

Data Management Plan for "Drug and Alcohol Crash Risk: A Case-Control Study [Supporting Datasets]" 20240120

Basic Information

0. Basic Information

0.01 Lead researcher, or lead staff name: Amy Berning

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0.04 Organization: Office of Behavioral Safety Research (BSR), National Highway Transportation Safety Administration (NHTSA), U.S. Department of Transportation

0.05 Other researchers: See cataloging record and reports for other authors

0.06 Title of Research Proposal/Project: Drug and Alcohol Crash Risk: A Case-Control Study

0.07 URL: <https://doi.org/10.21949/1529969>

0.08 This is an initial DMP or a revised DMP.

0.09 Today's date (YYYY-MM-DD): 2024-01-20

0.10 This DMP was created by Leighton L Christiansen <https://orcid.org/0000-0002-0543-4268>, Data Curator, leighton.christiansen@dot.gov. You may also contact the NTL Data Curator at NTLDataCurator@dot.gov

1. Data Description:

1.01) Dataset name: "Drug and Alcohol Crash Risk: A Case-Control Study [Supporting Datasets]"

1.02) This dataset supports the conclusions of the report "Drug and Alcohol Crash Risk: A Case-Control Study." The study used a "case-control" design to estimate the risk of crashes involving drivers using drugs, alcohol or both. Data was collected in Virginia Beach, Virginia, for 20 months. The study obtained biological measures on more than 3,000 crash drivers at the scenes of the crashes, and 6,000 control (comparison) drivers. Control drivers were recruited one week after the crashes at the same time, day of week, location, and direction of travel as the crash-involved drivers. Data included 10,221 breath samples, 9,285 oral fluid samples, and 1,764 blood samples. Oral fluid and blood samples were screened and confirmed for the presence of alcohol and drugs. The crash risk associated with alcohol and other drugs was estimated using odds ratios that indicate the probability of a crash occurring over the probability that such an event does not occur. If a variable (alcohol and/or drugs) is not associated with a crash, the odds ratio for that variable will be 1.00. A higher or lower number indicates a stronger relationship between the probability of a crash occurring and the presence of that variable (alcohol and/or drugs in the driver). Confidence intervals (CIs) of an odds ratio indicate the range in which the true value lies—with 95 percent confidence. Alcohol: Alcohol was the largest contributor to crash risk. The unadjusted crash risk estimates for alcohol indicated drivers with a breath alcohol concentrations (BrACs) of .05 grams per 210 liters (g/210L) are 2.05 times more likely to crash than drivers with no alcohol. For drivers with BrACs of .08 g/210L, the unadjusted relative risk of crashing is 3.98 times that of drivers with no alcohol. When adjusted for age and gender, drivers with BrACs of .05 g/210L are 2.07 times more likely to crash than drivers with no alcohol. The adjusted crash risk for drivers at .08 g/210L is 3.93 times that of drivers with no alcohol. Drugs: Unadjusted drug odds ratio estimates indicated a significant increase in crash risk. For the active ingredient in marijuana, delta-9-tetrahydrocannabinol (THC), this yielded an unadjusted odds ratio of 1.25. However, after adjusting for gender, age, race/ethnicity, and alcohol, there was no indication that any drug significantly contributed to crash risk. The adjusted odds ratios for THC were 1.00, 95 percent CI [.83, 1.22], indicating no increased or decreased crash risk. Odds ratios for antidepressants were .86, 95 percent CI [.56, 1.33]; narcotic analgesics were 1.17, 95% percent drugs as an overall category were .99, 95 percent CI [.84, 1.18], and prescription and over-the-counter medications were 1.02, 95 percent CI [.83, 1.26]. Alcohol and Drugs: Analyses found no statistically significant interaction effects when drivers were positive for both alcohol and drugs. Although initial analyses suggested that the combination of alcohol and other drugs were contributors to increased crash risk, additional analyses adjusting for other risk factors indicated no significant effect. When both alcohol and other drugs were consumed, alcohol alone was associated with crash risk.

These data support the results of the following publications available in this repository: Drug and Alcohol Crash Risk: A Case-Control Study <https://doi.org/10.21949/1525791>; and, Drug and Alcohol Crash Risk [Traffic Safety Facts]: Research Note <https://doi.org/10.21949/1525811>.

NTL staff has reviewed the data. While researchers gathered names, ages, and other demographic

information from participants, those sensitive data have either been excluded from the final dataset, anonymized, or pose only a small chance of re-identification. Further, while data collection took place over 20 months, the "Year" that any crash occurred is not revealed, further reducing re-identification risk. NTL staff feel the risk of re-identification of study participants from this dataset is low, but not zero. The .ZIP folder of datasets and supporting documentation is MB in size. The ZIP contains files in the following formats: .CSV files which can be opened with any text editor; .TXT files which can be opened with any text editor; .PDF files that can be opened with any PDF reader; .DOCX files that can be opened in Microsoft Word and some web-based programs; .SAV files which can be opened with IBM SPSS statistical software; .SAS and .sas7bdat files which can be opened with SAS statistical software; .XLSX files which can be opened with Microsoft Excel and other spreadsheet programs; and, .JSON files which can be opened with text editors or metadata editing programs.

1.03) Data was collected over 20 months. However, the Years are not disclosed, to help protect privacy. No updates

1.04) The data can provide long-term value by helping to mark the risk of alcohol use by drivers to cause crashes.

1.05) Data is fully accessible to the public.

1.06) The National Transportation Library is now responsible for the long-term preservation of the dataset. All responsibility for data content lies with NHTSA.

2. Standards Employed:

2.01) The data are available in the following formats: .CSV, .XLSX, .SAS, .SAV, and .DTA. .CSV is an open format. All others are proprietary.

2.02) The proprietary formats allow users to work in one of many current and ubiquitous statistical software programs: .XLSX version, opens with Microsoft Excel or other spreadsheet program; .SAV version, opens with IBM SPSS statistical software; .SAS version, opens with SAS statistical software; and, .DTA version, opens with Stata statistical software.

2.03) This is the final version of the data. If future updates or changes are needed, file name date and timestamps will be updated, as well as the README.txt document.

2.04) Documentation includes a Data Dictionary, a README.txt, this DMP, and the Methodology section of the report "Drug and Alcohol Crash Risk: A Case-Control Study".

2.05) This dataset is described using the DCAT-US Version 1.1 metadata schema in file NHTSA_BSR_DACRS_2016_METADATA_20240120_1200.json

3. Access Policies:

3.01) This data may be shared with the public.

3.02) NTL staff has reviewed the data. While researchers gathered names, ages, and other demographic information from participants, those sensitive data have either been excluded from the final dataset, anonymized, or pose only a small chance of re-identification. Further, while data collection took place over 20 months, the "Year" that any crash occurred is not revealed, further reducing re-identification risk. NTL staff feel the risk of re-identification of study participants from this dataset is low, but not zero.

3.03) There are few to no privacy, ethical, or confidentiality concerns raised from sharing this data.

3.04) Each crash and each vehicle were given a random identifier.

4. Re-Use, Redistribution, and Derivative Products Policies:

4.01) This data is managed by the National Transportation Library through agreement with the Office of Behavioral Safety Research (BSR) of the National Highway Transportation Safety Administration (NHTSA).

4.02) This data was transferred to NTL in 2023-07.

4.03) This data is in the public domain.

5. Archiving and Preservation Plans:

5.01) This dataset will be preserved by the National Transportation Library (NTL) in the Repository & Open Science Access Portal (ROSA P). The dataset landing page is at <https://doi.org/10.21949/1529970>

5.02) In order to protect digital information and data from loss, NTL employs the "3-2-1" backup rule. NTL

maintains:

- A) Three (3) copies of the electronic files
- B) Stored on two (2) different kinds of storage media
- C) With at least one (1) copy stored in a different geographic and geologic region.
- i) Currently, NTL maintains a copy of its repository content and metadata in the following locations:
 - (1) USDOT- managed Microsoft Azure cloud environment
 - (2) CDC Public Access Platform (Amazon Web Services cloud environment)
 - (3) Removable media (external drive)
 - (4) Backups on the USDOT-managed Microsoft Azure cloud environment are in the disaster recovery site, in a different geographical area than USDOT headquarters. Backups on the CDC Public Access Platform are in the disaster recovery (DR) site on the US West Coast, a different geographic area than CDC headquarters. The disaster recovery site is updated daily. All daily backups of the staging server and weekly backups of the production servers are kept for 45 days.

5.03) The NTL will preserve and share the data in perpetuity.

5.04) NTL mints DOIs for datasets. The DOI for this dataset is <https://doi.org/10.21949/1529970>

5.05) NTL's ROSA P fully meets the criteria outlined on the Guidelines for Evaluating Repositories for Conformance with the DOT Public Access Plan page <<https://doi.org/10.21949/1520563>>.

6. Policies Affecting this Data Management Plan

This data management plan was created to meet the requirements enumerated in the U.S. Department of Transportation's Plan to Increase Public Access to the Results of Federally-Funded Scientific Research Version 1.1 <<https://doi.org/10.21949/1520559>> and guidelines suggested by the DOT Public Access website <<https://doi.org/10.21949/1503647>>, in effect and current as of January 2024.

7. CHANGE LOG

2024-01-20: Original DMP written