Examining Safety and Health among Aviation Industry Workers in Alaska: A Survey

Supporting Statement Section A

New

Request for Office of Management and Budget (OMB) Review and Approval for a Federally Sponsored Data Collection

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List of Attachments

A. Justification

- **Goals of the study:** The primary goal of this study is to collect information on injuries and illness among workers in the aviation industry in Alaska. Second, to provide information to identify risk factors for adverse illness and injury outcomes. Third, the survey will provide information to the Alaska aviation industry stakeholders to assist in identifying intervention strategies to mitigate identified and perceived safety and health needs and concerns, and provide information to the research community to allow generation of hypotheses and prioritize future research in health and safety topics in this workforce.

- **Intended use of the resulting data:** To reduce injuries and illnesses among workers in the aviation industry.

- **Methods to be used to collect:** Web-based survey of samples of workers in five broad occupational categories will be collected on a voluntary basis.

- **The subpopulation to be studied:** Air carrier operators, pilots, mechanics, cargo/baggage/ramp and dock agents, and customer service agents employed in Alaska.

- **How data will be analyzed:** Descriptive analyses (prevalence and trends); multivariate logistic regression and other statistical methods to analyze associations of work-related risk factors and injuries and illness.

1. Circumstances Making the Collection of Information Necessary

This is a new information collection request (ICR) from the National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control and Prevention (CDC). The request is for two years to complete data collection. This data collection is authorized by Section 20(a)(1) of the Occupational Safety and Health Act (29 U.S.C. 669) (Attachment 1).

The mission of NIOSH is to promote safety and health at work for all people through research and prevention. The Occupational Safety and Health Act of 1970, Public Law 9-596 (Section 20) [a][1] authorizes NIOSH to conduct research to advance the health and safety of workers.

This research effort entails conducting surveys (Attachments 3a-e) of commuter and air taxi operators and their employees in Alaska to collect occupational safety and health information, which is not available elsewhere. Operators and pilots were surveyed in 2001-2002 as part of a NIOSH-contracted survey that collected safety information as part of the federally-funded Alaska Interagency Aviation Safety Initiative (AIASI). The goal of the initiative was to reduce aviation-related injuries and fatalities and to promote aviation safety in cooperation with the air transportation industry and pilots in Alaska[1]. In addition to the operators and pilots, this current effort would survey workers in three additional aviation occupations to better understand worker's job tasks and the aviation operating environment in Alaska. Questions from the previous survey for operators and pilots will be repeated for these two occupations in order to compare previous results and determine operational changes and current concerns in the commuter and air taxi industry in Alaska.

This will be the first time that an epidemiological survey on safety and health topics will be administered to this subgroup of workers. This survey will: 1) collect information on injuries and illnesses among workers in the aviation industry in Alaska, 2) provide information to identify risk factors for adverse illness and injury outcomes, 3) provide information to the Alaska aviation industry stakeholders to assist in identifying intervention strategies to mitigate identified and perceived safety and health needs and concerns, and 4) provide information to the research community to allow generation of hypotheses and prioritize future research in health and safety topics in this workforce.

Commuter and air taxi operations, which are regulated under 14 C.F.R. § 135 Commuter and On Demand Operations, serve as the main link between the villages and regional hub airports, and transport people, cargo, and mail to more than 150 communities located off the road system in Alaska. These operations are a vital component of the transportation system in Alaska. Alaska is critically dependent on air transportation as over 80% of its communities are not connected by roads. The Alaska aviation industry generates $3.5 billion annually and accounts for 10% of the jobs in Alaska, more than 47,000 jobs[2]. These jobs include occupations such as pilots, maintenance technicians, ramp agents, baggage handlers, and customer service agents.

Alaska experiences the 5th highest rate of non-fatal occupational injury and illness in the US, and the rates of non-fatal occupational injuries and illnesses for Alaskans are higher than for all US workers in twelve out of thirteen reported industry sectors[3]. The health burden, medical costs, and cost of work loss resulting from non-fatal occupational injury and illness are substantial. During 2000–2013, the State of Alaska Department of Labor and Workforce Development received over 320,000 reports of occupational injury or illness, and more than $3 billion was paid out in workers' compensation benefits[4]. Little is known about the work practices and attitudes about safety for the adverse illness and injury outcomes found in data from the State of Alaska Department of Labor and Workforce Development, or the work environment in which the injuries occur.

Accordingly, NIOSH is proposing a survey study which will provide important information on the health and safety of aviation workers in Alaska that is not available elsewhere. The proposed data collection will provide an update to information previously collected and reported in the *Survey and Analysis of Air Transportation Safety Among Air Carrier Operators and Pilots in Alaska*[5] and provide an initial step toward achieving several prioritized strategic goals identified by the National Occupational Research Agenda (NORA) for workers in the Transportation, Warehousing, and Utilities sector. The data collection will also meet one of the aims identified in the NORA-funded project *Improving Safety in the Commercial Aviation Industry in Alaska*. NORA is a partnership program designed to stimulate innovative research and improve workplace practices. Unveiled in 1996, NORA has become a research framework for NIOSH and the nation. Diverse parties (industry, academia, government, insurance, etc.) collaborate to identify the most critical issues in workplace safety and health. NORA is divided into industry sector councils. The goals of the NORA Transportation, Warehousing, and Utilities sector addressed by this survey include:

Strategic goal 6: Improve workplace safety to reduce traumatic injuries

Strategic goal 7: Promote safe and healthy work design and well-being

The specific aim addressed by this survey from the NORA-funded project is:

Specific Aim 3: To use findings from the analysis of workers' compensation data, and from previous NIOSH aviation Safety Program work, to develop a survey of commercial airline operators, pilots and other aviation

industry workers. The survey data will be used to further identify risk factors, such as work practices and attitudes about safety for the adverse illness and injury outcomes found in the workers' compensation data. The survey results will allow for the development of recommendations to guide future prevention efforts.

2. Purpose and Use of Information Collection

The purpose of this effort is to collect data that will guide health and safety research and outreach in this high-risk workforce. In particular, this survey will: 1) collect information on injuries and illnesses among workers in the aviation industry in Alaska, 2) provide information to identify risk factors for adverse illness and injury outcomes, 3) provide information to the Alaska aviation industry stakeholders to assist in identifying intervention strategies to mitigate identified and perceived safety and health needs and concerns, and 4) provide information to the research community to allow generation of hypotheses and prioritize future research in health and safety topics in this workforce.

This project will identify the perceptions, policies, and practices of air carrier operators; pilots; mechanics and maintenance personnel; ramp, baggage, cargo, and dock agents; and customer service agents that could affect the health and safety of these workers, the safety of flight operations, develop interventions for reducing the incidence of injuries and illness. Specifically, NIOSH requests approval for a comprehensive survey effort to collect information within the scope of the areas described above. The surveys will provide vital information not otherwise available and necessary for the data analysis. The data collection would take the form of a mail or e-mail letter of introduction and request to participate with a link to a Web-based survey.

Through a contract partnership, the Institute of Social and Economic Research (ISER) at the University of Alaska-Anchorage (UAA) will administer the survey questionnaires and will destroy all identifying information after their analysis is complete to preclude any use of this information in administrative or enforcement actions, and to be able to offer assurances of confidentiality.

After workers agree to participate, the surveys will be self-administered using Web-based survey software to a stratified sample of workers in five occupational groups. Results will be analyzed by ISER and NIOSH researchers using standard statistical analyses commonly employed in survey research. NIOSH is committed to the concept of Research to Practice (r2p), thus we strive to ensure that NIOSH-generated knowledge is used to create practical interventions to reduce illness and injury among workers. We engage stakeholders (e.g., other government agencies, safety organizations, industry partners, subject matter experts, the workers themselves) throughout the process. This ensures that we focus on issues that are of importance to the workers of the specific industry and can be translated into interventions and activities with practical utility within that industry. This study will also raise awareness of the safety and health issues encountered by these worker populations and lead to improved decision making by all stakeholders in this industry.

If this survey were not administered, NIOSH would continue to rely on information from surveys of workers from other industries to extrapolate the health concerns for aviation workers. By assuming that aviation workers are like other worker populations, we risk not identifying important industry-specific health issues and injury hazards, which could lead to wasted resources on unnecessary research projects and limited impact on the safety and health of workers. It is likely information from this survey will mirror those in other industries with established health and safety messages; in this case, we can save resources by adapting those resources to

aviation worker needs. New information from the surveys can be used to develop targeted intervention strategies which may be generalizable to other occupations in other industries

This survey is a one-time data collection effort that will facilitate comparisons with data collected in 2001 and 2002 in the pilot and air carrier manager surveys. It is possible that there will be additional uses for these data such as using these cohorts as comparison groups for future surveys. However, any additional use of the data for such purposes would not change any burden estimates or create additional privacy issues for participants of this study.

This data collection has been peer-reviewed, approved, and fully funded by the NIOSH National Occupational Research Agenda.

3. Use of improved information technology and burden reduction

This study will only collect data necessary to meet the goals of the study and will only include questions that provide information not available from other sources. This will consist of measures of judgment, knowledge, attitudes, perceptions, and business practices. It will also include basic information on flight activity, where available information is either too aggregated to be useful for our study or is subject to large estimation errors.

Participants will self-administer the survey electronically using Web-based survey software (Qualtrics). The surveys will also be accessible on mobile devices, by e-mail, on paper, or by telephone. Participants will be informed of a toll-free number in the announcement and recruitment letter where they can obtain additional information and learn about other modes of administration. Workers will also have the option to complete the questionnaire in a hard copy format and telephonically to accommodate those who are not comfortable with, or do not have access to the technology.

The electronic format allows for skip patterns so that respondents only read applicable questions. Automatic recording of responses reduces the need for data entry and cleaning as well as eliminating potential sources of error. Respondents will be able to access and respond to the questionnaires at a time and place convenient to them. The questionnaires have undergone peer review by representatives from several aviation organizations. They have not been pretested.

4. Effort to Identify Duplication and Use of Similar Information

NIOSH researchers have conducted comprehensive searches to identify available literature regarding worker safety information, air carrier policies, and worker practices related to Alaska-based aviation workers. The only identified source of information for aviation workers in Alaska is the 2001-2002 NIOSH study of air carrier managers and pilots in Alaska. That study focused on fatalities and collecting the specific information needed for the reduction of deaths related to air crashes in Alaska and does not include a focus on health and safety for all aviation workers. Applicable questions from the two questionnaires from this study will be repeated in the current study. This study will address a knowledge gap in the professional and scientific literature by contributing quantitative data to an ongoing problem.

5. Impact on Small Businesses or Other Small Entities

Some of these entities are small air carrier businesses. The number of questions have been kept to a minimum and include only what are considered essential topics. The length of the survey is kept as short as possible by

using the previous study to focus the questions and by eliminating questions with other sources of data. Survey questions that are not applicable to the respondent are skipped. Participation in the survey is voluntary and conducted at a time convenient for the participant. Participants are provided with options to respond using different media.

6. Consequences of Collecting Information Less Frequently

This request is for a one-time data collection. If this data collection does not take place, industry leaders and federal programs will not be able to make evidence-based decisions regarding the safety and health concerns of aviation industry workers. Additionally, this data collection will inform NIOSH's research agenda by aiding in prioritization of research activities and resources. There are no legal or technical obstacles to reduce the burden as this is a one-time data collection.

7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5

This request fully complies with the regulation 5 CFR 1320.5

8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency

A. A 60-day Federal Register Notice was published in the *Federal Register* on December 18, 2020, Vol. 85, No. 244, Pages 82478-82480 (see Attachment 2). CDC did not receive any public comments towards the 60-day FRN.

B. The following individuals outside the agency were consulted regarding various aspects of the survey questionnaires during 2018:

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9. Explanation of Any Payment or Gift to Respondents

Participants will not receive payment or gifts. The previous information collection conducted in 2001-2002 did not provide payment or gifts to respondents. The response rate for this effort was 79% for all operators and 69% for pilots. This data collection effort will aim to achieve a 70% response rate for all respondents. A flyer will be used to advertise the survey and encourage participation prior to commencing data collection (Attachment 9). Where workers decline to participate, they will be asked to answer a very short, six-question non-response questionnaire (Attachment 10) that will allow researchers to compare basic demographics of participants and non-respondents to determine if there are any differences.

10. Protection of the Privacy & Confidentiality of Information Provided by Respondents

The NIOSH Information Systems Security Officer (ISSO) has reviewed this data collection and determined that the Privacy Act does not apply. No personally identifying information (PII) will be recorded (e.g. names, social security numbers, or any other unique identifier) as a part of the dataset.

The contracted researchers will obtain names and contact information (e-mail addresses, mailing addresses) of workers from air carrier companies. This information will be organized in a spreadsheet and used for estimating the number of employees in each occupational subcategory; determining the sampling fractions; drawing the samples; distributing the recruitment packages, which are comprised of recruitment letters (Attachments 5a and 5b), which contain personalized links to the questionnaire and consent forms (Attachments 6a and 6b); and to track the proportion of workers who complete the questionnaire. Reminder postcards (Attachments 7a and b),emails (Attachments 11 and 12), and/or telephone calls (Attachments 13 and 14) will be sent to workers who do not complete the questionnaires using contact information contained on the spreadsheet.

This spreadsheet will not be a part of the dataset and will be managed by the Institute of Social and Economic Research (ISER) in a responsible and secure manner. The survey software, Qualtrics, automatically collects IP addresses. These IP addresses are not uploaded into the dataset. The University of Alaska's Institutional review Board has reviewed and approved ISER's protocol and accompanying documents and retains oversight of this project. Once ISER completes data collection and analyses, the spreadsheet containing names and contact information will be deleted from computers or shredded, if maintained as a hard copy. Data will not be disclosed, unless otherwise compelled by law.

When participants click on the link provided in the recruitment letters, they are directed to the consent form which explains the risks of participation, describes the intended uses of the information, explains that participation is voluntary, and explains that participants do not have to answer any questions they don't wish to and that they may stop at any time. The questionnaire will collect potentially sensitive information about health status, injury, and safety and health concerns. Benefits to participants include increased knowledge of safety and health issues of workers in this industry and targeted prevention programs based on the information NIOSH gains from this survey.

All reports of this survey will only contain aggregated data. Air carriers will not receive data on individual workers and reports will not contain company identifiers. When stratifying results by age, gender, occupation, and other characteristics, the possibility of releasing indirectly identifying information is carefully considered.

Information is uploaded from the third-party web application, Qualtrics, to encrypted NIOSH-owned computer systems, which require a 2-step authentication for access. Qualtrics servers and firewalls are audited using industry standard SSAE-16 Service Organization Control 1 specification. All collected data are stored with industry best practice security measures designed to prevent unauthorized access and disclosure (ISO 27001/2). Login information is accessible only to researchers on this project. Computers containing survey response data related to this project will be kept secure at all times. Access to the data is limited to authorized project staff for the purpose of performing research on prevalence of injuries and illness and associated risk factors, to use as a basis for designing or evaluating interventions, and to identify subgroups of workers at increased risk.

A.11. Institutional Review Board (IRB) and Justification for Sensitive Questions

The University of Alaska Anchorage's Institutional Review Board reviewed and approved the proposed study (Attachment 8a, Attachment 8b is the subsequent NIOSH determination).

The proposed questionnaire contains questions that may be sensitive in nature, including questions regarding on the job injuries and illnesses; whether a workers comp claim was filed and if not, why not; parts of the body affected; the level of agreement with statements about managements' attitudes about safety issues (opinions regarding the emphasis that their employer places on the health and safety of workers); effects of fatigue; and other health and safety concerns.

The following sensitive questions are asked in the questionnaire:

- How many flight hours per day do you typically log?
- How confident are you that you can safely fly under Visual Flight Rules (VFR) in the following conditions?
- Exposures in the workplace may be to harmful substances, fumes, loud noises, or temperature extremes. In the past five years, have you had any exposures as a result of your work that required medical care, first aid, time off work, or changes in how you do your job?
    - o Yes. Please explain:
    - o No

- Other than piloting the aircraft, which of your duties or tasks are most likely to make you ill?
- Which of the following best describes your reasons for not filing a worker's compensation claim? Please select all that apply.
    - I didn't think the injury was bad enough, filing was unnecessary
    - I didn't know I could
    - I didn't know how

- I didn’t want to hurt the company or my employer
- I didn’t want my employer to be disappointed in me
- I was worried it would make me look bad
- I didn’t want to get a co-worker in trouble
- I was worried about getting in trouble with my employer
- Other. Please describe: _____

- Do you think your injury could have been prevented?
  - o Yes. What could have prevented it? _____
  - o No. Please explain: _____
  - o I don't know

- Please indicate how much you agree or disagree with each of the following statements. Where I work…

Where I work…	Strongly Disagree	Disagree	Neither Disagree nor Agree	Agree	Strongly Agree
the safety of workers is a high priority with management.	O	O	O	O	O
workers are discouraged from reporting safety issues	O	O	O	O	O
there are no significant compromises or shortcuts taken when worker safety is at stake.	O	O	O	O	O
keeping aircraft in the air is more important than worker safety.	O	O	O	O	O
employees and management work together to ensure the safest possible working conditions.	O	O	O	O	O
management isn’t interested in safety issues.	O	O	O	O	O

- Have you ever felt so tired at work that you forgot what you were doing, what you had done, or made a mistake?
  - o Yes
  - o No
  - o I don’t remember
  - o Prefer not to answer

- During **YEAR**, about how often would you have liked to decline a flight because you were too tired, but you flew anyway?
    - Daily
    - Weekly
    - Monthly
    - Less often than monthly
    - Never
    - Prefer not to answer

The potentially sensitive questions are needed to determine key safety and health hazards and concerns for these workers so that appropriate recommendations can be made regarding the best practices, interventions, or policies to prevent or mitigate these hazards. To effectively improve the safety and health of aviation industry workers, NIOSH also needs an understanding of the risk factors for injuries and illness for this workforce. Therefore, it is important to collect data regarding health and injuries, on-the-job risks, and elements of the work environment, which include safety culture and company safety policies. An understanding of the prevalence of these risk factors, and associations between these factors and a history of injury or illness, will also allow NIOSH to develop recommendations and work with stakeholders to develop interventions to improve worker safety and health. This knowledge can guide future research on specific hazards among aviation workers. The survey does not include traditionally sensitive questions such as trade secrets, sexual behavior, religious attitudes, and does not ask for a respondent's social security number.

All questionnaire response data will be treated in a secure manner and will not be disclosed, unless compelled by law. Aggregation of responses will ensure participants will not be identifiable.

12. Estimates of the burden hours and costs

A. Annualized Burden to Respondents

No direct costs will accrue to respondents other than their time to complete the questionnaire. We estimate a total annual estimated response burden of 774 hours for this information collection based on the surveys conducted. This burden will be incurred over two years. The following table provides an estimate of the annualized burden hours for the occupational groups. The total estimated burden hours over two years is 1548.

Table A12.1 Estimated Annualized Time Burden to Respondents

Type of Respondents	**Form Name**	**Number of Respond-ents**	**Number of Responses per Respond-ent**	**Average Burden per Response (in hours)**	**Total Burden (in hours)**
Operators	Operator_ Survey	153	1	25/60	64

Pilots	Pilot_Survey	410	1	25/60	171
Maintenance technicians	Maintenance Technician_ Survey	700	1	15/60	175
Ramp/baggage/ cargo/dock agents	RBCD_Survey	550	1	15/60	138
Customer Service Agents	CSA_Survey	800	1	15/60	200
All Non-respondents	Non-respondent Questionnaire	523	1	3/60	26
Total					**774**

B. Annualized Cost to Respondents

The estimated total cost to the respondent population for the questionnaire is $27,771 based on the average costs per burden hour and the burden hours as shown below. This burden will occur over two years of information collection.

Table A12.2 Estimated Annualized Cost Burden to Respondents

Type of Respondent	**Form Name**	**Total Burden Hours**	**Hourly Wage Rate***	**Total Respondent Costs**
Operators	Survey	64	$59.39	$3801
Pilots	Survey	171	$59.39	$10156
Mechanics/maintenance technicians	Survey	175	$32.45	$5679
Ramp/baggage/cargo/dock agents	Survey	138	$21.02	$2901
Customer Service Agents	Survey	200	$21.94	$4388
All Non-respondents	Non-respondent Questionnaire	26	$32.54	$846
Total Cost		774		**27,771**

* Wage estimates were obtained from the Alaska Department of Labor and Workforce Development May 2020 wages (https://live.laborstats.alaska.gov/wage/index.cfm#g53). Annual salary for Commercial Pilots (Standard Occupational Classification (SOC) system code 53-2012) was divided by 2080 hours to obtain an hourly wage estimate. This estimate was also used for operators' hourly wage estimate, as many operators are self-employed commercial pilots. Hourly wages were available for Aircraft Mechanics and Service Technicians (SOC Code 49-3011) and Laborers and Freight, Stock, and Material Movers (SOC Code 53-7062). Wages were not available for

Transportation Attendants, Except Flight Attendants (SOC Code 53-6061); wage estimate for Reservation and Transportation Ticket Agents and Travel Clerks (SOC Code 43-4181) was used.

13. Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers

There are no additional cost burdens to respondents or record keepers.

14. Annualized Cost to the Federal Government

The annualized cost to the government is approximately $105,877 for each of the six years of the study, of which two years involve data collection. The total cost for the entire six year period is $635,262. Costs include personnel charges for NIOSH personnel, contractors, supplies and printing costs, and travel-related costs.

Table A14.1. Estimated Annualized Cost to the Federal Government

		Annualized Cost
NIOSH Personnel		$59,715
Contracts/Services		$44,962
Supplies		$1,000
Travel		$100
Other (Printing, Shipping)		$1,000
Total		$105,877

15. Explanation for Program Changes or Adjustments

This is a new data collection.

16. Plans for Tabulation and Publication and Project Time Schedule

Table A.16.1. Project Time Schedule

Activity	Time Schedule
Develop database to collect worker contact information	During OMB Review
Outreach to Alaska aviation industry to create awareness of study	During OMB Review
Letters sent to operators	0-6 months after OMB Approval
Data Collection	1–24 months after OMB Approval
Data Cleaning	18-20 months after OMB Approval
Data Analysis	20-24 months after OMB Approval
Publication and Dissemination	24–36 months after OMB Approval

The wide timeframe for letters to be sent to operators is in consideration of seasonal operations. Optimal times for dissemination of worker questionnaires are during the shoulder seasons in spring and autumn when most workers are available to complete questionnaires.

Descriptive and statistical methods will be used to analyze the data. Responses for each question will be aggregated and reported with simple proportions. Results may be stratified by occupation, company type, or another logical stratification. However, results will not be stratified where the numbers are too small and could result in unintentional identification of respondents. Multivariate logistic regression will be used to evaluate associations between injury, illness and elements of the work environment, including safety culture and company safety policies and practices.

17. Reason(s) Display of OMB Expiration Date is Inappropriate

The display of the OMB expiration date is not inappropriate.

18. Exceptions to Certification for Paperwork Reduction Act Submissions

There are no exceptions to the certification.

References

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