

**Pre-9/11 and Post-9/11 Customer Service Outcomes at U.S.
Airports for International Travelers to the U.S.**

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The views and opinions expressed in this paper are those of the author and do not necessarily represent official positions or policies of the United States Government or the Department of Homeland Security.

Executive Summary

- This study evaluates the passport and customs control experience and concerns over personal safety of international visitors by air to the U.S. using data from the Department of Commerce's (DOC's) in-flight survey of international travelers to and from the U.S. which has been administered since 1993. 69,000-95,000 overseas travelers are surveyed each year.
- **This study evaluates 6 indicators on customer service outcomes for international travelers at U.S. airports, and 2 indicators on concerns about personal safety in the U.S.** Qualitative indicators include the degree to which international travelers were satisfied with passport processing time, customs processing time, passport processing staff courtesy, customs processing staff courtesy, and baggage delivery time. Quantitative indicators include the reported time in minutes that was required to clear passport and customs control;
- **Average ratings or outcomes are given for 12 U.S. airports and for travelers from 6 regions of the world and 6 specific countries.** This enables comparison of customer service outcomes across U.S. airports, and for travelers from different regions and countries of the world;
- **The average reported values for qualitative satisfaction across all travelers lie between "average" and "good".** The table below summarizes average values reported in the years 1999, 2000, 2003, and 2004;
- **There has been no material change in qualitative satisfaction ratings from the pre-9/11 period to the post-9/11 period.** The table below shows that no satisfaction indicator changed to an extent such that there was any material change in overall satisfaction outcome. Satisfaction with Customs and Border Protection (CBP) passport and customs processing times fell slightly, and satisfaction with CBP staff courtesy and baggage delivery time rose slightly. The results of this survey suggest that satisfaction with the CBP passport and customs control experience of international visitors who actually came to the U.S. was roughly the same in the pre- and post-9/11 eras;
- **Reported time in minutes to clear passport and customs control rose significantly, by 36%.** Average time reported by all surveyed international travelers rose from 26 minutes in 1999-2000 to 35 minutes in 2003-04. Even though reported wait time rose significantly, reported satisfaction with wait time decreased only slightly;
- **There are systematic differences in satisfaction scores across regions and countries.** Travelers from Asia typically report the lowest customer satisfaction scores. Travelers from the Middle East typically report above-average satisfaction scores. There is no evidence that satisfaction of travelers from the Middle East has fallen significantly in the post-9/11 period;
- **The percentage of international travelers to the U.S. who reported having personal safety concerns about coming to the U.S. rose after 9/11.** The percentage rose from an average of 24.5% in 1999-2000 to 28.5% in 2003. It fell to 26.7% in 2004. A small minority of concerned travelers who nonetheless decided to travel to the U.S. changed their travel plans as a result of their concerns;

- **There are a range of possible explanations for why satisfaction changed so little from the pre- to the post-9/11 eras.** More in-depth research using data on individual survey responses is necessary in order to determine which explanations are most likely to account for observed outcomes.

Summary Results

Satisfaction score responses are 1 (“poor”), 2 (“fair”), 3 (“average”), 4 (“good”), 5 (“excellent”) Satisfaction scores averaged over respondents given here	1999	2000	2003	2004	Change from 1999/2000 to 2003/2004^A
Satisfaction with passport processing time	3.52	3.42	3.30	3.34	-4.3%
Satisfaction with customs processing time	3.66	3.65	3.53	3.51	-3.7%
Passport/customs clearance time (in minutes)	24.2	27.1	33.8	35.7	35.5%
Satisfaction with passport staff courtesy	3.46	3.35	3.40	3.42	0.1%
Satisfaction with customs staff courtesy	3.50	3.48	3.54	3.51	1.0%
Satisfaction with baggage delivery time	3.40	3.33	3.45	3.43	2.2%

Satisfaction scores are “poor” (value = 1), “fair” (2), “average” (3), “good” (4) and “excellent” (5). Average scores across 6 regions of the world are presented here.

A : change is from the average value in 1999/2000 to the average value in 2003/2004.

I. Overview

This study evaluates the passport and customs control experience and concerns over personal safety of international visitors to the U.S. arriving at airports using data from the Department of Commerce's (DOC's) in-flight survey of international travelers to and from the U.S. The in-flight survey has been administered by DOC's Office of Tourism and Travel Industries (OTTI) since 1983 and collects a wide range of information on trips that international travelers make to the U.S., and U.S. citizens make abroad. Information on customer service at passport and customs control at U.S. airports has been collected since 1993. International travelers are given questionnaires to fill out on their plane flight home and so must recall their customer service treatment when they initially arrived in the U.S. 69,000-95,000 overseas travelers (both non-U.S.-residents arriving in the U.S. and U.S. citizens traveling abroad) are surveyed each year.

Data for the years 1999, 2000, 2003, and 2004 are examined in this study. The period 1999-2000 is a pre-9/11 baseline that permits determination of the degree to which outcomes changed in the post-9/11 period of 2003-2004. Average responses for the top 12 airports in the U.S. by number of non-U.S.-resident traveler arrivals are reported (these averages are taken across all nationalities), as well as average responses for 6 regions and 6 countries taken across all surveyed U.S. airports. The table below shows the number of usable responses received for the typical question related to passport and customs control or personal safety in 2004. The total number of responses for the top 12 airports reviewed was typically 19,000, and the total number of responses for the 6 regions reviewed typically was 22,516. Some countries, particularly Pakistan and Egypt, have very small sample sizes. Response numbers for 1999, 2000, and 2003 are roughly equal to the numbers in the table below.

	Typical Number of Responses Received for Questions on CBP- Related Processes in 2004
Top 12 Airports	19,000
Regions	22,516
Middle East	300
Asia	11,067
Africa	403
Central America	1,151
South America	1,587
Western Europe	8,010
Countries	
China (incl. Hong Kong)	338
India	356
Pakistan	37
Egypt	11
Indonesia	130
United Kingdom	3,725

Customer Service Questions

The qualitative customer service questions reviewed in this study include satisfaction with passport processing time, customs processing time, passport staff courtesy, customs staff courtesy, and baggage delivery waiting time. The quantitative customer service indicator is reported time in minutes required to clear passport and customs control upon arrival in the U.S. Two personal safety questions are also evaluated: the percentage of international travelers answering “Yes” to the question “Did you have personal safety concerns before you started your trip?”, and of those answering yes to the above question, the percentage answering yes to the question “Did your concerns cause you to change your travel plans?” Appendix A provides an exact reproduction of the section of the questionnaire that asks these questions.

All qualitative satisfaction questions ask the respondent to rate speed of processing or courtesy according to the following scale:

- 5 = Excellent
- 4 = Good
- 3 = Average
- 2 = Fair
- 1 = Poor

Average Response Values

We report average response values in two different ways. First, we report average response values for the top 12 airports in the U.S. by number of international traveler arrivals. These averages are taken across all surveyed international travelers passing through these airport, and they permit comparison of average scores across U.S. airports. Second, we report average response values for international travelers from 6 major regions and 6 individual countries. These averages are taken across all travelers from a particular region or country regardless of which airport they were surveyed at, and they permit comparison of outcomes for international travelers from different regions or countries of origin. Averages across the top 12 airports and across the 6 major regions are also given: these averages approximate the average outcome for all international travelers to the U.S.¹

The next section presents results. This is followed by a discussion of why the trends apparent in the response values may have occurred, the subtleties involved in determining why satisfaction ratings did (or did not) change, and paths for future research.

¹ These averages are calculated using weights for individual airports or regions that are the total number of international arrivals at the airport or from region divided by the total number of international arrivals for all 12 airports or all 6 regions.

II. Average Response Value Results

Qualitative Satisfaction with Passport Processing Time

Table 2.1 below presents results for qualitative satisfaction with passport processing time. Overall satisfaction with passport processing time is rated at 3.3-3.5, between “average” and “good”. There has been a slight fall in satisfaction with passport processing time from the pre-9/11 to the post-9/11 era, although not enough to make a material difference to the average reported satisfaction outcome. Variance in reported satisfaction across airports is not great, as almost all values are between 3.0 and 3.5. Most airports have experienced a relatively small drop in reported satisfaction. Some airports (#11 and #12) have experienced much larger falls in their average satisfaction score after 9/11 than the other ten airports. Visitors from Asia report the lowest average satisfaction level. Interestingly, visitors from the Middle East region report scores significantly above the world average. This is also true for the specific countries of Pakistan and Egypt (although sample size for these countries is quite small). Ratings from visitors from South America have fallen significantly from the pre- to post-9/11 eras, but ratings from other regions have experienced relatively small drops.

Table 2.1
Passport Processing Time: Qualitative Satisfaction

By Airport (average score)				
	1999	2000	2003	2004
All 12 Airports	3.49	3.39	3.26	3.31
No Change				
Airport #1	3.5	3.5	3.4	3.5
Airport #2	3.6	3.2	3.5	3.5
Airport #3	3.6	3.7	3.5	3.7
Slight Rise				
Airport #4	3.2	3.1	3.1	3.3
Slight Fall				
Airport #5	3.2	3.2	3.1	3.0
Airport #6	3.6	3.4	3.4	3.4
Airport #7	3.4	3.4	3.2	3.3
Airport #8	3.2	3.2	2.9	3.1
Airport #9	3.6	3.4	3.5	3.3
Airport #10	3.7	3.5	3.1	3.4
Significant Fall				
Airport #11	3.8	3.6	3.3	3.2
Airport #12	3.5	3.6	3.0	3.0

By Region/Country (average score)				
	1999	2000	2003	2004
All 6 Regions	3.52	3.42	3.30	3.34
Middle East	3.8	3.9	3.4	3.8
Asia	3.3	3.2	3.1	3.0
Africa	3.7	3.8	3.6	3.7
Central America	3.9	3.7	3.6	3.7
South America	3.8	3.7	3.5	3.5
Western Europe	3.5	3.4	3.3	3.4
Countries				
China ^A	3.4	3.4	3.4	3.4
India	4.0	4.0	4.0	4.0
<i>Pakistan</i> ^B	<i>3.7</i>	<i>3.9</i>	<i>3.9</i>	<i>4.0</i>
<i>Egypt</i> ^B	<i>4.3</i>	<i>4.2</i>	<i>4.7</i>	<i>4.2</i>
Indonesia	3.7	3.7	3.5	3.5
United Kingdom	3.6	3.5	3.4	3.4

A : Peoples' Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

Qualitative Satisfaction with Customs Processing Time

Table 2.2 below presents results for qualitative satisfaction with passport processing time. Overall satisfaction with customs processing time is rated at 3.5-3.7, between “average” and “good.” This score is somewhat higher than for satisfaction with passport processing time. There has been a slight fall in satisfaction with customs processing time from the pre-9/11 to the post-9/11 era, although not enough to make a material difference to the average reported satisfaction outcome. Variance across airports in reported satisfaction is not great, as almost all values are between 3.4-3.8. A majority of airports have experienced a slight or significant drop in reported satisfaction from the pre- to post-9/11 eras. Three airports (#3, 11 and 12) have experienced significant falls in their average reported score; for airports #11 and 12, this is consistent with the picture for change in satisfaction with passport processing time. For region/country scores, as in the case of scores for satisfaction with passport processing time, visitors from Asia reported the lowest average scores, and visitors from the Middle East reported scores significantly above the world average (including the specific small-sample size countries of Pakistan and Egypt). Some regions have reported slight drops in average scores from the pre- to post-9/11 eras.

**Table 2.2
Customs Processing Time: Qualitative Satisfaction**

By Airport (average score)				
	1999	2000	2003	2004
All 12 Airports	3.69	3.64	3.51	3.54
No Change				
Airport #1	3.8	3.7	3.7	3.7
Airport #2	3.7	3.6	3.8	3.7
Airport #7	3.5	3.6	3.4	3.5
Airport #10	3.7	3.8	3.6	3.8
Slight Fall				
Airport #4	3.5	3.5	3.4	3.4
Airport #5	3.3	3.3	3.1	3.2
Airport #6	3.8	3.7	3.5	3.6
Airport #8	3.7	3.6	3.6	3.6
Airport #9	3.8	3.6	3.6	3.7
Significant Fall				
Airport #11	3.9	3.8	3.5	3.5
Airport #12	3.8	3.9	3.5	3.5
Airport #3	3.8	3.8	3.6	3.5

By Region/Country (average score)				
	1999	2000	2003	2004
All 6 Regions	3.66	3.65	3.53	3.51
Middle East	4.0	4.0	4.1	3.9
Asia	3.4	3.4	3.2	3.2
Africa	4.0	3.9	3.8	3.7
Central America	3.8	3.8	3.8	3.7
South America	3.9	3.9	3.7	3.7
Western Europe	3.7	3.7	3.6	3.6
Countries				
China ^A	3.5	3.4	3.4	3.5
India	4.2	4.3	4.1	4.0
Pakistan ^B	4.1	4.5	3.9	3.8
Egypt ^B	4.5	4.5	4.8	4.5
Indonesia	3.8	3.7	3.5	3.8
United Kingdom	3.7	3.7	3.6	3.6

A : Peoples' Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

Quantitative Outcomes for Passport and Customs Processing Time

Respondents were asked to report an estimate of how long it took them to clear passport control and customs in minutes. The question as written is open to interpretation by the traveler as to whether it should cover the entire time from leaving the plane to entering the airport, or from entering the passport control queue to entering the airport. Given that the time required to get from the arrival gate to the passport control queue will not typically be very large, it is not likely that this vagueness has a major impact on reported results. The questionnaire also does not ask whether a traveler was reported to secondary inspection when they arrived, which will make a major difference to reported time. It would be useful to modify the questionnaire to include a question specifically on secondary inspection.

Table 2.3 gives average reported scores for the 12 airports reviewed in this study, and table 2.4 gives scores for the 6 regions and 6 countries. Using values for all regions of the world from table 2.4, the average reported clearance time rose substantially from the pre-9/11 to the post-9/11 eras, from roughly 26 minutes to 35 minutes, which is a 35% increase. The same increase occurred in the median reported clearance time. This raises the interesting question of why the actual time spent in clearing passport and customs rose significantly, but satisfaction with that outcome did not. This issue is discussed more in the following section. It is also not clear to what extent this increase was due to increased waiting in primary inspection queues and/or an increase in baggage delivery time versus an increased reporting rate to secondary inspection. Given that the number of passengers reported to secondary inspection is small, and that some of those reported to secondary are not permitted entry into the U.S. and thus would not be included in the in-flight survey's sample, we believe *a priori* that the increase is primarily due to increased waiting in primary inspection queues and/or baggage delivery time.

Results for specific airports show a range of outcomes. Some airports experienced much bigger growth in reported clearance time than others. Airports #10, 11, and 12 experienced growth of 79% or more, whereas airports #2, 4, and 5 experienced growth of 16% or less. This has led to an increase in the variance of reported clearance times across the 12 airports.² Levels and changes in median reported clearance times are consistent with levels and changes in average reported clearance times.

Figure 2.1 below shows that the incidence of short reported clearance times has fallen, and the incidence of reported clearance times of 46 minutes or more has risen significantly from 1999/2000 to 2003/04.

² The coefficient of variation (ratio of the standard deviation to the mean value) across airports rose from 0.124 in 1999-2000 to 0.175 in 2003-2004.

Table 2.3
Passport/Customs Clearance Time: Quantitative Outcomes By Airport

By Airport					
Average Reported Passport/Clearance Time in Minutes					
	1999	2000	2003	2004	Growth, 99/00-03/04^A
All 12 Airports	25.0	27.8	35.5	37.5	38.4%
Airport #11	23.0	27.0	42.7	51.5	88.4%
Airport #12	22.9	23.4	41.5	45.4	87.7%
Airport #10	21.1	26.1	37.3	47.2	79.0%
Airport #3	25.7	26.7	37.3	38.9	45.4%
Airport #8	29.6	30.1	44.0	42.1	44.2%
Airport #6	22.6	24.0	31.8	32.4	37.8%
Airport #7	24.1	26.5	33.4	32.3	29.8%
Airport #1	25.0	25.5	31.9	32.8	28.1%
Airport #9	24.6	25.1	30.3	32.7	26.8%
Airport #4	30.1	35.8	39.8	36.8	16.2%
Airport #5	22.3	24.0	24.7	27.5	12.7%
Airport #2	25.7	30.5	30.1	32.3	11.0%

A : Growth of average for 2003-2004 over average for 1999-2000.

By Airport					
Median Reported Passport/Clearance Time in Minutes					
	1999	2000	2003	2004	Growth, 99/00-03/04^A
All 12 Airports	20.6	21.9	28.0	31.0	38.9%
Airport #11	20	20	30	40	75.0%
Airport #12	20	20	30	40	75.0%
Airport #10	15	20	30	30	71.4%
Airport #1	20	20	30	30	50.0%
Airport #7	20	20	30	30	50.0%
Airport #8	20	20	30	30	50.0%
Airport #6	20	20	25	30	37.5%
Airport #3	20	20	25	30	37.5%
Airport #9	20	20	25	30	37.5%
Airport #2	20	25	25	30	22.2%
Airport #4	25	30	30	30	9.1%
Airport #5	20	20	20	20	0.0%

A : Growth of average for 2003-2004 over average for 1999-2000.

Figure 2.1

**Passport/Customs Clearance Times: Frequency Distributions
(For top 12 US airports)**

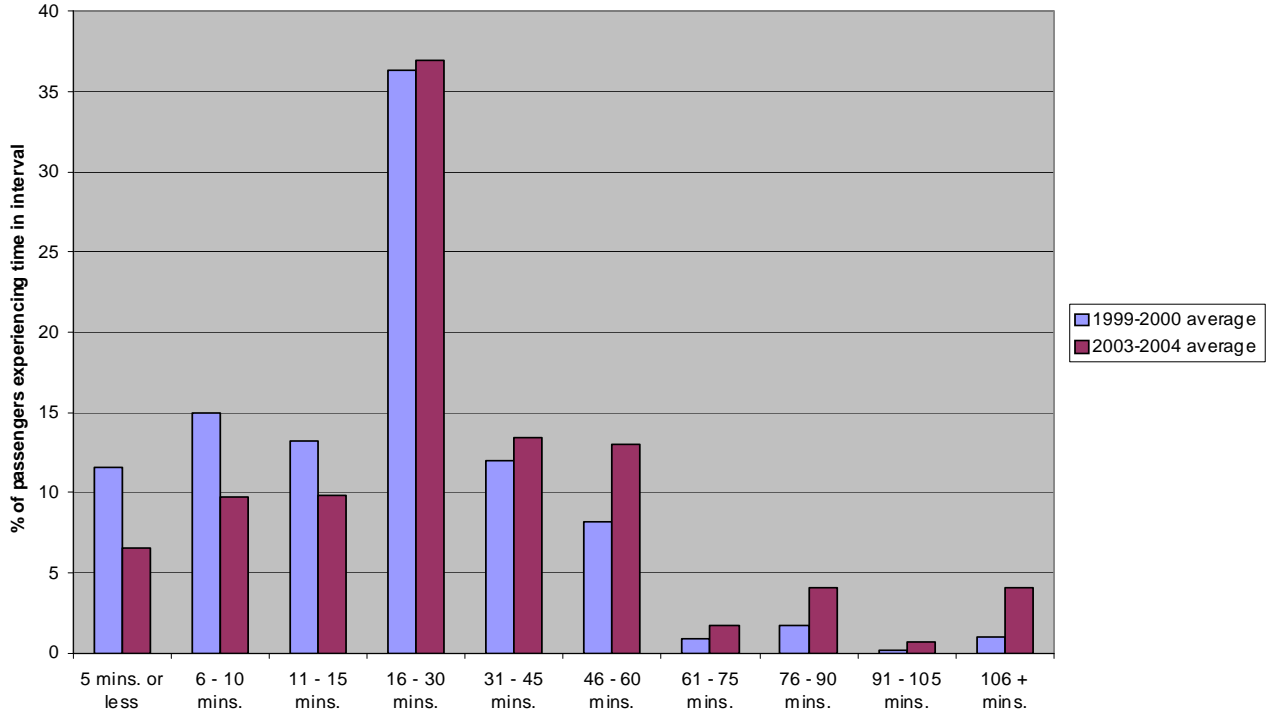


Table 2.4 below reports average clearance times in minutes by region and country. Change in reported clearance time by region shows an overall increase of roughly one-third, consistent with the results by the top 12 airports. Travelers from Asia reported the smallest increase in average clearance time, of roughly 20%. In 2004, travelers from the Middle East reported an average clearance time less than the 6-region average. Travelers from Africa, Central and South America, and Western Europe all reported average clearance times higher than for travelers from the Middle East³. Travelers from Indonesia and Pakistan reported the largest increases in average clearance time. However, travelers from Indonesia and the United Kingdom reported almost identical average clearance times in 2004. Changes in median reported clearance times are consistent with changes in average reported clearance times.

³ The Middle East includes travelers from Israel, who account for a substantial fraction of travelers from the Middle East region.

Table 2.4
Passport/Customs Clearance Time: Quantitative Outcomes By Region/Country

By Region/Country:					
Average Reported Passport/Customs Clearance Time in Minutes					
	1999	2000	2003	2004	Growth, 99/00-03/04^A
All 6 Regions	24.2	27.1	33.8	35.7	35.5%
Middle East	24.1	24.4	39.5	32.8	49.1%
Asia	22.6	26.8	29.1	30.0	19.6%
Africa	24.3	32.7	34.0	37.3	25.1%
Central America	21.3	24.3	31.2	36.3	48.0%
South America	23.0	27.2	35.2	43.4	56.6%
Western Europe	26.1	28.0	36.8	38.0	38.3%
Countries					
China ^B	23.8	28.4	32.4	29.5	18.6%
India	24.8	29.1	31.5	34.0	21.5%
Pakistan ^C	34.6	30.4	44.3	50.9	46.5%
Egypt ^C	19.4	24.5	21.0	28.3	12.3%
Indonesia	22.9	23.9	42.9	38.0	72.9%
United Kingdom	25.7	27.3	35.7	37.6	38.3%

By Region/Country:					
Median Passport/Clearance Time in Minutes					
	1999	2000	2003	2004	Growth, 99/00-03/04^A
All 6 Regions	19.5	20.1	26.5	30.0	43.1%
Middle East	20	20	30	30	50.0%
Asia	20	20	20	30	25.0%
Africa	15	25	30	30	50.0%
Central America	15	20	25	30	57.1%
South America	20	20	30	30	50.0%
Western Europe	20	20	30	30	50.0%
Countries					
China ^B	20	25	25	30	22.2%
India	20	20	25	25	25.0%
Pakistan ^C	30	30	na	45	na
Egypt ^C	20	20	15	15	-25.0%
Indonesia	15	15	30	30	100.0%
United Kingdom	20	20	30	30	50.0%

A : Growth of average for 2003-2004 over average for 1999-2000.

B : Peoples' Republic of China, including Hong Kong.

C : Pakistan and Egypt values are based on 60 responses or less.

Qualitative Satisfaction with Passport Staff Courtesy

Table 2.5 below gives reported average value of satisfaction with passport staff courtesy. Overall satisfaction has been rated at roughly 3.5, between “average” and “good.” Variance across airports is not great, as almost all values are between 3.4-3.8. As in the case of scores for satisfaction with passport and customs processing times, visitors from Asia report the lowest average scores, and visitors from the Middle East report average scores significantly above the world average (including the specific small-sample size countries of Pakistan and Egypt). There has been no significant change in satisfaction with passport staff courtesy from the pre-9/11 to the post-9/11 era. Most airports have experienced no change in average score. Two airports have experienced a slight fall, and two have experienced a slight rise. Travelers from Africa and Central America reported slight increases in average score.

Table 2.5
Passport Staff Courtesy: Qualitative Satisfaction

By Airport (average score)				
	1999	2000	2003	2004
All 12 Airports	3.51	3.40	3.44	3.46
No Change				
Airport #1	3.4	3.3	3.4	3.4
Airport #5	3.3	3.2	3.2	3.2
Airport #2	3.5	3.3	3.6	3.4
Airport #6	3.6	3.5	3.5	3.5
Airport #7	3.5	3.4	3.4	3.5
Airport #8	3.5	3.5	3.3	3.5
Airport #9	3.6	3.4	3.6	3.5
Airport #10	3.5	3.7	3.4	3.7
Slight Rise				
Airport #4	3.4	3.2	3.3	3.5
Airport #3	3.6	3.7	3.8	3.8
Slight Fall				
Airport #11	3.7	3.6	3.6	3.5
Airport #12	3.7	3.6	3.5	3.5

By Region/Country (average score)				
	1999	2000	2003	2004
All 6 Regions	3.46	3.35	3.40	3.42
Middle East	3.9	3.8	3.7	3.8
Asia	3.3	3.2	3.2	3.2
Africa	3.6	3.5	3.7	3.7
Central America	3.6	3.7	3.7	3.8
South America	3.7	3.6	3.6	3.6
Western Europe	3.6	3.5	3.5	3.6
Countries				
China ^A	3.4	3.5	3.6	3.5
India	3.9	3.9	4.0	3.9
Pakistan ^B	3.5	4.0	3.9	3.8
Egypt ^B	4.2	4.0	3.1	4.4
Indonesia	3.7	3.8	3.5	3.7
United Kingdom	3.6	3.5	3.6	3.7

A : Peoples' Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

Qualitative Satisfaction with Customs Staff Courtesy

Table 2.6 below gives reported average value of satisfaction with customs staff courtesy. Overall satisfaction with customs staff courtesy is rated at roughly 3.6, between “average” and “good.” There has been a slight fall in reported satisfaction with customs staff courtesy from the pre-9/11 to the post-9/11 era, but not enough to make a material difference. Variance across airports is not great, as almost all values are between 3.5-3.8. As in the case of other satisfaction scores, visitors from Asia reported the lowest average scores, and visitors from the Middle East reported the highest average scores. Six airports have experienced no change in average score, five have experienced a slight fall, and one has experienced a rise. There has been very little change in average scores for regions across time.

Table 2.6
Customs Staff Courtesy: Qualitative Satisfaction

By Airport (average score)				
	1999	2000	2003	2004
All 12 Airports	3.64	3.59	3.57	3.56
No Change				
Airport #1	3.6	3.6	3.6	3.6
Airport #4	3.5	3.5	3.4	3.5
Airport #5	3.3	3.2	3.2	3.2
Airport #2	3.7	3.6	3.8	3.6
Airport #7	3.6	3.5	3.5	3.6
Airport #9	3.8	3.7	3.7	3.8
Slight Rise				
Airport #10	3.7	3.7	3.7	3.8
Slight Fall				
Airport #11	3.8	3.7	3.7	3.6
Airport #6	3.7	3.6	3.5	3.5
Airport #8	3.7	3.7	3.7	3.6
Airport #12	3.8	3.8	3.6	3.6
Airport #3	3.8	3.9	3.8	3.7

By Region/Country (average score)				
	1999	2000	2003	2004
All 6 Regions	3.50	3.48	3.54	3.51
Middle East	4.0	4.0	4.0	4.0
Asia	3.3	3.3	3.3	3.3
Africa	3.7	3.6	3.8	3.8
Central America	3.8	3.7	3.8	3.7
South America	3.8	3.8	3.7	3.7
Western Europe	3.7	3.7	3.7	3.7
Countries				
China ^A	3.5	3.5	3.6	3.5
India	4.2	4.2	4.1	4.0
Pakistan ^B	4.0	4.1	3.8	3.7
Egypt ^B	4.4	4.4	4.0	4.5
Indonesia	3.8	3.6	3.6	3.8
United Kingdom	3.7	3.7	3.7	3.7

A : Peoples' Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

Qualitative Satisfaction with Baggage Delivery Waiting Time

Table 2.7 below gives reported average value of satisfaction with baggage delivery waiting time. Overall satisfaction is rated at roughly 3.4, between “average” and “good.” Variance across airports is not particularly large, as all values are between 3.2-3.7. Variance across regions is quite low: in 2003-04, only travelers from Asia reported a score significantly different from the mean value of the other regions. There has been a slight increase in overall satisfaction with baggage delivery waiting time from the pre-9/11 to the post-9/11 era. Most airports have experienced little or no change in average score, but airports #7 and 10 have experienced significant increases. Airport #3, on the other hand, has experienced a significant fall. Satisfaction among travelers from Central America rose significantly.

Table 2.7
Baggage Delivery Waiting Time: Qualitative Satisfaction

By Airport				
(average score)				
	1999	2000	2003	2004
All 12 Airports	3.42	3.40	3.46	3.44
No Change				
Airport #1	3.5	3.5	3.6	3.5
Airport #11	3.5	3.5	3.5	3.6
Airport #4	3.4	3.3	3.3	3.3
Airport #5	3.3	3.3	3.3	3.2
Airport #2	3.4	3.4	3.4	3.5
Airport #6	3.4	3.4	3.4	3.4
Airport #8	3.3	3.4	3.6	3.3
Airport #12	3.5	3.6	3.5	3.5
Substantial Rise				
Airport #7	3.1	3.1	3.5	3.4
Airport #10	3.4	3.2	3.7	3.7
Slight Rise				
Airport #9	3.5	3.3	3.5	3.7
Substantial Fall				
Airport #3	3.6	3.6	3.3	3.3

By Region/Country (average score)				
	1999	2000	2003	2004
All 6 Regions	3.40	3.33	3.45	3.43
Middle East	3.4	3.6	3.6	3.6
Asia	3.2	3.1	3.2	3.2
Africa	3.5	3.5	3.7	3.6
Central America	3.3	3.3	3.7	3.6
South America	3.6	3.6	3.6	3.6
Western Europe	3.5	3.4	3.5	3.5
Countries				
China ^A	3.4	3.3	3.3	3.3
India	3.8	3.8	3.7	3.7
Pakistan ^B	3.5	3.9	2.9	3.8
Egypt ^B	4.1	3.7	4.8	4.1
Indonesia	3.5	3.4	3.6	3.6
United Kingdom	3.5	3.5	3.5	3.5

A : Peoples' Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

Concern About Personal Safety

Table 2.8 below gives the percentages of international travelers reporting whether or not they had concerns about their personal safety prior to coming to the U.S. Concern with personal safety affects roughly 25% of international travelers to the U.S. Variance across cities from which these travelers were departing the U.S. is significant. Some cities have typically had higher-than-average percentages of concerned travelers, and some cities have typically had lower-than-average percentages. Variance across regions is also significant. Asia and South America have consistently had significantly higher-than-average percentages of concerned travelers, and the Middle East and Western Europe have had significantly lower-than-average percentages.

There has been a slight increase in safety concern from the pre-9/11 to the post-9/11 era. The pre-9/11 level of roughly 23% rose to 27.8% in 2003, but then fell to 25.4% in 2004. Some airports have experienced larger rises than others. The percentage of concerned travelers from the Middle East fell slightly in the post-9/11 era.⁴ Percentages for all other regions rose.

⁴ Given that concern rose for travelers from Pakistan and Egypt, this may be driven by the high share of travelers from Israel in the Middle East group. Further analysis is clearly needed.

Table 2.8
Personal Safety Concerns

Question 25(a): “Did you have personal safety concerns before you started your trip?”

By Airport :				
Percentage Answering “Yes” to Question 25(a)				
	1999	2000	2003	2004
All 12 Airports	23.8%	22.6%	27.8%	25.4%
Airport #1	23.5%	25.4%	28.7%	26.2%
Airport #11	28.9%	21.9%	30.7%	28.7%
Airport #4	29.5%	27.7%	32.1%	25.8%
Airport #10	28.7%	31.0%	38.2%	32.9%
Airport #2	16.3%	18.3%	19.7%	20.3%
Airport #6	17.6%	15.8%	24.9%	22.2%
Airport #7	24.0%	26.8%	28.1%	26.8%
Airport #8	16.4%	20.5%	22.3%	16.9%
Airport #12	14.7%	13.2%	23.4%	22.4%
Airport #3	17.0%	10.2%	23.0%	16.5%
Airport #9	11.3%	9.2%	14.0%	22.0%
Airport #10	26.3%	20.7%	16.2%	26.2%

By Region/Country:				
Percentage Answering “Yes” to Question 25(a)				
	1999	2000	2003	2004
All 6 Regions	24.7%	24.2%	28.5%	26.7%
Middle East	20.4%	22.0%	19.0%	19.9%
Asia	35.6%	35.3%	40.4%	34.6%
Africa	19.9%	24.8%	32.9%	29.9%
Central America	25.6%	28.5%	28.6%	29.3%
South America	36.7%	31.8%	38.2%	37.5%
Western Europe	14.7%	13.7%	19.8%	19.4%
Countries				
China ^A	37.0%	43.7%	40.1%	37.5%
India	34.7%	32.4%	39.6%	31.2%
Pakistan ^B	39.9%	26.8%	49.7%	45.3%
Egypt ^B	14.0%	31.0%	34.5%	13.6%
Indonesia	35.7%	39.2%	42.4%	41.7%
United Kingdom	13.0%	12.5%	18.3%	17.4%

A : Peoples’ Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

Table 2.9 below gives the percentages of international travelers who changed their trip plans because of being concerned about personal safety. Of those reporting that they had concerns about personal safety before traveling to the U.S., a small percentage of these (11.6%) actually changed their travel plans as a result. It is important to keep in mind that these are travelers who changed their plans but still came to the U.S. – it is not a measure of how many travelers were deterred from coming to the U.S. Variance across airports, regions and countries is significant, and volatility over time is also high. Concerned travelers from the Middle East generally changed their travel plans to a greater degree than travelers from other regions. The percentage of concerned travelers who changed travel plans has fallen slightly from the pre-9/11 to the post-9/11 era, from above 12% to roughly 11%.

It would be useful to know more about how travelers specifically changed their travel plans: did they visit a city or region different from that originally intended, did they fly into a different city, did they postpone their trip, etc. Of even more use would be information on how many potential travelers to the U.S. were deterred from coming due to personal safety concerns, but it is not possible to measure this with a survey of those who actually did come.

Table 2.9
Personal Safety Concerns and Trip Plans

Question 25(b): “Did your concerns cause you to change your travel plans?”

By Airport :				
% Answering “Yes” to Question 25(b)				
(as % of Those Answering “Yes” to Question 25(a))				
	1999	2000	2003	2004
All 12 Airports	12.3%	12.2%	11.8%	9.9%
Airport #1	12.8%	14.6%	10.5%	8.4%
Airport #11	9.0%	11.0%	8.5%	7.7%
Airport #4	18.0%	17.0%	16.5%	13.6%
Airport #5	12.2%	12.9%	15.4%	12.8%
Airport #2	10.4%	8.2%	16.2%	11.8%
Airport #6	15.9%	17.7%	9.6%	6.8%
Airport #7	17.1%	13.4%	12.1%	16.4%
Airport #8	8.5%	5.4%	14.8%	8.9%
Airport #12	10.2%	6.8%	6.4%	11.2%
Airport #3	5.9%	2.0%	1.7%	4.8%
Airport #9	2.7%	14.1%	20.7%	8.6%
Airport #10	14.4%	5.3%	6.8%	1.9%

By Region/Country:				
Percentage Answering “Yes” to Question 25(b)				
(as % of Those Answering “Yes” to Question 25(a))				
	1999	2000	2003	2004
All 6 Regions	13.2%	12.8%	11.4%	9.6%
Middle East	20.6%	20.5%	17.9%	18.6%
Asia	18.5%	17.3%	16.3%	13.9%
Africa	9.0%	24.6%	10.9%	2.3%
Central America	10.5%	8.8%	7.7%	7.2%
South America	9.3%	8.8%	8.4%	9.1%
Western Europe	10.9%	10.9%	9.6%	7.2%
Countries				
China ^A	30.0%	37.1%	21.9%	20.0%
India	17.3%	16.0%	15.4%	12.2%
Pakistan ^B	13.0%	0.0%	18.9%	24.7%
Egypt ^B	20.7%	6.8%	0.0%	0.0%
Indonesia	43.7%	46.7%	42.9%	32.4%
United Kingdom	6.9%	3.2%	6.6%	3.4%

A : Peoples’ Republic of China, including Hong Kong.

B : Pakistan and Egypt values are based on 60 responses or less.

III. Interpreting the Results and Paths for Future Research

The most striking finding of this study is that average customer satisfaction ratings with passport and customs control did not materially change from the pre- to the post-9/11 eras. In the case of wait time, average satisfaction with wait time changed very little even though the average reported time in minutes required to clear passport and customs control rose by 35%. Appendix B shows that for the 12 airports evaluated here, airports that experienced a larger rise in minutes waited in passport and customs control also experienced a larger deterioration in wait satisfaction ratings, but that the elasticity of satisfaction rating with respect to reported wait time is quite low. Why did wait satisfaction ratings change so little when their presumable underlying determinant changed significantly? This question raises the issue of how satisfaction ratings are determined, and what exactly they mean and reflect.

How Are Satisfaction Ratings Determined?

Satisfaction measures require a respondent to rate an experience on a scale of ordinal values that are arbitrarily bounded from below and above. The scale ranges from “poor” to “average” to “excellent”. This scale requires a traveler to form an opinion on what an “average” experience is, or should be. Opinions about an “average” experience will vary across travelers depending on their previous experiences, information, and preferences. Consider, for example, customer satisfaction with waiting to clear passport and customs control. Travelers form their expectations of what an average wait experience should be based on a set of information that could include a variety of things. Past experiences in U.S. airports or airports in other countries could be used to set expectations. Information on the experiences of friends or family could be used. Information on shocks like 9/11 that can be expected to significantly change wait times could also be incorporated.

Once a traveler has formed an opinion on what an “average” experience should be, s/he will then set a satisfaction score based on the actual experience that they went through. The typical traveler will presumably set a score taking into account a “surprise” factor that is the difference between what their expectation of an “average” experience and the actual experience they had, the absolute level of the experience, and their preferences. The surprise factor captures the influence of an actual experience being unexpectedly good or bad on the satisfaction score. The absolute level of the experience reflects the fact that even if a traveler is not surprised and experiences what they expected, a very long wait can still be regarded as undesirable and lead to a poor satisfaction score (or a very short wait be regarded as excellent performance.) Preferences of the traveler will influence also the satisfaction outcome. For example, business travelers under tight time pressure might be more sensitive to expected and actual wait time outcomes, and leisure travelers less sensitive.

Mathematically, this model of satisfaction score determination in the case of wait time can be written as:

$$(3.1) \quad WT^E = f(E_{US}, E_{OTH}, E^*_{US}, E^*_{OTH}, I)$$

and

$$(3.2) \quad S = g(\{WT^{\text{ACT}} - WT^{\text{E}}\}; WT^{\text{ACT}}; P)$$

where WT^{E} is the wait time that the traveler is expecting as an average experience, E_{US} is the traveler's previous experiences in U.S. airports, E_{OTH} is the traveler's previous experiences in other airports, E^*_{US} is information that the traveler has on others' experiences in U.S. airport, E^*_{OTH} is information that the traveler has on other's experiences in non-U.S. airports, I is a set of information that the traveler has on what wait times might be that is independent of previous experiences, S is the satisfaction score the traveler reports, WT^{ACT} is the actual wait time experienced by the traveler, P are preferences of the traveler, and $f(\cdot)$ and $g(\cdot)$ are mathematical functions. The function $g(\cdot)$ must be chosen to respect the fact that satisfaction ratings are bounded from above and below, and that the values that S can take on are discrete.

Of course, the same model can apply to satisfaction with staff courtesy, or any other satisfaction variable. One difference between wait time and staff courtesy is that the presumable underlying determinant of wait time satisfaction (the actual wait time in minutes) can be measured and reported by the traveler. This would be very difficult to do in the case of staff courtesy.

Steady States versus Extraordinary Times

In "normal times," when wait times or politeness is not changing in any systematic fashion, the expected experience should generally be equal to the actual experience. What was experienced in the past will be used to form expectations, and these will typically be consistent with actual experience. The information set used by a traveler to form a judgment about what an "average" experience should not be changing dramatically. "Normal times" are mathematically termed a "steady state." The surprise factor described above should be equivalent to white noise – travelers are not systematically surprised in a positive or negative way. Traveler judgments will of course be influenced by traveler preferences, in that more impatient and demanding travelers will set a higher standard for performance and judge outcomes accordingly. In "steady states", interpretation of reported satisfaction levels are less of a problem than in extraordinary times such as right after 9/11.

Extraordinary events such as 9/11 complicate interpretation of satisfaction measures. Consider wait times. In late 2001 or early 2002, if travelers were basing their evaluation of what an "average" wait time experience should be purely on their pre-9/11 experiences, then we would expect that their satisfaction measure would decline substantially, because wait times rose substantially right after 9/11. However, it is quite plausible that immediately after 9/11, many in the traveling public expected that wait times would increase because of tightened security measures. This corresponds to a change in I in equation (3.1) above that caused WT^{E} to rise. After 9/11, it is not clear that the surprise factor $\{WT^{\text{ACT}} - WT^{\text{E}}\}$ took on positive values systematically across

travelers and time. It is important to note, however, that because the absolute value of the experience, WT^{ACT} , also presumably influences satisfaction ratings, these ratings should deteriorate as actual wait times rise even if the surprise factor does not differ systematically from zero.

Some analysts (including many economists) would not regard satisfaction measures as conveying much meaningful information. These analysts would prefer to evaluate the loss of real resources directly rather than a traveler's subjective satisfaction evaluation of that loss. In the case of waiting, performance would be evaluated not by looking at travelers' subjective evaluations, but by how much time is lost by those travelers in waiting. Because this time could have been used by the travelers for other purposes (leisure or work), there is an opportunity cost involved, and a monetary value of the lost time can be estimated and then compared to the benefits that the increased waiting brings. Consider an extreme situation in which travelers lose an entire day due to waiting in line. If this situation is the norm and travelers expect to lose an entire day in line, and they base their satisfaction rating only on the surprise factor (the difference between actual and expected outcomes), then travelers would rate the loss of a full day spent in waiting as an "average" outcome. However, this is clearly a very costly outcome to both the traveler and society, and it seems implausible that it would be evaluated as an "average" experience, particularly in societies where the value of time is high. This example illustrates why the absolute level of the experience should influence the satisfaction rating as well as the surprise factor.

Perceived Benefits of Waiting

It may also be the case that travelers perceive that increased waiting brings them increased security benefits. In "normal" situations, travelers are likely to interpret an unexpectedly long wait time as reflecting inefficiency on the part of processors. After an event such as 9/11, however, it is possible that travelers perceive longer waiting as providing an increased level of security, and the traveler directly benefits from this increased security.

This argument may apply in the case of lines at airport security administered by the Transport Security Agency (TSA). The process examined here is passport and customs control, which is experienced by travelers after their arrival flight. For international visitors to the U.S. to perceive security benefits from this process, it must be the case that they anticipate this process to deter terrorists from getting into the U.S. to carry out plots that could somehow impact them. It is possible that international visitors perceive such benefits resulting from intensified inspection at passport and customs control.

Change in Traveler Composition

Another possibility is that after 9/11, the composition of international visitors coming to the U.S. changed such that there was a systematic change in preferences. It may be the case that relatively more travelers with higher levels of patience and lower values of time came to the U.S. after 9/11. The fact that the waiting and expense involved in getting a

visa to come to the U.S. also rose significantly after 9/11 might strengthen the plausibility of this possibility: if an international visitor was willing to incur increased costs to get a visa, s/he might be more likely to care less about waiting in an airport line.

Conclusions and Paths for Future Research

This study establishes that customer satisfaction ratings at U.S. airports changed very little from the pre- to the post-9/11 era. It is not yet clear why this was the case. In order to identify the reasons, more involved research is needed that evaluates satisfaction responses at the level of the individual traveler. Econometric analysis of individual responses based on a formal model of expectations formation and determination of satisfaction rating as outlined in equations (3.1) and (3.2) is the necessary next stage of research. This research can take advantage of the considerable information on individual travelers that is provided by the in-flight survey's many other questions unrelated to satisfaction with passport and customs control. Finally, responses over the full period 1996-2005 can be evaluated as opposed to the four years 1999-2000 and 2003-2004.

Appendix A : In-Flight Questionnaire

The text below is an exact reproduction of the section of the section of the in-flight questionnaire that asks international travelers to the U.S. about their experience going through U.S. passport and customs control, and personal safety issues related to their trip.

25 a. For Non-U.S. Residents Only:

When entering the USA, please rate your Immigration and Naturalization Service/Passport Control and U.S. Customs experience at the airport where you entered the USA.

Mark (X) ONE rating for each

	Excellent	Good	Average	Fair	Poor	Don't Know
a. Passport control						
(1) Processing time	5	4	3	2	1	0
(2) Staff courtesy	5	4	3	2	1	0
b. Customs baggage clearance						
(1) Processing time	5	4	3	2	1	0
(2) Staff courtesy	5	4	3	2	1	0

b. About how long did it take you to clear Passport Control and Customs when entering the United States?

Specify in minutes

Baggage delivery waiting time

Mark (X) ONE rating

- Excellent
- Good
- Average
- Fair
- Poor
- Don't know

26a. Did you have personal safety concerns before you started your international trip?

Mark (X) ONE

- Yes
- No

b. Did your concerns cause you to change your travel plans?

Mark (X) ONE

- Yes
- No

26c. For Non-U.S. Residents ONLY

Was your personal safety actually endangered while in the USA?

Mark (X) ONE

No – Go to question 27

Yes – Indicate the city(ies) where incidents(s) took place and mark (X) the appropriate category(ies) below.

	<i>Incidents – Mark (X)</i>					
City	Harassment/ Arguments	Assault/ Physical Harm	Burglary/ Theft	Transportation accident	Health Problem	Other -- Specify

Appendix B: Relationship Between Qualitative and Quantitative Indicators

Data from the in-flight survey permit assessing the relationship between qualitative indicators and quantitative indicators. Change in international traveler *satisfaction* with passport and customs processing time can be compared with change in reported length of time required for passport and customs clearance. A negative relationship between these variables would be expected, as satisfaction should go down as one has to wait longer to be cleared. The graphs below show that this negative relationship is present in the data: the higher the average processing time rose at an airport from the period 1999-2000 to 2003-2004, the more satisfaction with passport processing time and customs processing time declined.⁵

Further analysis using linear regression reveals that the degree to which satisfaction with wait time responds to change in time actually waited is low. The elasticity of satisfaction with passport processing time with respect to reported passport processing time is -0.27: if reported passport/customs processing time rises by 1%, satisfaction falls by 0.27%. Satisfaction with respect to customs processing time is even lower, at -0.12. Satisfaction measures are relatively unresponsive to the underlying quantitative measures that presumably drive the level of satisfaction. These elasticities imply that a doubling in the average amount of time that one has to wait to clear passport and customs control does not lead to a very significant change in the level of satisfaction expressed by the travelers.

⁵ The graphs also suggest that the relationship between satisfaction with passport processing time and reported passport/customs processing time is stronger than the relationship between satisfaction with customs processing time and reported passport/customs processing time. This suggests that the total amount of time required to clear passport and customs control is dominated by time spent at passport control.

