



Australian Survey Finds Pilot Confidence in Workplace Safety Climate

The Australian Transport Safety Bureau report on the survey said that improvements in the safety climate could enhance a safety record that already has benefited from technical solutions to problems that caused accidents and incidents.

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FSF Editorial Staff

A survey of commercial pilots in Australia has found that most pilots believe that safety rules and procedures, equipment and maintenance, and training are adequate and that their management is committed to aviation safety.

The two-part survey, conducted in late 2003 by the Australian Transport Safety Bureau (ATSB), was distributed to 5,000 pilots nationwide; responses were received from 1,542 pilots. Of those responding, 940 pilots (61 percent) had been employed in flying jobs during the previous year, and they answered questions for both the first part of the survey — on “safety climate factors”¹ — and the second part of the survey — on “common flying errors.” An additional 323 respondents (21 percent) had flown aircraft privately during the previous year, and they answered only the questions about common flying errors.

An additional 235 respondents (15 percent) who had not piloted aircraft in the previous year returned the survey, as requested, without answering questions. Responses from 44 pilots (3 percent) were not useable, either because essential information was omitted or because the respondents were military personnel.



The safety-climate-factors survey indicated that regular public transport (RPT) pilots, charter pilots and pilots engaged in aerial work (emergency medical services, agricultural operations, surveying flights, training and other operations) “‘agreed’ or ‘strongly agreed’ that the aspects of safety [being examined by the survey] were present in the industry” and that pilots in the three groups “did not differ in their perceptions of safety climate.”

Improvements in safety climate help improve aviation safety overall, the report said.

“Workplace safety has been a concern for management and workers for many decades,” the report said. “Technical solutions have provided great gains in reducing incidents and accidents. ... However, in many instances, these gains have plateaued and new methods are needed if further [safety] improvements are to be made. Safety climate is an area in which such improvements could be made.”

Evaluation of a safety climate is based on the premise that aviation personnel may be “influenced to comply with safety rules and procedures because they work in an organization that values safety and are surrounded by others who comply,” the report said.

Of the 940 pilots whose responses were considered in the safety-climate-factors survey, 367 (39 percent) were RPT pilots, 208 (22 percent) were charter pilots, 344 (37 percent) were engaged in aerial work, and 21 (2 percent) were business pilots. Responses from business pilots were omitted from the analysis because of the small number of pilots involved and because of their “lack of association with other aggregated groups,” the report said.

The respondents ranged in age from 19 years to 78 years — RPT pilots were between 21 years and 66 years, with a mean (average) age of 46 years; charter pilots were between 19 years and 78 years, with a mean age of 45 years; and aerial work pilots were between 20 years and 77 years, with a mean age of 49 years (Figure 1).

In all three types of flying, more pilots were between 50 years and 59 years than any other age group. Sixty-seven percent of RPT pilots were between 40 years and 59 years.

“There may be many reasons for pilots under 30 years and over 60 years to be more likely to be employed in charter or aerial work than in RPT operations,” the report said. “Pilots usually start their career in charter operations to build up flying hours before moving on to RPT and then retire, usually before 65 years. Pilots in aerial work may be self-employed and may therefore retire later, at around 70 years. Also, older ex-military

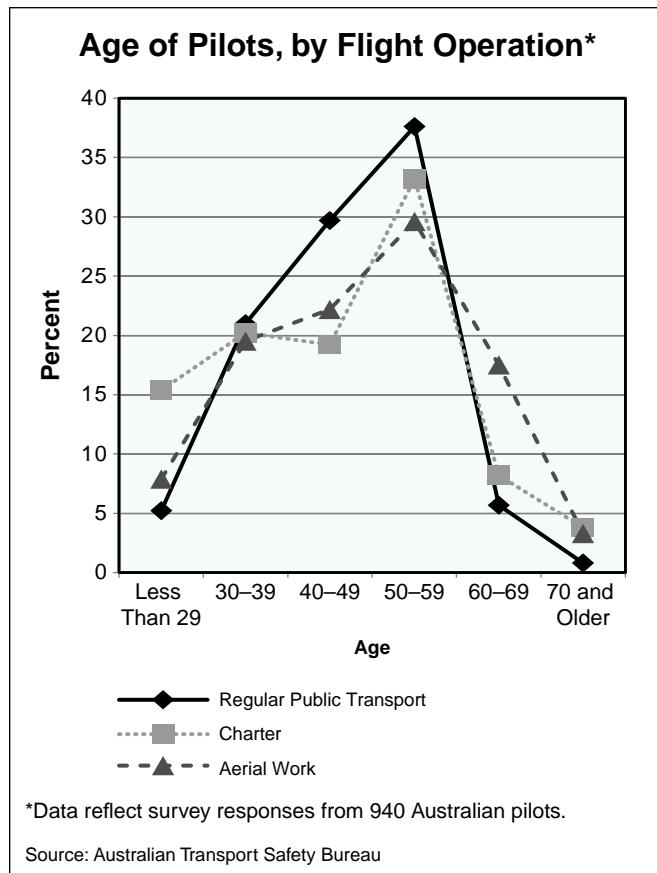


Figure 1

pilots may have entered civil flying operations, thereby inflating pilot numbers, or people may be becoming pilots later in life when they have time and money to pursue flying.”

Nearly all RPT pilots were employed full-time, compared with 55 percent to 60 percent of charter pilots and aerial work pilots (Figure 2, page 3), and RPT pilots accumulated an average of 630 flight hours per year, compared with an average of 348 flight hours per year for charter pilots and an average of 365 flight hours per year for aerial work pilots (Figure 3, page 3). Eighty-two percent of RPT pilots worked in organizations that employed more than 50 other pilots; 79 percent of charter pilots and 70 percent of aerial work pilots worked in organizations with fewer than 10 other pilots.

Change Was Common in Aircraft, Company Operations

The survey found that one-third of the pilots said that they worked in operations that experienced “substantial changes” during the previous year. Fifty-five percent of RPT pilots cited substantial changes, compared with about 22 percent of charter pilots and aerial work pilots.

Included among those changes were the following:

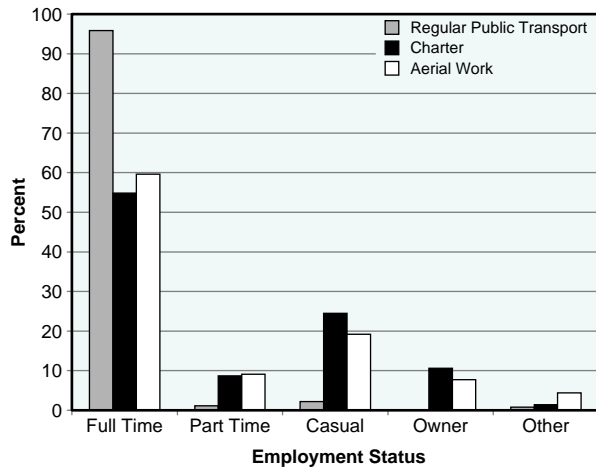
- Sixty-four percent of RPT pilots said that their companies had made “substantial changes in the type of aircraft operated.” Only about 10 percent of charter pilots and aerial work pilots, however, said that there had been substantial changes in the type of aircraft they operated;
- Sixty-six percent of RPT pilots said that “substantial changes in management personnel or structure” had occurred during the previous year. About 30 percent of charter pilots and aerial work pilots said that their companies had experienced such changes; and,
- Pilot turnover was similar within the three groups. Overall, about 17 percent of the pilots said that pilot turnover within their organizations had been “unusually high” during the previous year.

In addition, about 87 percent of the pilots said that they believed that their employers had been “financially sound” during the previous year.

Questions Focused on Management, Training, Equipment, Rules

To evaluate the pilots’ perceptions of the four safety-climate factors — management commitment to safety, training, equipment and maintenance, and safety rules and procedures — survey respondents were asked a series of questions.

Pilot Employment Status, By Flight Operation*



*Data reflect survey responses from 940 Australian pilots.

Source: Australian Transport Safety Bureau

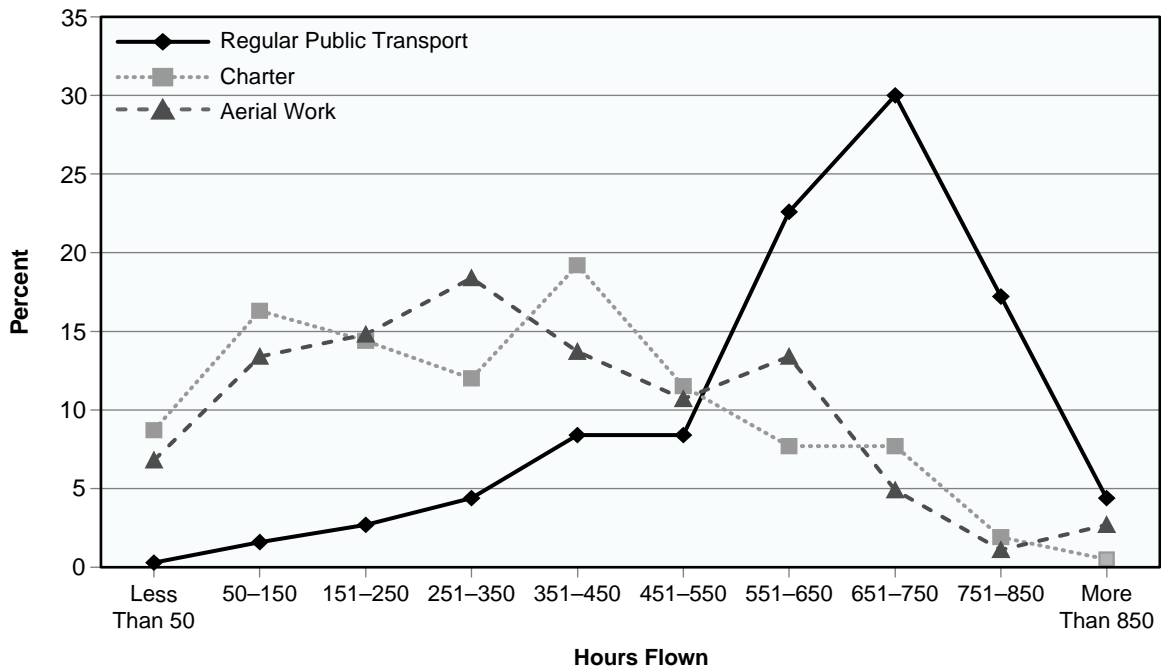
Figure 2

Individual responses to each group of questions were averaged and each respondent was assigned a score between 1 (“strongly disagree”) and 5 (“strongly agree”). Responses from 710 pilots were included; responses were excluded from 230 others who had “major managerial responsibilities” or were owner/operators.

To evaluate perceptions of management commitment to safety, pilots were asked whether:

- “Management regarded safety to be an important part of company operations;
- “Pilots were encouraged to consider that safety was more important than keeping to the schedule;
- “Management [was] genuinely interested in safety issues;
- “Suggestions for improving safety were encouraged;
- “Pilots were not pressured to fly if they had a safety concern;
- “Management had a good understanding of operational issues that impacted on flight safety;
- “There was no need to work around company safety rules and procedures to get the job done;
- “Safety was considered to enhance, rather than limit, productivity;
- “Management allocated sufficient resources to safety; [and,]

Pilot Flight Hours in Previous Year, by Flight Operation*



*Data reflect survey responses from 940 Australian pilots.

Source: Australian Transport Safety Bureau

Figure 3

- “Management looked for underlying factors that contributed to safety incidents rather than blame the people involved.”

More than 70 percent of the pilots agreed or strongly agreed that management commitment to safety was present in their organizations; about 8 percent disagreed or strongly disagreed (Figure 4). Responses among RPT pilots, charter pilots and aerial work pilots were similar, but charter pilots gave more “neutral” responses than RPT pilots or aerial work pilots.

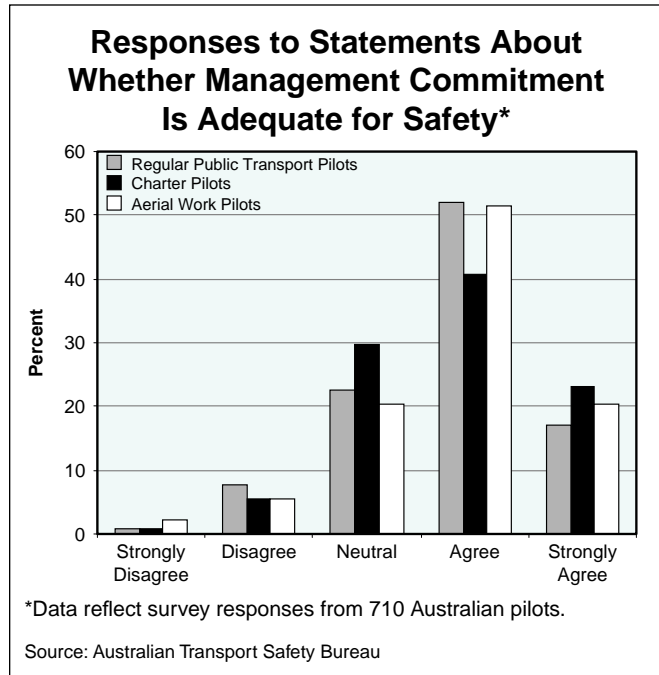


Figure 4

“Charter [respondents] and aerial work respondents seemed to perceive management commitment to safety more than RPT pilots did, as shown by higher scores in the ‘strongly agree’ category,” the report said. “This may be due to a higher number of smaller companies in charter and aerial work, where closer ties with management are easier to maintain and an understanding of management’s intentions is fostered.”

To evaluate perceptions of training, pilots were asked whether:

- “Regular training was provided for a range of emergency situations;
- “Training was received at regular intervals to refresh and update knowledge;
- “Company training was carried out by people with appropriate skills and experience;
- “Company training provided adequate skills and experience to carry out normal operations safely; [and,]

- “Training was received when new procedures or equipment [was] introduced.”

Sixty-seven percent of respondents considered their training adequate — the lowest agreement rate among the four factors; the disagreement rate of 10 percent was the highest (Figure 5).

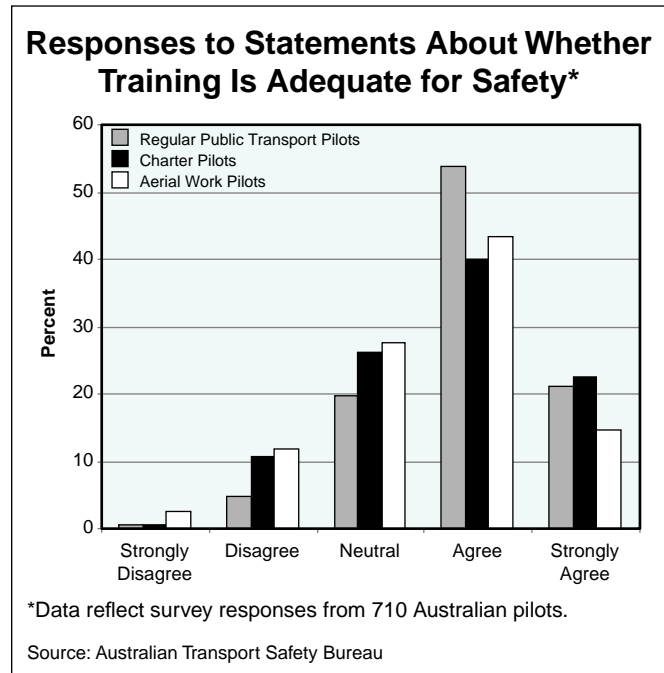


Figure 5

“RPT pilots seemed to be the most positive of the groups in regard to training, with 67 percent of this group ticking either the ‘agree’ or ‘strongly agree’ categories,” the report said. “Aerial work pilot responses ... in the ‘strongly agree’ category [were noticeably lower than ‘strongly agree’ responses from pilots in other groups]. These findings probably reflect the time, money and emphasis placed on training within the various flying categories.”

To evaluate perceptions of equipment and maintenance, pilots were asked whether:

- “Aircraft were maintained to a safe standard;
- “Aircraft systems and components were replaced or updated when necessary;
- “Adequate resources were allocated to perform maintenance; [and,]
- “Aircraft were appropriately equipped for the type of operations conducted.”

Eight-one percent of the respondents agreed or strongly agreed that equipment and maintenance were adequate — the highest agreement rate among the four factors; the “strongly agree” response rate of about 30 percent also was the highest among

the four factors. Four percent said that they disagreed or strongly disagreed (Figure 6).

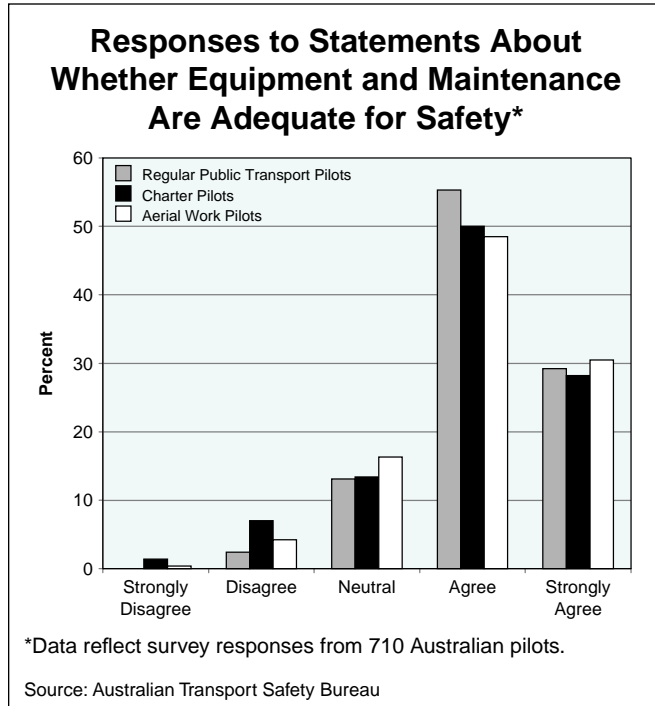


Figure 6

The report said, “It is ... interesting to note the similarity of the charter and aerial work responses to the RPT responses, since there is a general belief in the industry that equipment and maintenance are often neglected in charter and aerial work due to the associated costs.”

To evaluate perceptions of safety rules and procedures, pilots were asked whether:

- “Safety rules and procedures were easy for pilots to use during normal operations;
- “Company safety rules and procedures were easy to understand;
- “Company safety rules and procedures were as complete and comprehensive as they needed to be; [and,]
- “Company emergency operating procedures gave sufficient guidance on how to deal with emergencies.”

About 75 percent agreed or strongly agreed that safety rules and procedures were adequate; 3 percent disagreed or strongly disagreed (Figure 7).

“All three groups presented similar response patterns for the ‘agree’ and ‘neutral’ response categories,” the report said. “Charter and aerial work pilots were more represented in the ‘strongly agree’ category than were RPT pilots. This may be a reflection of lower expectations in charter operations when compared with RPT, rather than lower standards in RPT operations.”

Responses to Statements About Whether Rules and Procedures Are Adequate for Safety

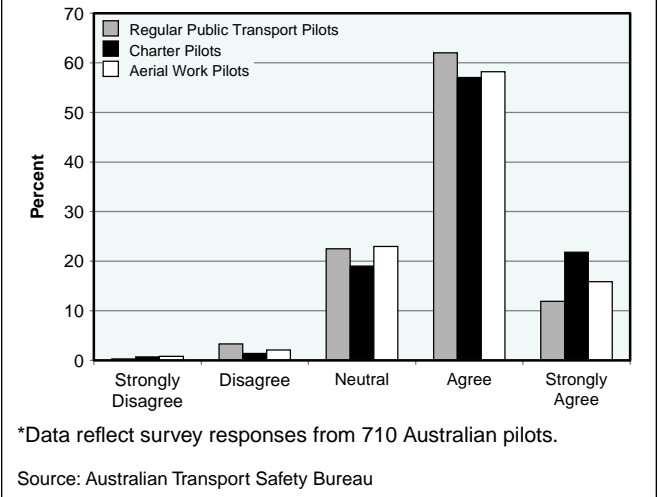


Figure 7

Survey Requested Descriptions of Errors

The second part of the survey questioned pilots about safety experiences during the previous year and asked them to describe the most serious error that they made or that they observed during that time. About 40 percent of survey respondents did not answer this question; therefore, the responses might not be representative of the flying community, the report said.

Of the 727 pilots who responded, 205 (28 percent) were RPT pilots, 126 (17 percent) were charter pilots, 211 (29 percent) were aerial work pilots, and 185 (25 percent) were involved in private flying operations. (Percentages do not total 100 because of rounding.)

Results indicated that nearly 12 percent of the events involved violations of standard operating procedures (SOPs), such as a pilot who conducted a takeoff although he knew that the aircraft was overweight. Violations of SOPs were reported less frequently among RPT pilots (5.9 percent) than among pilots in other categories.

Three percent of the events involved “willfully risky” activities, such as a “strong desire to return to base [while] exceeding duty hours and under deteriorating weather [conditions] and failing light conditions.” These events were reported less frequently by RPT pilots (1.0 percent) and charter pilots (1.6 percent) than by aerial work pilots (4.7 percent) and pilots in private operations (4.9 percent).

In 2 percent of the events, accidents occurred. None of these accidents involved RPT pilots.

Nine percent of the events involved a “midair collision concern.”

Of the 727 events, 554 (76 percent) involved errors that occurred during flight, and 132 (18 percent) involved errors in flight preparation. The remainder involved air traffic services and “nonflight” errors, including errors by maintenance personnel.

The responses indicated “some similarities across the flight categories,” the report said. “All groups experienced procedural errors en route and misprocessed data from the operational environment. Mishandling, misconfiguration and data misprocessing [in] navigation were also a concern for most groups.

“Some similarities were also found regarding primary and secondary contributory factors. All groups identified lack of experience as important to incident involvement. Systems equipment and ‘system procedures — not done’ were also identified.”

The report said that many respondents in all pilot groups said that there were “no defenses present” that helped in recovering from errors. When the pilots cited specific defenses, “error recovery was predominantly enhanced by pilot skills and the implementation of procedures,” the report said. “Very few reports indicated that a post-event defense had been implemented to reduce the likelihood of recurrence.”♦

[FSF editorial note: This article, except where specifically noted, is based on two reports by the Australian Transport Safety Bureau (ATSB): *ATSB Aviation Safety Survey — Safety Climate Factors*, Aviation Research Paper B2003/0122, is a 40-page report containing illustrations and appendixes; and *ATSB Aviation Safety Survey — Common Flying Errors*, Aviation Research Paper B2003/1076, is a 45-page report containing illustrations and appendixes.]

Note

1. The report said that “safety culture” and “safety climate” are related terms that are used to describe “characteristics of how workers in the organization go about carrying out their duties. Culture can be described as an enduring character of organizations (e.g., personality), while climate relates to perceptions of organizational behavior at a particular time (e.g., mood).”

Further Reading From FSF Publications

Shappell, Scott A.; Wiegmann, Douglas A. “Human Factors Analysis and Classification System.” *Flight Safety Digest* Volume 20 (February 2001).

Braithwaite, Graham R. “Pilots Attribute Australia’s Aviation Safety Record to Good Training, Favorable Weather, Low Traffic Density.” *Flight Safety Digest* Volume 19 (March 2000).

Simmon, David A. “Boeing 757 CFIT Accident at Cali, Colombia, Becomes Focus of Lessons Learned.” *Flight Safety Digest* Volume 17 (May–June 1998).

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