

A Baseline of Injury and Psychosocial Stress for Applied Behavior Analysis Workers
Supporting Statement A

Request for Office of Management and Budget Review and Approval
for Federally Sponsored Data Collection

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Table of Contents

Contents

1. Circumstances Making the Collection of Information Necessary.....	3
2. Purpose and Use of Information Collection.....	4
3. Use of Improved Information Technology and Burden Reduction.....	6
4. Efforts to Identify Duplication and Use of Similar Information.....	6
5. Impact on Small Businesses or Other Small Entities.....	7
6. Consequences of Collecting the Information Less Frequently.....	7
7. Special Circumstances Relating to the Guidelines of 5 CFR 1320.5.....	7
8. Comments in Response to the Federal Register Notice and Efforts to Consult Outside the Agency.....	7
9. Explanation of Any Payment or Gift to Respondents.....	7
10. Protection of the Privacy and Confidentiality of Information Provided by Respondents.....	7
11. Institutional Review Board (IRB) and Justification for Sensitive Questions.....	8
12. Estimates of Annualized Burden Hours and Costs.....	8
13. Estimates of Other Total Annual Cost Burden to Respondents or Record Keepers.....	9
14. Annualized Cost to the Government.....	9
15. Explanation for Program Changes or Adjustments.....	9
16. Plans for Tabulation and Publication and Project Time Schedule.....	9
17. Reason(s) Display of OMB Expiration Date is Inappropriate.....	10
18. Exceptions to Certification for Paperwork Reduction Act Submissions.....	10

List of Attachments

Attachment A- Authorizing Legislation

Attachment B- 60-day FRN

Attachment C- Survey

Attachment D- Recruitment Email

Attachment E- Survey Reminder Email

Attachment F- Survey Advertisement

Attachment G- Survey Items and references

Attachment H- Example Respondent Characteristics and Number of Survey Questions

Attachment I- IRB Determination

- **Goal of the study:** The goal of the study is to collect data on the burden of work-related injuries and psychosocial stress among ABA workers in the United States.
- **Intended use of the resulting data:** The results of the survey will be used to identify objectives and priorities for intervention research to improve the safety of the workplace, reduce injury, and improve the well-being of applied behavior analysis workers.
- **Methods to be used to collect data:** The data will be collected with a direct-contact web-based cross-sectional survey.
- **The subpopulation to be studied:** The subpopulation for the study will be applied behavior analysis workers in the United States credentialed by the Behavior Analysis Certification Board.
- **How data will be analyzed:** Data will be analyzed using chi-square tests, analysis of variance, and generalized linear models, as appropriate.

1. Circumstances Making the Collection of Information Necessary

The Information Collection Request for *A Baseline of Injury and Psychosocial Stress for Applied Behavior Analysis Workers* is classified as **New**. The National Institute for Occupational Safety and Health (NIOSH) is requesting approval for three years. Data collection for this project is authorized under 29 USC § 669 Section 20 of the Occupational Safety and Health Act (Attachment A). Data collection for this project is authorized under 29 USC § 669 (Section 20 of the Occupational Safety and Health Act). Section 20 states that “The Secretary of Health and Human Services, after consultation with the Secretary and with other appropriate Federal departments or agencies, shall conduct (directly or by grants or contracts) research, experiments, and demonstrations relating to occupational safety and health, including studies of psychological factors involved, and relating to innovative methods, techniques, and approaches for dealing with occupational safety and health problems.” This collection will survey applied behavior analysis (ABA) workers to obtain information regarding the injuries they may have sustained while working. Applied behavior analysis is a principle intervention for problem behaviors exhibited by children, adolescents, and adults with developmental disorders, and Board Certified Behavior Analysts - Doctorate (BCBA-Ds), Board Certified Behavior Analysts (BCBAs), Board Certified Assistant Behavior Analysts (BCaBAs), and Registered Behavior Technicians (RBTs), hereafter referred to as ABA workers, are responsible for planning and implementing behavior-focused treatments in schools, clinics, homes, and hospitals. The treatments are often designed to reduce violent, aggressive, and destructive behaviors. The nature of this work requires ABA workers to approach and manage violent and aggressive behaviors, posing significant risks for injury and psychosocial stress.

Demand for ABA services is increasing (particularly among individuals with autism spectrum disorders) as is the number of workers; prevalence of autism spectrum disorders in the United States is estimated to be 14.6 per 1,000 children (Centers for Disease Control and Prevention, 2017). The number of BCBAs has grown steadily since the inception of credentialing in 1999 and at a near-exponential rate in more recent years. As of January 2021, there are over 135,000 workers credentialed by the Behavior Analyst Certification Board. Conservative estimates suggest there will be more than 100,000 credentialed behavior analysts and more than 200,000 credentialed RBTs within one to two decades (Burning Glass Technologies, 2017; Carr & Nosik, 2017). From 2012-14, there were over 7,000 openings for credentialed behavior analysts primarily in the health care (46%), educational services (28%), and social assistance (11%) industries (Burning Glass Technologies, 2017). Growth in the number of ABA workers increases exposure to hazardous work environments and new employers may lack a well-developed safety culture.

Currently there is no standard occupational classification (SOC) to identify ABA workers within occupational injury data from the Bureau of Labor Statistics, and thus, specific occupational health and safety data for ABA workers cannot be isolated and extracted from existing occupational data sources. Additionally, their job duties make many of their experiences in the workplace unique from other types of healthcare workers who may encounter occasional violence. For example, ABA workers develop and implement behavioral treatments for violent and destructive behaviors, placing them in frequent and direct exposure to potential harm and injury. Whereas other healthcare workers usually take steps to mitigate violence in their work, ABA workers are tasked with soliciting and then treating (i.e., confronting) violent behavior as part of behavioral treatments. In addition, ABA workers often spend more time with clients than other types of workers: 25-40 hours per week of direct-contact services is common for a client. Despite anecdotal evidence of the prevalence of injuries among this group of workers, there exists no published evidence. Given the unique nature of their jobs, etiologic research is necessary to capture injury rates and associated factors among these workers.

This collection has been funded through CDC's National Occupational Research Agenda and aligns with the priority goals of the Healthcare and Social Assistance Sector. This collection will obtain information related to injuries among ABA workers. This project completed a peer-review process as part of the National Occupational Research Agenda, and it was approved by the agency and has received funding through 2023.

2. Purpose and Use of Information Collection

The purpose of this data collection is to obtain information about work-related injuries and stress experienced by applied behavior analysis workers. The information will be collected through a one-time web-based survey will be used by the NIOSH researchers, applied behavior analysis workers, and academicians to identify priorities for current and future intervention research to improve the safety and well-being of applied behavior analysis workers.

Due to certain limitations in the study design, the results are not intended to be used for influential policymaking purposes (e.g., as part of the evidence base used to justify future rulemaking or budget proposals). We expect to experience a degree of non-response bias. In addition, we will be unable to estimate the prevalence of non-response bias because the socio-demographic information of survey respondents is unavailable, thus making it impossible to compare the characteristics of survey respondents to those who did not respond to the survey. Recognizing these limitations, we will be careful to present the findings and associated conclusions in the proper context.

The specific research questions are as follows:

Research Question 1. What is the occurrence of events/exposures across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, by workplace characteristics (type of employment, work setting, number of employees), by types of safety training, by use of PPE, and by injury reporting?

Research Question 2. What is the prevalence of injuries across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, by workplace characteristics (type of employment, work setting, number of employees), by types of safety training, by use of PPE, and by injury reporting?

Research Question 3. What is the perceived safety climate across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, by workplace characteristics (type of employment, work setting, number of employees), by types of safety training, by use of PPE, and by injury reporting?

Research Question 4. What is the proportion of PPE usage across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, by workplace characteristics (type of employment, work setting, number of employees), by types of safety training, and by injury reporting?

Research Question 5. What is perceived mental health across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, by workplace characteristics (type of employment, work setting, number of employees, access to stress management programs) by use of PPE, and by injury reporting?

Research Question 6. What is perceived workload across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, by workplace characteristics (type of employment, work setting, number of employees), by types of safety training, by use of PPE, and by injury reporting?

Research Question 7. What is perceived burnout across demographic characteristics, by type of credential (RBT, BCaBA, BCBA, BCBA-D), by client age, or by workplace characteristics (type of employment, work setting, number of employees, access to stress management programs), by use of PPE, and by injury reporting?

Research Question 8. Are the factors safety climate, PPE use, and mental health inversely associated with the prevalence of events/exposures and injuries?

Research Question 9. Are the factors mental health, use of PPE, and injury reporting positively associated with safety climate?

Research Question 10. Is mental health positively associated with use of PPE?

The planned use for the data is to conduct analyses to answer the research questions and publish the findings in peer-reviewed publications and informational products distributed by professional organizations that will bring awareness of hazards, risks, and injuries to the workers, owners, and managers of organizations who employ ABA workers.

Participation in this data collection is voluntary, and every effort was made to keep the data collection as short as possible and still meet the needs of the data collection. As the respondents of the survey will be those who voluntarily decide to complete the survey, there may be a lack of generalizability of the results to the entire population. Those who choose to initiate and complete the survey may differ from those in the population who decide not to initiate or complete the survey.

Data collected for this project will have several positive outcomes and impacts:

- a) Existing data describing applied behavior analysis workers' nonfatal injuries are limited. The proposed study will address this research gap by collecting data on worker injury.
- b) Data dissemination will occur via publications, presentations, fact sheets, and infographics. These methods will target those concerned with applied behavior analysis workers' safety and health, allowing them to improve and develop targeted interventions. Dissemination will also target applied behavior analysis workers themselves to raise their awareness of hazards and nonfatal injury risks on the job.
- c) Applied behavior analysis workers provide valuable services to individuals in their communities by improving the lives of individuals with disabilities, and improving their health and safety not only contributes to their well-being but also to the well-being of the larger community.

There are at least two negative consequences of not collecting and disseminating these data:

- a) Interventions to reduce applied behavior analysis workers' injuries and improve their well-being would lack the injury and psychosocial health data to be effectively targeted.
- b) Being unable to use data to develop targeted interventions could result in minimal to no reduction in applied behavior analysis workers' injuries.

3. Use of Improved Information Technology and Burden Reduction

This information collection request involves the use of electronic data collection for all respondents.

Respondents will receive an email (Attachment D) with a link to the survey (Attachment C), and they will be able

to complete the survey on their computer, tablet, or smartphone. Respondents will be able access and respond to data collection requests at a time and place that is convenient to them, eliminating the need to travel for survey administration. Additionally, computer-generated skip patterns within the survey will minimize the length of the survey and reduce burden to participants.

In addition, technological advances will be used to help provide higher quality data. These methods include:

- **Data Review:** The researchers will conduct data quality reviews periodically to evaluate whether respondents have reported inconsistent or straight-line responses. These respondents will be coded with an 'Invalid' disposition in the final dataset and their data excluded from analysis.
- **Incomplete Survey Analysis:** Incomplete surveys will be analyzed to identify common breakoff points. This information will help identify factors or methods, including perhaps the use of incentives or other strategies, that can improve participation in any future version of the survey.
- **Opt Out Analysis:** Respondents will be given an option at the end of the survey instruction page to proceed with the survey or opt out. If they decide to opt out, they will be asked to indicate a reason for opting out from a list of various reasons. This information might improve recruitment of respondents in future research studies.

4. Efforts to Identify Duplication and Use of Similar Information

There currently is no standard occupational classification (SOC) code for applied behavior analysis workers. Therefore, injury data for this unique population of workers do not exist. Although many of the job duties of applied behavior analysis workers are distinct from other professions such as special education teachers or school counselors, any injuries experienced by applied behavior analysis workers are currently coded under these other professions. The lack of a unique SOC code means that the injury statistics for this group of workers are diluted among the various SOC codes to which they are assigned, and these statistics cannot be isolated from the existing data. Although existing professions within the SOC system, such as psychiatric nurse, can provide some gross estimates for what the injury statistics might be for applied behavior analysis workers, fundamental differences in job settings and duties are likely to lead to appreciable errors in these estimations. For example, psychiatric nurses primarily work in hospitals and nursing homes, but applied behavior analysis workers often work in clients' homes. Psychiatric nurses typically have coworkers who can assist with more violent patients, but applied behavior analysis workers are often working alone and do not have anyone to assist them. Therefore, inferences can be drawn from the existing data to hypothesize what the injury rates may be among applied behavior analysis workers by examining similar professions, but because some of the job duties of applied behavior analysis workers are distinct from other types of workers, this is an imperfect approach.

To determine that this project did not duplicate any previous studies, we: 1) attended behavioral science conferences, such as the Association for Behavior Analysis International Annual Convention and the Behavioral Safety Now annual meeting, to survey the latest research being conducted in applied behavior analysis worker health and safety, 2) conducted an informal literature review of survey-based research in occupational safety and health related to applied behavior analysis workers, 3) reviewed recently issued grants, cooperative agreements, and contracts by NIOSH and CDC for overlapping content, and 4) consulted with other researchers and experts who conduct survey-based research on healthcare providers.

To identify whether data on injuries and psychosocial stress already existed in the literature, we conducted searches with Scopus and Google Scholar and did not identify any studies that surveyed board certified behavior analysts, board certified assistant behavior analysts, or registered behavior technicians about their injuries. In terms of psychosocial stress and burnout, several studies have evaluated these topics with applied behavior analysis workers. Novack and Dixon (2019) conducted a literature review on burnout, job satisfaction, and turnover and identified five studies:

- Gibson, J. A., Grey, I. M., & Hastings, R. P. (2009). Supervisor support as a predictor of burnout and therapeutic self-efficacy in therapists working in ABA schools. *Journal of Autism and Developmental Disorders*, 39, 1024-1030.
- Griffith, G. M., Barbakou, A., Hastings, R. P. (2014). Coping as a predictor of burnout and general health in therapists working in ABA schools. *European Journal of Special Needs Education*, 29, 548-558.
- Hurt, A. A., Lann Grist, C., Malesky Jr., L. A., & McCord, D. M. (2013). Personality traits associated with occupational 'burnout' in ABA therapists. *Journal of Applied Research in Intellectual Disabilities*, 26, 299-308.
- Kazemi, E., Shapiro, M., & Kavner, A. (2015). Predictors of intention to turnover in behavior technicians working with individuals with autism spectrum disorder. *Research in Autism Spectrum Disorder*, 17, 106-115.
- Kelly, A., & Barnes-Holmes, D. (2013). Implicit attitudes towards children with autism versus normally developing children as predictors of professional burnout and psychopathology. *Research in Developmental Disabilities*, 34, 17-28.

We also found an additional study that looked at burnout among board certified behavior analysts:

- Plantiveau, C., Dounavi, K., & Virues-Ortega, J. (2018). High levels of burnout among early-career board-certified behavior analysts with low collegial support in the work environment. *European Journal of Behavior Analysis*, 19, 195-207.

Although these studies examined psychosocial issues like burnout and job satisfaction, they do not examine them in relation to occupational injuries and safety climate. Additionally, they used relatively small sample sizes. The largest sample size consisted of 113 behavior technicians; the smallest sample size was 16.

5. Impact on Small Businesses or Other Small Entities

This data collection will not involve small businesses.

6. Consequences of Collecting the Information Less Frequently

The request is for a one-time information 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. Attached is a copy of the 60-day Federal Register Notice that was published on May 7, 2021 (Vol. 86, No. 87 page 24623-24624) (Attachment B). No public comments were received.
- B. We have not consulted with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and record keeping, disclosure, or reporting.

9. Explanation of Any Payment or Gift to Respondents

Respondents will not receive any payments or gifts.

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

NIOSH's Information Systems Security Officer (ISSO) reviewed this submission and determined in conjunction with the CDC Privacy Office that the Privacy Act is not applicable. The collection contains low risk PII with demographic questions in the survey (i.e., race, gender, and ethnicity). However, the Privacy Act does not apply

since records will not be retrieved by a personal identifier through the NIOSH Edge Computing Platform (NCEP) previously NIOSH Analytical Data Warehouse (ADW). The NCEP will be used to store the data and includes the in-place technical, physical, or administrative controls (safeguards). The NIOSH Edge Computing Platform (NCEP) System Security Plan (SSP) defines the safeguards/controls to protect the availability, integrity, and confidentiality of the data. The NCEP SSP also defines the process for handling security incidents. The system's team and the Cybersecurity Program Office (CSPO) share the responsibilities for event monitoring and incident response. Direct reports of suspicious security or adverse privacy related events to the component's Information Systems Security Officer (ISSO), CDC helpdesk, or to the CDC Security Incident Response Team (CSIRT). The CDC CSPO reports to the HHS Computer Security Incident Response Center (CSIRC), which reports incidents to US-CERT as appropriate.

NIOSH researchers will manage the data collection using RedCAP, and all data will be stored on the NIOSH Edge Computing Platform (NCEP). All survey data files will be saved and archived in their raw format. Additional data files containing processed, reformatted, or summarize data will be created, edited, or reformatted as necessary to meet the requirements for conducting various statistical analyses. These files will be regularly inspected by multiple the NIOSH researchers team members for quality (i.e., accuracy, omissions, and errors). Informed consent will not be obtained for this study. The NIOSH IRB has classified this study as exempt and therefore informed consent is not necessary. However, the first survey page that potential respondents will see will have the information that is typical of an informed consent such as the voluntary nature of the survey, the potential risks of participation, and the researcher's contact information. This first page will also include the mandatory OMB information (e.g., OMB number, expiry date, burden information, etc.). Participants will be instructed that if they continue with the survey, it will be considered consent to participate.

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

IRB Approval

The information collection has received an exemption determination by the NIOSH IRB. The approval letter is in ATTACHMENT I.

Sensitive Questions

The survey includes sensitive questions about race and ethnicity, which are formatted according to OMB guidelines. These questions are deemed important and necessary to better understand the incidence and experience of injuries in this unique worker population and for which no similar information currently exists. Data on race and ethnicity also meets NIOSH research goals of better understanding health and injury disparities especially among vulnerable and disadvantaged worker populations.

The survey also includes one question about mental illness. This question is necessary to meet the research objective of better understanding the effects of workplace violence and injury on mental health in this unique population of workers and for which no similar information currently exists.

No PII data are being collected to ensure anonymity of responses to these sensitive questions.

12. Estimates of Annualized Burden Hours and Costs

A. The survey will take approximately 10 minutes to complete based on the results of pretesting. The survey instrument is identical for all types of respondents and takes approximately five minutes. It takes approximately five minutes to read the email and review the instructions. The total amount of burden per respondent is therefore 10 minutes.

There are four types of ABA workers: Board Certified Behavior Analysts (BCBA and BCBA-D), Board Certified Assistant Behavior Analysts (BCaBA), and Registered Behavior Technicians (RBT). In the table below, we have grouped together BCBAs, BCBA-Ds, and BCaBA because they are similar in education requirements and hourly wage. RBTs are listed separately. The number of respondents is proportional to the number of that type of credentialed worker in the total population of ABA workers (e.g., RBTs make up 64% of all credentialed ABA workers, therefore the number of respondents in the present study is 64% of the estimated 24,000 total respondents).

Type of Respondents	Form Name	No. of Respondents	No. of Responses per Respondent	Average Burden per Response (in hours)	Total Burden (in hours)
Board Certified Behavior Analysts (BCBA, BCBA-D, and BCaBA)	Survey	8,640	1	10/60	1,440
Registered Behavior Technicians (RBT)	Survey	15,360	1	10/60	2,560
Total					4,000

B. There are no standard occupational classification codes for applied behavior analysis workers. Therefore, the occupations listed in the burden costs table below are the categories under which applied behavior analysis workers are frequently listed. ‘Counselors, All Other’ was listed as the most commonly used classification for this population of workers in a report commissioned by the Behavior Analyst Certification Board [Burning Glass, 2015]. At the time of that report, the registered behavior technician certification did not exist. Therefore, it is unknown what code is typically used for this occupation. Psychiatric Technicians and Aides was selected for this population of workers as it is the most similar occupation. The hourly wage rates listed in the table below are from the Occupational Employment Statistics.

Type of Respondent	No. of Respondents	No. Responses per Respondent	Avg. Burden per Response (in hours)	Total Burden Hours	Hourly Wage Rate	Total Respondent Costs
Counselors, All Other	8,640	1	10/60	1,440	\$24.00	\$34,560.00
Psychiatric Technicians and Aides	15,360	1	10/60	2,560	\$16.00	\$40,960.00
Total						\$75,520.00

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

There will be no capital, operating, or maintenance costs to the respondents.

14. Annualized Cost to the Government

Personnel Role	Description	Period	Cost ¹
Co-Project Manager	PhD Research Psychologist 50% FTE @	12 months	\$59,302
Co-Project Manager	PhD Epidemiologist 50% FTE @	12 months	\$49,078
Total			\$108,380

Contract for Data Collection	\$3,000
Annualized Salary and Benefits	\$108,380
Total Annualized Cost to Government	\$111,380

15. Explanation for Program Changes or Adjustments

This is a new data/information collection.

16. Plans for Tabulation and Publication and Project Time Schedule

Activity	Time Schedule
Recruitment materials disseminated	1 month after OMB approval
Complete data collection	6 months after OMB approval
Analyses	3 months after OMB approval
Publication and dissemination	2 months after OMB approval

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 not exceptions to the certification.