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Airline Quality Rating Report

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April, 1997

ABOUT THE AUTHORS

Brent Bowen is Director and Professor, Aviation Institute, University of Nebraska at Omaha. He has been appointed as a Graduate Faculty Fellow of the University of Nebraska System-wide Graduate College. Bowen attained his Doctorate in Higher Education and Aviation from Oklahoma State University and a Master of Business Administration degree from Oklahoma City University. His Federal Aviation Administration certifications include Airline Transport Pilot, Certified Flight Instructor, Advanced-Instrument Ground Instructor, Aviation Safety Counselor, and Aerospace Education Counselor. Dr. Bowen's research interests focus on aviation applications of public productivity enhancement and marketing in the areas of service quality evaluation, forecasting, and student recruitment in collegiate aviation programs. He is also well published in areas related to effective teaching. His professional affiliations include the University Aviation Association, Council on Aviation Accreditation, World Aerospace Education Association, International Air Transportation Research Group, Aerospace Education Association, Alpha Eta Rho International Aviation Fraternity, and the Nebraska Academy of Science. He also serves as program director and principal investigator of the National Aeronautics and Space Administration funded Nebraska Space Grant Consortium.

Dean Headley is Associate Professor of Marketing and Barton Fellow, W. Frank Barton School of Business, and Faculty Associate of the National Institute for Aviation Research at Wichita State University. He holds a Doctorate in Marketing and Statistics from Oklahoma State University, a Master of Business Administration Degree from Wichita State University, and a Master of Public Health Degree from the University of Oklahoma. Dr. Headley's research interests include methodology development for the measurement of service quality, the connection between service quality and consumer behavior, consumer choice processes in service settings, and the effects of marketing activities on consumers and providers of services. Dr. Headley's memberships include the American Marketing Association, Academy for Health Services Marketing, Midwest Business Administration Association, and the Society for Case Research.

Collectively, Dr. Bowen's and Dr. Headley's research on the Airline Quality Rating (AQR) has met with widespread acceptance and acknowledgement. The Airline Quality Rating has been featured on *ABC's Good Morning America*, *The Cable News Network*, *The Today Show*, on network news, in *USA Today*, in *Aviation Week and Space Technology*, and in numerous other national and international media. Bowen and Headley have served as invited expert witnesses before the U.S. House of Representatives Committee on Government Operations and have served on multiple occasions as invited speakers and panelists for such groups as the National Academy of Sciences/Transportation Research Board. Resulting from work with the Airline Quality Rating, Bowen and Headley have been recognized with awards from the American Marketing Association, the American Institute of Aeronautics and Astronautics, Embry-Riddle Aeronautical University, the Travel and Transportation Research Association, W. Frank Barton School of Business, and others. The AQR research has been published in the *Journal of Aviation/Aerospace Education and Research*, *Advances in Marketing*, *Business Research Methods*, as well as other journals, proceedings, text books, and research monographs.

AIRLINE QUALITY RATING 1997

Brent D. Bowen, University of Nebraska at Omaha
Dean E. Headley, Wichita State University

Abstract

The Airline Quality Rating (AQR) was developed and first announced in early 1991 as an objective method of comparing airline performance on combined multiple factors important to consumers. Development history and calculation details for the AQR rating system are detailed in The Airline Quality Rating 1991 issued in April, 1991, by the National Institute for Aviation Research at Wichita State University. This current report, Airline Quality Rating 1997, contains monthly Airline Quality Rating scores for 1996. Additional copies are available by contacting Wichita State University or University of Nebraska at Omaha.

The Airline Quality Rating 1997 is a summary of month-by-month quality ratings for the nine major domestic U.S. airlines operating during 1996. Using the Airline Quality Rating system and monthly performance data for each airline for the calendar year of 1996, individual and comparative ratings are reported. This research monograph contains a brief summary of the AQR methodology, detailed data and charts that track comparative quality for major domestic airlines across the 12 month period of 1996, and industry average results. Also, comparative Airline Quality Rating data for 1991 through 1995 are included to provide a longer term view of quality in the industry.

The Airline Quality Rating (AQR)

The majority of quality ratings available rely on subjective surveys of consumer opinion that are infrequently done. This subjective approach yields a quality rating that is essentially noncomparable from survey to survey for any specific airline. Timeliness of survey based results can be a problem as well in the fast changing airline industry. Before the Airline Quality Rating, there was effectively no consistent method for monitoring the quality of airlines on a timely, objective and comparable basis. With the introduction of the AQR, a multi-factor, weighted average approach became available. This approach had not been used before in the airline industry. The method relies on taking published, publicly available data that characterizes airline performance on critical quality factors important to consumers and combines them into a rating system. The final result is a rating for individual airlines with ratio scale properties that is comparable across airlines and across time.

The Airline Quality Rating (AQR) is a weighted average of 19 factors (see Table 1) that have importance to consumers when judging the quality of airline services. Factors included in the rating scale are taken from an initial list of over 80 factors. Factors were screened to meet two basic criteria; 1) a factor must be obtainable from published data sources for each airline; and 2) a factor must have relevance to consumer concerns regarding airline quality. Data used in calculating ratings represent performance aspects (i.e. safety, on-time performance, financial stability, lost baggage, denied boardings) of airlines that are

important to consumers. Many of the factors used are part of the Air Travel Consumer Report maintained by the Department of Transportation.

Final factors and weights were established by surveying 65 airline industry experts regarding their opinion as to what consumers would rate as important (on a scale of 0 to 10) in judging airline quality. Also, each weight and factor were assigned a plus or minus sign to reflect the nature of impact for that factor on a consumer's perception of quality. For instance, the factor that includes on-time performance is included as a positive factor because it is reported in terms of on-time successes, suggesting that a higher number is favorable to consumers. The weight for this factor is high due to the importance most consumers place on this aspect of airline service. Conversely, the factor that includes accidents is included as a negative factor because it is reported in terms of accidents relative to the industry experience, suggesting that a higher number is unfavorable to consumers. Because safety is important to most consumers the weight for this factor is also high. Weights and positive/negative signs are independent of each other. Weights reflect importance of the factor in consumer decision making, while signs reflect the direction of impact that the factor should have on the consumer's rating of airline quality. When all factors, weights and impacts are combined for an airline and averaged, a single continuously scaled value is obtained. This value is comparable across airlines and across time periods.

The Airline Quality Rating methodology allows comparison of major domestic airlines on a regular basis (as often as monthly) using a standard set of quality factors. Unlike other consumer opinion approaches which rely on consumer surveys and subjective opinion, the AQR uses a mathematical formula that takes multiple weighted objective factors into account in arriving at a single rating for an airline. The rating scale is useful because it provides consumers and industry watchers a means for looking at comparative quality for each airline on a timely basis using objective, performance-based data.

Table 1

AIRLINE QUALITY RATING FACTORS, WEIGHTS AND IMPACT

	FACTOR	WEIGHT	IMPACT (+/-)
1	Average Age of Fleet	5.85	-
2	Number of Aircraft	4.54	+
3	On-Time	8.63	+
4	Load Factor	6.98	-
5	Pilot Deviations	8.03	-
6	Number of Accidents	8.38	-
7	Frequent Flier Awards	7.35	-
8	Flight Problems ^a	8.05	-
9	Denied Boardings ^a	8.03	-
10	Mishandled Baggage ^a	7.92	-
11	Fares ^a	7.60	-
12	Customer Service ^a	7.20	-
13	Refunds ^a	7.32	-
14	Ticketing/Boarding ^a	7.08	-
15	Advertising ^a	6.82	-
16	Credit ^a	5.94	-
17	Other ^a	7.34	-
18	Financial Stability	6.52	+
19	Average Seat-Mile Cost	4.49	-

^aData for these factors is drawn from consumer complaints as registered with the Department of Transportation and published monthly in the Air Travel Consumer Report.

The basic formula for calculating the AQR is:

$$\text{AQR} = \frac{-w_1F1 + w_2F2 + w_3F3 \text{ +/- } \dots w_{19}F19}{w_1 + w_2 + w_3 + \dots w_{19}}$$

What the Airline Quality Rating Tells Us about 1996

Since the Airline Quality Rating is comparable across airlines and across time, monthly rating results can be examined both individually and collectively. The pages following these summary comments outline the AQR scores by airline, by month for 1996. For comparison purposes, results for each airline are also displayed for 1991 through 1995. A composite industry average chart that combines the nine airlines tracked is shown.

For the first time in the AQR's six year history, the scores show some clear groupings. Southwest is clearly at the top of the ratings. A second group of airlines, American, United, Delta, Continental, and Northwest, make up a very closely competitive group. It is reasonable to conclude that the small differences in AQR scores for this group suggests very little performance differences among the group. A third group, US Airways, America West, and Trans World, are clearly not performing at the same level as the other major airlines across all of the AQR factors.

The AQR results for 1996 indicate that:

- Southwest Airlines maintained the top rated position, with an improved 1996 average AQR score over 1995. While some of the other large carriers increased their AQR scores, Southwest had a commanding lead in 1996. They recorded the best annual average on-time percentage of the major carriers, and were the only carrier to have an average on-time percentage over 80% for the year. Southwest had the second highest denied boardings rate and fewest lost bags of the major carriers.
- American Airlines slipped to a lower average AQR score in 1996, keeping them in the second rated position. Compared to 1995 their 1996 performance was weaker in on-time operations, mishandled more baggage, denied passenger boardings more frequently, and had a higher volume of consumer complaints.
- United Airlines maintained its third position in the 1996 ratings, even though their yearly average shows a decline in performance from 1995. As with many airlines, United had a lower on-time percentage for 1996, a higher rate of mishandled baggage, and a higher frequency of denied boardings. On the positive side, they had fewer consumer complaints for 1996. For the year, United was a relatively consistent quality performer, just at a slightly lower level than for 1995.
- Delta Airlines showed improved AQR scores from May, 1996 through December, 1996. Overall, the difference in Delta's average 1996 AQR score compared to their 1995 average score is very little, but positive. Their steady performance helped them maintain their position. Most noticeable were more negative outcomes in the areas of on-time performance, denied boardings, and consumer complaints.

- Continental Airlines showed dramatic gains again in 1996, with the most improvement in AQR scores of all rated airlines. Better performance with the fewest denied boardings, second highest on-time performance, second best lost baggage rate, and a nearly 50% reduction in consumer complaints made a very noticeable difference. The distance between Continental and other major carriers in 1996 was made up with consistently good performance in all areas rated. The AQR scores show that Continental Airlines is clearly the most improved airline of the major carriers again in 1996.
- Northwest Airlines made consistent performance level increases from February, 1996 through December, 1996. They registered the second largest gain in average AQR score of all the airlines. Like 1995, the current year saw a general increase in monthly scores. This increase did not effect their position, but brought them much closer to the performance levels of other airlines. Northwest tied with the second highest on-time performance in the industry. They improved their baggage handling, but increased the rate of denied boardings and number of consumer complaints.
- US Airways maintained an AQR score with months of gains and losses at about the same levels as in 1995. Looking at some of the details reveals that US Airways was only slightly worse in on-time performance and lost baggage and had about the same rates of denied boardings and consumer complaints.
- America West made a slight improvement in their AQR scores for 1996 until August, 1996. After August, problems with denied boardings really hurt their AQR scores. In a year of relative consistency, this translated into a move from fifth to eighth in overall position. America West had a lower on-time percentage, fewer lost bags, and a higher rate of complaints. A serious denied boardings problem in the fourth quarter took their AQR scores down overall.
- Trans World Airlines was a steady performer in 1996, generally finishing the year at the same AQR score levels as in 1995. TWA has the worst on-time percentage, the second worst baggage handling record, and the highest rate of consumer complaints of the major carriers.
- For 1996 the overall industry average AQR score improved over the 12 month tracking period. The AQR industry average score for 1996 is slightly better than for 1995, suggesting that performance has turned the corner along with the financial recovery the industry is experiencing.

Observations About the Industry and a Look at the Future

As measured by the Airline Quality Rating, quality generally increased during 1996 across the industry, although quality scores finished on a downward trend near the end of 1996. Overall quality had diminished annually as measured by the AQR for most of the previous years. This finding is consistent with more casual industry watching. As the quality of performance increases, we can note that improved stability is evident across the industry. By looking closely at AQR scores, we see evidence that individual air carrier performance is more stable in a majority of cases. Comparative performance among the major carriers is certainly a key finding of the AQR research methodology and helps demonstrate the very competitive environment of the industry.

Continued financial recovery was the hallmark of the airline industry in 1996. Most observers would agree that 1996 was a good year financially for the industry. Competition from new industry players is still a concern for the major airlines, as is the focus on safety and security issues.

Looking to a broader perspective, there are other issues which faced the industry in 1996. Global alliances in passenger and cargo services have become more apparent in our domestic market and our domestic airlines continue to seek global connections and alliances. This is evidenced by code sharing arrangements and our air carriers' support of liberalized bilateral agreements. The U.S. is capitalizing financially on foreign carriers' desire to fly to domestic destinations by charging fees for flyover privileges. These fees are generally being used to enhance our level of domestic air service.

Looking Ahead....

- Strong financial performance for the industry should continue. With moderate projected growth in passenger volume in both the near and long term future, and near double digit percentage increases in air fares, carriers are positioning themselves to reap profits and finance needed equipment updates. Some airlines may not find this time of prosperity as rewarding or opportunistic as others, but, the tide certainly has turned in favor of a more healthy industry.
- It is very evident that safety is a major concern across the industry. The recent Gore Commission report adds Presidential priority to maintaining a focus on safety and security issues at all levels of flight operations.
- Continued movement toward point-to-point service availability will be a hallmark change for the second half of the '90s. Consumers are demanding this type of service delivery. Increased competition from startups, more niche marketing, and new smaller economical jet aircraft will produce opportunities for route structures that force all airlines to be alert in identifying and meeting consumer demand to stay competitive.
- Stage 3 readiness (noise abatement) is fast approaching a deadline in the year 2000. While airlines are making good efforts to meet the requirements, as much as 30% of the domestic jet fleet still does not meet the federal guidelines. This should continue to affect the activity seen in new aircraft manufacturing and related industries outputs.

- Demand has influenced pricing increases. Continued cost cutting by the airlines will be attempted, but the outcome will be affected by taxes and user fees imposed. While these types of added costs are seen as necessary to fund certain changes, they certainly affect consumers total costs to fly, and that ultimately influences the volume of travelers using commercial air services.
- A potential Amtrak labor dispute in May, 1997 could affect the airline business. If trains are not a travel option, many travelers will seek the airlines as a preferred travel mode, producing increased demand at a time when the system is usually operating with seasonally high loads. This could have both good and bad outcomes for consumer and carriers.
- Issues surrounding frequent flyer programs and rules will continue to be a source of unrest for consumers. Changes by the airlines and uncertainty about the tax status of the accumulated "miles" will keep the issue heated for both consumers (particularly business travelers) and the airlines.
- Air traffic control modernization is moving ahead slowly. With safety and air traffic access issues at the forefront of both consumer and government concerns, the updating of the system should move along more rapidly. The DOT and FAA must find a way to resolve the responsibility and funding issues. This is a critical element in keeping the sky safe.
- Potential for a stable and prosperous period seems high. Long term labor agreements have been reached with many airline employee groups, the economy appears healthy, demand for air travel is strong, and supply is readily available in a variety of combinations. Labor driven disruptions are always a possibility, but recent actions by President Clinton may be an indication of how future disputes could be addressed.
- Free-flight (the ability to fly with most direct routing) must be put into effect. This new approach to commercial aviation routing will save the airlines a tremendous amount of money and will save the flying public substantial time in their travels. This type of routing should encourage the development of point-to-point route structures more readily.
- Revival of the Essential Air Services program under the DOT will create new opportunities for connecting rural areas to regional carriers. With the implementation of the Rural Air Service Survival Act in 1998, fees charged to foreign airlines overflying the U.S. will generate an expected \$50 million annually that will be used to subsidize and improve rural air service and routes.

Previous Airline Quality Reports

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Bowen, Brent D., and Dean E. Headley (1992), Airline Quality Rating Report 1992, National Institute for Aviation Research Report 92-11, Wichita, Kansas.

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Bowen, Brent D., and Dean E. Headley (1996), Airline Quality Rating 1996, W. Frank Barton School of Business, Wichita, Kansas.

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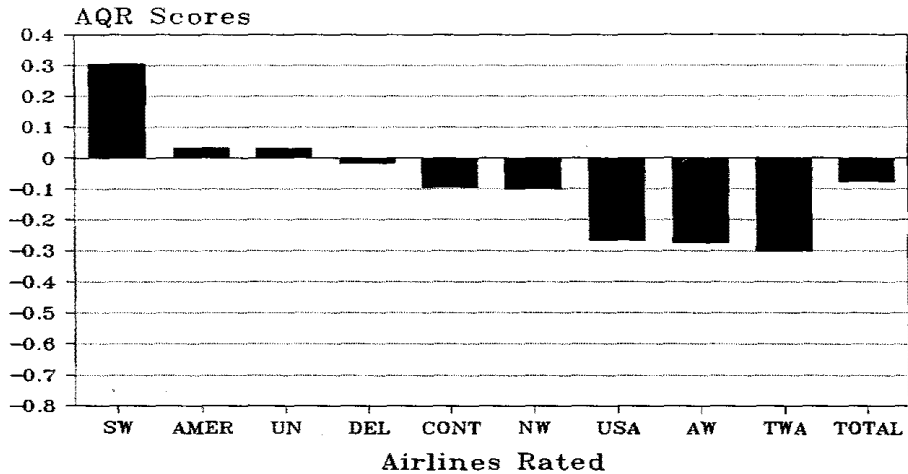
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AIRLINE QUALITY RATING

MEAN AQR SCORES - 1996

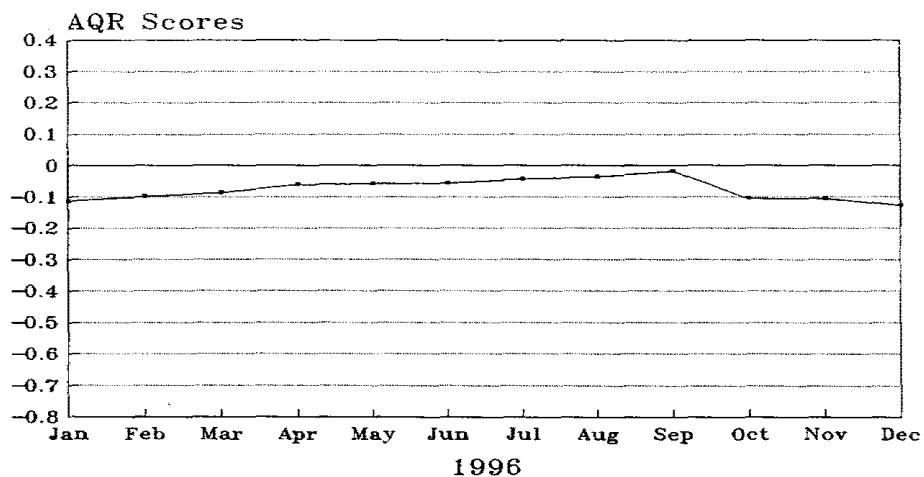


Industry Average AQR Scores for U.S. Major Airlines

	1996	1995	1994	1993	1992	1991
Southwest	0.306	0.221	0.211	0.252	0.251	0.220
American	0.033	0.164	0.225	0.231	0.290	0.323
United	0.031	0.058	0.123	0.176	0.214	0.168
Delta	-0.017	-0.024	-0.031	0.076	0.123	0.193
Continental	-0.095	-0.340	-0.574	-0.540	-0.274	-0.266
Northwest	-0.100	-0.222	-0.210	-0.247	-0.193	-0.143
US Airways	-0.267	-0.262	-0.148	-0.003	-0.024	0.115
America West	-0.275	-0.145	-0.282	-0.294	-0.267	-0.325
Trans World	-0.302	-0.303	-0.307	-0.286	-0.398	-0.435
Total Average	-0.076	-0.090	-0.110	-0.070	-0.031	-0.017

AIRLINE QUALITY RATING

ALL AIRLINES

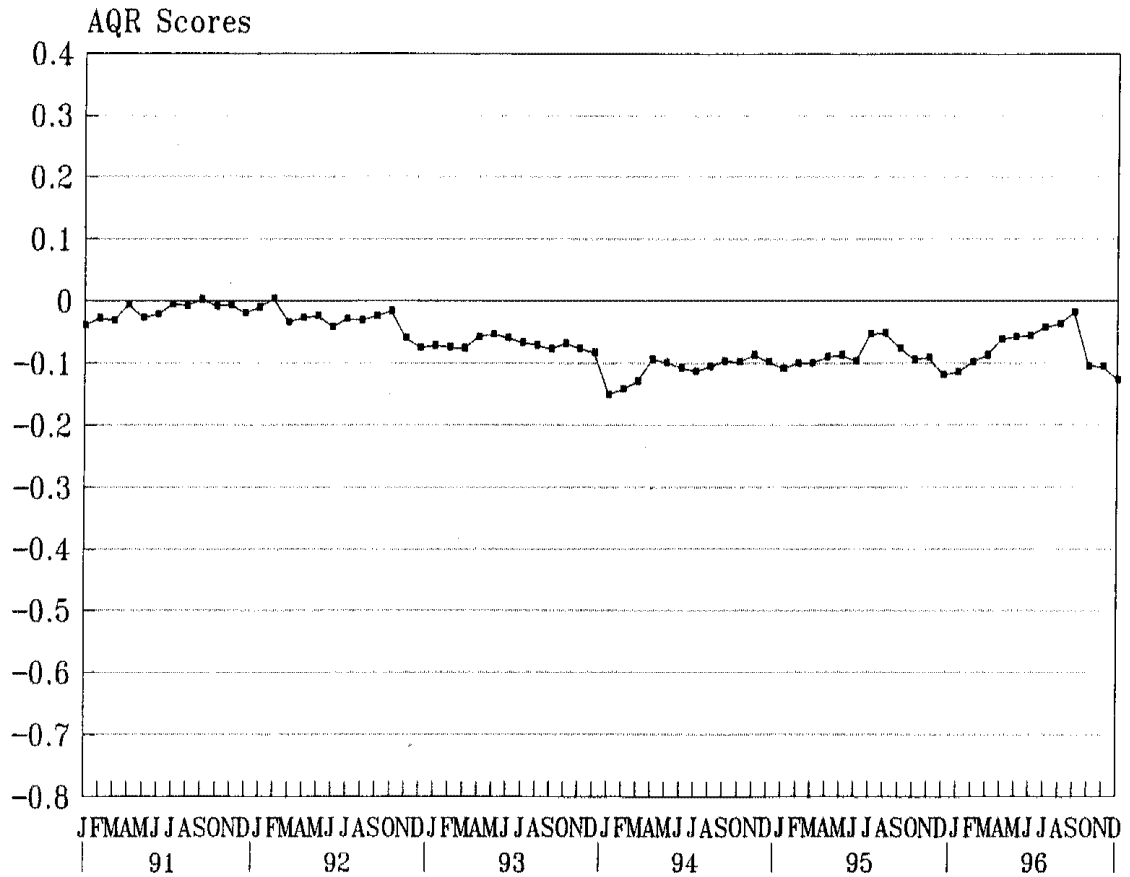


Average Monthly AQR Scores for U.S. Major Airlines

	1996	1995	1994	1993	1992	1991
January	-0.115	-0.109	-0.151	-0.072	-0.011	-0.040
February	-0.098	-0.100	-0.142	-0.075	-0.003	-0.028
March	-0.087	-0.100	-0.130	-0.077	-0.034	-0.032
April	-0.062	-0.090	-0.094	-0.058	-0.027	-0.006
May	-0.058	-0.087	-0.099	-0.054	-0.024	-0.027
June	-0.056	-0.097	-0.108	-0.060	-0.042	-0.021
July	-0.043	-0.053	-0.114	-0.068	-0.029	-0.006
August	-0.037	-0.052	-0.106	-0.072	-0.031	-0.008
September	-0.018	-0.077	-0.097	-0.078	-0.024	0.002
October	-0.105	-0.093	-0.098	-0.069	-0.016	-0.009
November	-0.106	-0.091	-0.087	-0.077	-0.060	-0.007
December	-0.127	-0.119	-0.098	-0.083	-0.076	-0.019
Average	-0.076	-0.090	-0.110	-0.070	-0.031	-0.017

AIRLINE QUALITY RATING

ALL AIRLINES 1991 - 1996



APPENDIX

Detail of Frequently Cited Airline Performance Factors

As always, consumer interest remains high regarding such issues as lost baggage and on-time performance. Since these factors are part of the AQR calculations, it is useful to provide more complete data in these consumer interest areas. The following data tables and charts provide a detailed look at the performance of each major U.S. airline for the 12 months of 1996 regarding lost baggage, on-time performance, denied boardings, and consumer complaints. Data were drawn from the Department of Transportation monthly *Air Travel Consumer Report*.

We offer some interesting facts in areas of concern to most consumers (on-time, lost bags, denied boardings, consumer complaints, and safety). This information is drawn from a variety of sources and can be useful in helping the less familiar consumer gain a perspective on issues of interest in the airline industry.

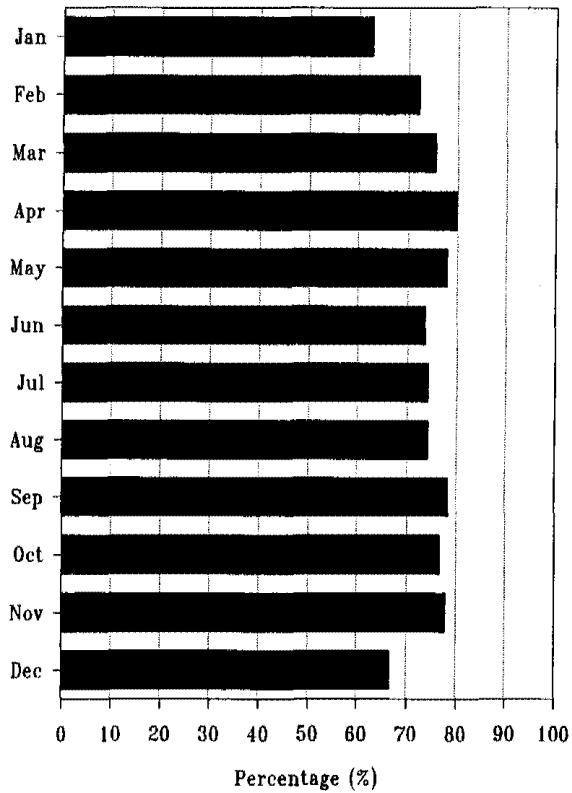
The final pages of this report restate the Airline Quality Rating factor definitions. As we approach a redefinition of the factor pool, it seems useful that the factor definitions be restated for clarity and future reference.

**1996 On Time Percentage by Month
for U.S. Major Airlines**

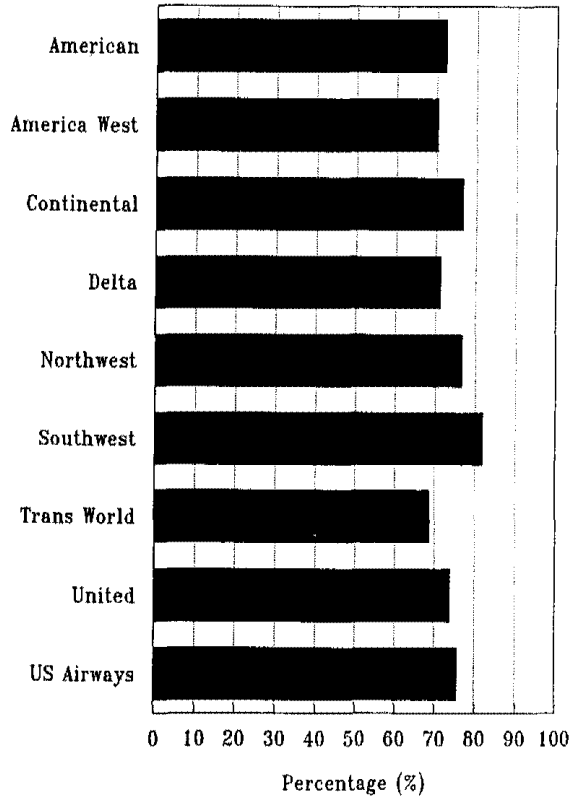
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Airline Average
American	.612	.728	.778	.764	.762	.694	.653	.664	.765	.760	.797	.700	.723
America West	.681	.691	.719	.764	.762	.689	.677	.699	.749	.678	.744	.651	.704
Continental	.694	.779	.770	.802	.847	.710	.743	.737	.776	.798	.809	.731	.766
Delta	.513	.616	.683	.763	.790	.756	.748	.732	.769	.755	.750	.669	.712
Northwest	.684	.755	.794	.842	.791	.746	.790	.784	.822	.814	.754	.616	.766
Southwest	.779	.820	.841	.870	.866	.841	.870	.859	.833	.769	.792	.676	.818
Trans World	.493	.708	.692	.755	.669	.682	.665	.678	.756	.744	.766	.630	.687
United	.601	.705	.794	.833	.724	.744	.764	.766	.767	.749	.792	.624	.739
US Airways	.592	.699	.723	.788	.811	.766	.770	.772	.815	.836	.806	.704	.757
Monthly Avg.	.628	.722	.755	.798	.780	.736	.742	.743	.784	.767	.779	.667	.742

Source: *Air Travel Consumer Report*, U.S. Department of Transportation, Office of Aviation Enforcement and Proceedings.

1996 On Time Percentage Monthly Averages for Major Airlines



On Time Percentage 1996 Averages for Major Airlines



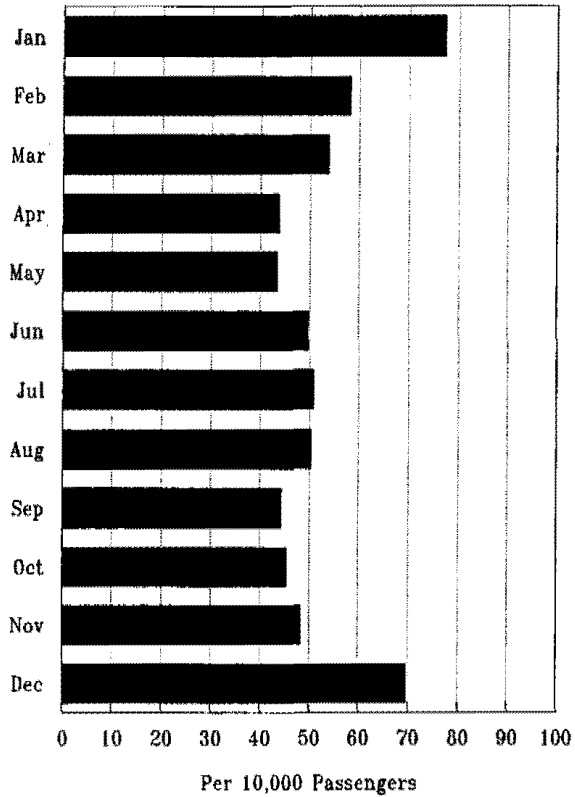
**1996 Mishandled Baggage* by Month
for U.S. Major Airlines**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Airline Average
American	84.0	61.4	59.5	51.3	46.4	52.0	51.0	49.8	41.9	47.3	46.1	68.3	54.7
America West	63.8	48.1	43.8	40.6	37.3	46.3	48.1	47.3	35.2	35.4	38.9	50.0	43.8
Continental	55.5	39.8	42.2	33.9	33.3	42.4	43.3	43.4	33.2	32.8	34.8	51.7	40.5
Delta	78.8	60.5	56.0	44.7	42.8	48.4	49.2	44.9	48.7	46.6	47.6	60.2	51.9
Northwest	82.0	64.3	55.3	41.4	41.8	50.3	45.5	48.2	39.7	39.6	51.2	89.4	53.4
Southwest	51.4	39.8	40.8	35.1	33.9	39.1	38.9	38.3	36.4	33.2	35.9	54.6	39.6
Trans World	107.6	59.7	61.8	51.5	55.3	57.2	57.7	55.3	49.3	50.5	52.0	83.1	61.2
United	88.4	71.6	60.5	48.3	57.2	60.5	65.7	66.7	56.4	64.9	66.9	105.0	67.3
US Airways	78.1	59.6	53.4	42.5	36.9	47.0	51.4	54.9	43.4	42.4	47.2	66.9	51.4
Monthly Avg.	77.2	58.1	53.7	43.7	43.4	49.7	50.8	50.3	44.3	45.4	48.2	69.6	52.6

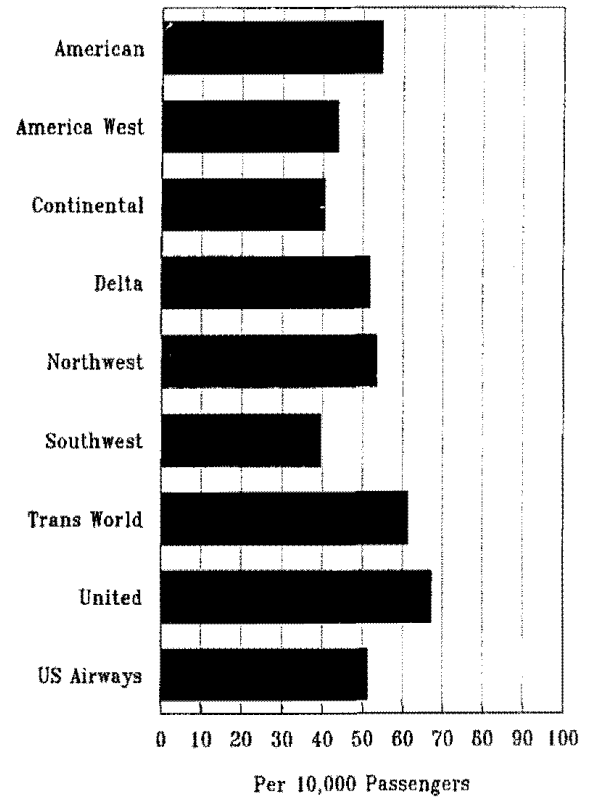
* Figures shown are per 10,000 passengers.

Source: *Air Travel Consumer Report*, U.S. Department of Transportation, Office of Aviation Enforcement and Proceedings.

1996 Mishandled Baggage Monthly Averages for Major Airlines



Mishandled Baggage 1996 Averages for Major Airlines



**1996 Denied Boardings* by Quarter
for U.S. Major Airlines**

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1996 Average
American	0.49	0.36	0.76	1.56	0.79
America West	2.23	1.70	2.05	11.31	4.36
Continental	0.36	0.11	0.09	0.21	0.19
Delta	1.68	1.16	0.95	1.43	1.30
Northwest	0.52	0.59	0.51	0.61	0.56
Southwest	2.47	2.99	1.49	2.64	2.39
Trans World	1.03	0.55	1.09	0.84	0.87
United	0.81	0.46	0.56	0.35	0.54
US Airways	2.17	1.37	0.76	1.15	1.34
Industry Average	1.28	1.02	0.84	1.59	1.18

* Figures shown are per 10,000 passengers.

Source: *Air Travel Consumer Report*, U.S. Department of Transportation, Office of Aviation Enforcement and Proceedings.

**1995 Denied Boardings* by Quarter
for U.S. Major Airlines**

	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	1995 Average
American	0.53	0.35	0.45	0.47	0.45
America West	2.59	2.52	2.23	2.31	2.28
Continental	1.06	0.73	0.53	0.36	0.67
Delta	0.78	0.83	0.83	0.76	0.80
Northwest	0.16	0.34	0.40	0.46	0.34
Southwest	3.04	3.04	3.48	4.13	3.43
Trans World	0.68	0.68	1.10	0.81	0.82
United	0.39	0.26	0.43	0.57	0.41
US Airways	1.72	1.63	0.66	1.35	1.35
Industry Average	1.06	1.00	0.98	1.15	1.05

* Figures shown are per 10,000 passengers.

Source: *Air Travel Consumer Report*, U.S. Department of Transportation, Office of Aviation Enforcement and Proceedings.

**1996 Total Complaints* by Month
for U.S. Major Airlines**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Airline Average
American	1.20	0.94	0.95	0.69	1.02	0.61	1.16	0.92	1.15	0.96	0.93	0.73	0.93
America West	1.31	0.79	1.24	1.18	0.91	0.46	1.34	1.22	1.98	1.89	1.46	0.81	1.22
Continental	0.31	0.86	0.56	0.45	0.39	0.75	0.77	0.42	0.66	0.55	0.79	0.48	0.58
Delta	0.96	0.68	0.70	0.33	0.79	0.74	1.08	0.71	0.64	0.58	0.48	0.54	0.72
Northwest	0.62	0.94	0.93	0.50	0.83	0.58	1.06	0.84	1.01	1.20	0.92	0.70	0.85
Southwest	0.35	0.27	0.19	0.18	0.19	0.19	0.23	0.12	0.25	0.16	0.22	0.17	0.21
Trans World	1.19	1.96	1.11	1.32	0.95	1.10	1.64	1.34	1.30	0.98	1.20	0.98	1.25
United	0.59	0.97	0.76	0.90	0.86	0.53	0.94	0.63	0.65	0.68	0.79	0.69	0.74
US Airways	0.92	0.68	0.73	0.82	0.51	0.73	1.13	0.84	0.59	0.58	0.33	0.33	0.68
Monthly Avg.	0.79	0.82	0.75	0.70	0.71	0.61	1.00	0.72	0.78	0.73	0.68	0.57	0.74

* Figures shown are per 100,000 passengers.

Source: *Air Travel Consumer Report*, U.S. Department of Transportation, Office of Aviation Enforcement and Proceedings.

Some Interesting Facts About U.S. Airlines

Approximately 480 million people boarded one of the nine major U.S. domestic carriers in 1996. On average, these carriers have about 14,570 flights per month. This translates to about 1.32 million people flying on the major carriers on any given day. On average then, about 55,000 people are in a jet in the air over the U.S. at any given hour of the day or night.

Lost Baggage:

Your chance of having a bag lost depends to some extent on how you use the baggage system, but about 1 out of every 200 bags that are checked are reported lost.

The months when most baggage was reported lost in 1996: January and December.

The months when the fewest bags are reported lost in 1996: April and May, September and October.

Airlines that lost bags most often in 1996: United and Trans World.

Airlines that lost the fewest bags in 1996: Southwest, Continental, and America West.

On-Time Performance:

Leaving and arriving on-time are affected by many uncontrollable factors. When just the more controllable elements are considered, the U.S. major carriers maintained a 74.2% on-time record for 1996. This was slightly worse than the 78.5% for 1995.

Worst on-time performers for 1996: Trans World (68.7%) and America West (70.9%).

The best on-time performers in 1996: Southwest (81.8%) and Continental and Northwest that tied (76.6%).

The most troublesome months to fly in 1996 (ie. lowest on-time performance for the industry): January (62.8%) and December (66.7%).

The most successful on-time months for the industry in 1996: April (79.8%), September (78.4%) and May (78.0%).

Being Bumped From a Flight (Involuntary Denied Boardings):

Across the industry, 1.18 passengers per 10,000 boardings were bumped from their flight involuntarily in 1996.

Airlines most likely to involuntarily bump people in 1996: America West (4.36) and Southwest (2.39).

Airlines least likely to involuntarily bump a passenger in 1996: Continental (0.19).

Consumer Complaints:

On average, the major carriers experienced 0.66 consumer complaints per 100,000 passengers for 1996. These complaints represent a wide range of areas such as cancellations, delays, oversales, reservation and ticketing problems, fares, refunds, customer treatment, unfair advertising, and other general problems.

The airlines with the most complaints in 1996: Trans World (1.34), Continental (1.04) and America West (0.94).

The airline with the fewest complaints in 1996: Southwest (0.21)

It seems that March was the month with the most complaints (0.97) and that November (0.41) and April (0.45) registered the fewest complaints for the major carriers.

Airline Safety:

In 1996, major airlines experienced 22 accidents with 232 deaths. In 1995, this same group of airlines experienced 19 accidents and 3 deaths. For 1994, major airlines experienced 20 accidents and 239 death. In 1993, these airlines experienced 22 accidents and only one death. As can be seen the year to year statistics vary greatly.

In 1996, only 1 in about 2 million passengers died in a commercial airliner accident. For 1996, it was 1.4 times more likely that an individual would die from a lightning strike than die as a passenger on a major airline (1 in approximately 650,000 Americans are struck each year, with an average of 93 deaths per year).

Considering a 15 year average of miles driven and miles flown, driving in a car is 35 times more deadly than flying in a commercial jet. In a typical three month period, more people die on our highways than have died in all the accidents in the history of U.S. commercial aviation.

Since 1980, an average of 120 people have died each year from airline accidents. Compare this to an average for the same period of 12,000 annual deaths from falling (ie. stairways, bathtubs, icy sidewalks, etc.); 5,400 deaths annually from drowning; 4,500 deaths annually from poisoning; and more than 4,800 deaths annually from fire.

Airline Quality Rating Factor Overview

Since the original publication of the Airline Quality Rating in the spring of 1991, the factor definitions, and weights have been held constant. With this 1997 report, we have a six year history of monthly AQR scores for each of the major airlines during that time. For those that might have questions about how the individual factor data and calculations are achieved, factor definitions are restated on the following pages. Factor weights are noted earlier in this report in Table 1.

FACTOR 1 AVERAGE AGE OF FLEET

Most currently available public data as to years of service is gathered for the various aircraft types operated by each major airline. An average age for the fleet for each airline is calculated for the year. The average age for an airline is converted to a percentage, using the industry annual average age as the denominator and the individual airline annual average age as the numerator. This percentage is used for each monthly calculation of AQR scores across the 12 month period.

FACTOR 2 NUMBER OF AIRCRAFT (SIZE OF FLEET)

Most currently available public data is gathered regarding total number of jet aircraft operated by each major carrier and for the total domestic jet fleet. The number of jet aircraft for each airline is converted to a percentage of the total domestic jet fleet, using the total jet fleet of all major carriers as the denominator and the individual airlines jet fleet size as the numerator. This percentage is used for each monthly calculation of AQR scores across the 12 month period.

FACTOR 3 ON-TIME PERFORMANCE

Regularly published data regarding on-time performance is obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. According to DOT, a flight is counted "on time" if it is within 15 minutes of scheduled arrival or departure time shown in the carriers' Computerized Reservations Systems. Delays caused by mechanical problems are counted as of January 1, 1995. Canceled and diverted operations are counted as late. The AQR calculations use the percentage of flights on time for each airline for each month.

FACTOR 4 LOAD FACTOR

This factor is an aspect of the efficiency of an airline in its bookings, routes, time schedules, and competitive structure. Data is reported as the percentage of seats filled per airline per month.

FACTOR 5 PILOT DEVIATIONS

Data regarding pilot deviations can be obtained from the National Transportation Safety Board (NTSB) and the Federal Aviation Administration (FAA) Pilot Deviation Subsystem. According to the NTSB, a pilot deviation is defined as an action of a pilot that may result in violation of a Federal Aviation Regulation or a North American Aerospace Air Defense Identification Zone tolerance. This data is reported for each carrier as the total number of pilot deviations for the year. The AQR uses a figure in each monthly calculation that reflects an equal proportion of total annual deviations reported per 10,000 hours flown for each airline.

FACTOR 6 NUMBER OF ACCIDENTS

Published data regarding number of accidents can be obtained from the National Transportation Safety Board (NTSB). According to the NTSB, an accident is defined as an occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight and until such time as all such persons have disembarked, and in which any person suffers death or serious injury, or in which the aircraft receives substantial damage. Data are reported each year by the total number of accidents per hours flown per carrier. The AQR uses the accidents reported for each airline each month as a percentage of total accidents for the year for all airlines included in the ratings.

FACTOR 7 FREQUENT FLIER AWARDS

Data regarding frequent flier programs and award levels can be obtained from each airline and, periodically, from newspaper and/or magazine articles. The AQR calculates the factor by combining the number of miles required to receive two round-trip domestic coach fares (ie. $25,000 + 25,000 = 50,000$). This total is converted by dividing by 10,000 (ie. $50,000 \div 10,000 = 5$). This number is used for each monthly calculation. For most airlines the mileage required is very similar and, therefore, has little differential impact. The factor carries a negative impact for the weighting number, suggesting that those airlines with higher mileage requirements for frequent flyer awards may be perceived as less desirable by a consumer.

FACTOR 8 FLIGHT PROBLEMS (CONSUMER COMPLAINTS)

Regularly published data regarding consumer complaints about delays can be obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. According to DOT, a flight is listed as a flight problem if it is delayed from schedule, whether planned or unplanned. Data is available by the total number of consumer complaints pertaining to delays, cancellations, and missed connections against each airline per month. The AQR uses the total delays reported for each airline each month as a percentage of total delays for all airlines included in the ratings.

FACTOR 9 DENIED BOARDINGS

This factor includes involuntary denied boardings. Data regarding denied boardings can be obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. Data includes the number of passengers who are involuntarily denied boarding and the total number of passengers boarded by month. The AQR uses the ratio of involuntary denied boardings per 10,000 passengers.

FACTOR 10 MISHANDLED BAGGAGE REPORTS

Regularly published data regarding consumer complaints about mishandled baggage can be obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. According to DOT, consumer complaints about mishandled baggage include claims for lost, damaged or delayed baggage, charges for excess baggage, carry-on problems, and difficulties with airline claim procedure. Data is reported by carriers as to the rate of mishandled baggage reports per 1000 passengers and for the industry. The AQR ratio is based on the total number of reports each carrier received from passengers concerning lost, damaged, delayed or pilfered baggage per 10,000 passengers.

FACTOR 11 FARES (CONSUMER COMPLAINTS)

Published data regarding consumer complaints about fares can be obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. According to DOT, consumer complaints about fares include incorrect or incomplete information about fares, discount fare conditions and availability, overcharges, fare increases and level of fares in general. Data is reported by the number of consumer complaints pertaining to fares and by the number of complaints regarding fares against each airline per month. The AQR uses the complaints reported for each airline as a percentage of all complaints in the category regarding fares for each monthly period.

FACTOR 12 CUSTOMER SERVICE (CONSUMER COMPLAINTS)

Monthly data regarding the number of consumer complaints about customer service can be obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. This factor includes complaints about rude or unhelpful employees, inadequate meals or cabin service, and treatment of delayed passengers. This data is reported by the total number of complaints received per month regarding customer service by the DOT for all airlines and the number against each airline per month. The AQR uses a percentage of customer service complaints reported per airline based on the total complaints regarding customer service for the month for all the major airlines.

FACTOR 13 REFUNDS (CONSUMER COMPLAINTS)

This factor includes customer complaints about problems in obtaining refunds for unused or lost tickets or fare adjustments. Data is reported by total number of complaints received per month regarding consumer complaints concerning refunds by the DOT for all airlines and the number against each airline per month. The AQR uses a percentage of refund complaints for each airline based on the total refund complaints for all airlines included.

FACTOR 14 TICKETING/BOARDING (CONSUMER COMPLAINTS)

This factor includes airline or travel agent mistakes in reservations and ticketing; problems in making reservations and obtaining tickets due to busy telephone lines or waiting in line, or delays in mailing tickets; problems boarding the aircraft (except oversales); and complaints received regarding ticketing/boarding. The AQR uses the percentage of ticketing/boarding complaints for each airline based on the total ticketing/boarding complaints for all airlines included.

FACTOR 15 ADVERTISING (CONSUMER COMPLAINTS)

These are complaints concerning advertising that is unfair, misleading or offensive to consumers. This data is reported by the total number of complaints received per month regarding complaints concerning advertising by the DOT for all airlines and the number against each airline per month. The AQR uses the percentage of advertising complaints for each airline as based on the total advertising complaints for the airlines included.

FACTOR 16 CREDIT (CONSUMER COMPLAINTS)

These are problems concerning denial of credit, interest or late payment charges, incorrect billing, or incorrect credit reports on airline-issued credit. This data is reported by the total number of complaints received per month regarding complaints concerning credit by the DOT for all airlines and the number against each airline per month. AQR uses the percentage of credit complaints for each airline as based on the total credit complaints for the airlines included.

FACTOR 17 OTHER (CONSUMER COMPLAINTS)

Data regarding consumer complaints about cargo problems, security, airport facilities, claims for bodily injury, frequent flyer programs, and other problems not classified above can be obtained from the U.S. Department of Transportation's *Air Travel Consumer Report*. This data is reported by the total number of complaints received per month regarding tours, smoking, and other consumer complaints by the DOT for all airlines and the number against each airline per month. AQR uses the percentage of other complaints for each airline as a percentage of total other complaints for all airlines included.

FACTOR 18 FINANCIAL STABILITY

Data regarding the financial stability of an airline can be obtained from each airline's corporate bond rating by Moody's Investment Services. Including this indicator of financial stability responds to the consumer's need to trust that an airline will be available to render the service which was purchased. The AQR assigns a numerical value to each of the potential 19 rating levels with Aaa = 19 to C = 1.

FACTOR 19 AVERAGE SEAT-MILE COST

Average seat-mile cost for an airline is an indication of the operating expenses per available passenger seat mile. This data is included in the AQR as the amount it costs (in cents) the carrier for each seat per each mile.