

An Analysis of Property Type and Location Type Categories Created for NIBRS Dashboards

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The standardization of state crime reporting guidelines to the Federal Bureau of Investigation's (FBI) Uniform Crime Reporting (UCR) Program through the National Incident-Based Reporting System (NIBRS) is intended to provide comparable data on crime across states in order to aid law enforcement efforts and inform the public for research and planning purposes (USDOJ, 2021). The main advantages of NIBRS are touted as increasing the overall amount of crime-related data that is being collected and improving the ability to create nationwide estimations as compared to previous reporting methods (Berzofsky et al., 2022). NIBRS aims to do this by collecting incident element information about nearly all crime types, instead of a select few, and by collecting information about more individual elements of an incident than prior reporting methods (Berzofsky et al., 2022). NIBRS initially had optional state participation and the FBI continued to accept reports in previous formats until January 1, 2021 (BJS, 2022).

Despite initial goals, the failure of some reporting agencies to transition to the NIBRS has led to concerns about the generalizability of the data (Levin, Nola, & Perst, 2022). Part of the transition has included federal-level grants for state Statistical Analysis Centers (SACs) to utilize the NIBRS data in a variety of ways, including making the data more transparent and accessible (BJS, 2021). NIBRS Dashboards are just one of many ways in which reporting agencies can keep the public informed about crime trends, increase accessibility to crime information, and improve coordination and collaboration with community safety and victim advocacy groups (Levin, Nola, & Perst, 2022). However, the transition to NIBRS entails numerous challenges for the states,

which were faced with the task of waiting to implement NIBRS until a national standard had been developed, or forging ahead with limited information based on the practices of other states (USDOJ, 2021).

A NIBRS Manual was eventually developed and released well after most states had made the reporting transition (USDOJ, 2021). Despite its late arrival, the manual serves as a guideline for the creation, update, and use of state-level reporting (USDOJ, 2021). Likewise, states attempting to translate their NIBRS data into Dashboard displays for the public have been faced with the expensive and time-consuming task of determining what, and how, to display across a wide variety of data types (Appendix A). Dashboards are an increasingly popular way for governments to share highly complex data analytics with the public in a user-friendly way (Young & Kitchin, 2020). Dashboard formats can have quite a bit of variety but are typically distinguished from flat displays by the ability for end users to interact with the Dashboard in meaningful ways (Vázquez-Ingelmo, Garcia-Peñalvo, & Therón, 2019).

A Dashboard that displays a large amount of data without any categorical system, such as one that displays all the element types that are collected by NIBRS simultaneously on the screen, risks creating visuals that are overly complex and cumbersome to interpret (Vázquez-Ingelmo, Garcia-Peñalvo, & Therón, 2019). Such Dashboards may also fail to highlight meaningful trends, leading end users to consider the information as boring or unengaging, a plight that has plagued previous non-NIBRS Dashboards maintained by the state of Hawaii (Young & Kitchin, 2020). Dashboards that are found to be more challenging by the end user are less likely to be utilized and thus less likely to be utilized for their intended purpose (Vázquez-Ingelmo, Garcia-Peñalvo, & Therón, 2019). With no existing guidelines on how to analyze, group, or display NIBRS data, interstate differences exist in the types of data that are displayed on Dashboards, and exactly how those data are displayed, making it challenging for the public to

compare information between different states (Appendix A). A high level of inconsistency in NIBRS Dashboards could also make it more difficult for interstate collaboration on projects that utilize NIBRS-based information, which has been deemed a partial requirement for future SAC grant funds (JIRN, 2023).

Method

The purpose of this study is to determine areas of overlap and divergence between current NIBRS Dashboards in order to inform the updating of a Hawaii NIBRS Dashboard in best keeping with nationwide standards. To achieve this goal, a systematic review was done on state/territory-based NIBRS Dashboards during September 13-15, 2023. Keyword searches were done using Google for each of the 49 states and three territories. While all states outside of the target state (Hawaii) were included, territories were included when they had either an official territory website or a SAC website listed on the Justice Information Resource Network (JIRN) website. SACs help to collect analyze and distribute information about state-level criminal justice-related data but may not necessarily have their own Dashboards (JIRN, 2023). Searches included each state/territory along with the words “NIBRS Dashboard”. Searches that did not return relevant links within the first page of the results were redone with the state/territory and the word “NIBRS”. In instances where a NIBRS-based dashboard could still not be located, the name of the state/territory was searched along with “Beyond 20/20” and “Optimum Technology”. These two additional search terms were added to the original search protocol due to the prevalence of initial searches showing that states who worked with a NIBRS Dashboard vendor were primarily working with one of those two companies.

Ultimately, 12 states/territories were found to be utilizing Beyond 20/20 as their NIBRS Dashboard vendor, and seven states/territories were found to be utilizing Optimum Technology as their NIBRS Dashboard vendor. An additional 16 states/territories appeared to be using an in-

house solution or an unidentified vendor for their Dashboards, with Tableau, MS Power BI, and SAS Visuals being the most commonly recognizable modes, in order of prevalence. While each of these methods had their pros and cons from a user perspective, vendor-based Dashboards proved to be the easiest to navigate due to their increased consistency and typically greater number of displays per page. Beyond 20/20 provides a combination of data storage, analysis, and display features with the presentation of the data tables used to create each visual (Beyond 20/20, 2022). This allows their visual displays to showcase only those items that were most relevant to each visual while still permitting the user to readily locate drill-down information, which was essential for this project (Beyond 20/20, 2022). Optimum Technology has a wide number of potential services and products for their clients, including multiple options for storing and sharing complex data (Optimum Technology, 2022). The drawback of their displays seems to be that they are more straightforward and less analytical, which may have impacted their ability to display certain kinds of data. Perhaps because of the variety in the types of services/products, there was substantially less consistency in state/territory NIBRS Dashboards from Optimum Technology, which made it more challenging to locate the information necessary for this project.

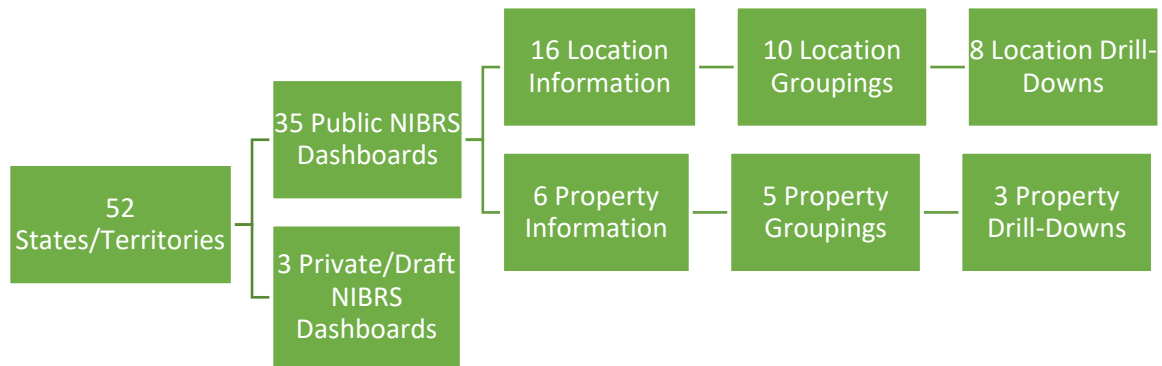
Study Design

The 35 states/territories with readily locatable, publicly available NIBRS Dashboards were inspected to attempt to locate information about property type categories and location type categories. When required, pages/tabs/search features within the Dashboard front page were used to locate, in order of search attempt, a general overview page, a crime against property page, and a crime against persons page. Each of these pages, when available, was visually inspected for information about locations and/or property. If no information about property was located, this was recorded and no additional searches for property categories for

that state were conducted. If information about locations was discovered, an attempt was made to find at least two other instances of location information being shared on that Dashboard. If location type category information was found in multiple places on a Dashboard, then those visuals were compared to ensure that each followed identical rules for displaying the location type category information. The search for location/property information was discontinued if the overview page, crime against property page, crime against persons page, and three additional pages including all associated tabs had been viewed without locating the category information. In the rare instances where states had more than one NIBRS Dashboard, the two most likely to contain location/property information were visually searched using the above strategy. While states most frequently have one or no NIBRS Dashboard, there are some states that have multiple, as many as four, distinct NIBRS Dashboards.

Using the same method, six states/territories were found to have a publicly available NIBRS Dashboard that contained property information. Of those six, there were five states/territories that grouped the property information. Of those five, only three (Mississippi, New Hampshire, and Wisconsin) contained drill-down information to determine the makeup of the property categories. There were 16 states/territories that contained location information on their publicly available NIBRS Dashboard. Of those 16, there were 10 states/territories that grouped the location information. Of those 10, there were eight (Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee) states/territories that provided sufficient drill-down information for analysis.

Figure 1
Inclusion Criteria for State-Based NIBRS Dashboards



Note: Hawaii was excluded due to the purpose of the study. Territories were only considered for inclusion if they were listed on the JIRN website as having a SAC.

Procedure

For all of the states/territories that were investigated, a master Excel spreadsheet was created with the names, websites, and findings relevant to the inclusion criteria. For each of the states/territories that met the inclusion criteria, an additional Excel worksheet page was created for their property and/or location information, as relevant. Each worksheet contains the category headings used by the state for information type, along with the drill-down information for each heading. Category and drill-down information was then compared. In instances where there is an overlap of category and/or drill-down information between two or more property-based worksheets, or between four or more location-based worksheets, the results are included in the tables below.

Results

Please note that category and drill-down orders were not included as part of this review. All states/territories that were included in this review had their categories and drill-downs initially displayed by count going from highest to lowest, making display order irrelevant.

Property Types

Mississippi and New Hampshire utilized the same grouping categories. Both states had the category of “Clothes/Fur/Personal Possessions” with drilldowns of “Clothes/Fur” and “Purses/Handbags/Wallets”. Both states had the category of “Financial Instruments Except Money” with drilldowns of “Negotiable Instruments”, “Credit/Debit Cards”, and “Non-Negotiable Instruments”. And finally, both states had the category of “Drug/Alcohol” with the drilldowns of “Drugs/Narcotics”, “Alcohol”, and “Drug/Narcotic Equipment”. There were no further congruencies of two or more states within the property category groupings.

Location Types

Each of the eight Dashboards with location type groupings were inspected for congruence of category titles. Among these eight Dashboards, there was a range of 6-20 category titles that were used for their location-based information. The Dashboard with 20 category titles was an outlier, and excluding it would result in an average of 8.1 category titles, while including it would result in an average of 9.3 category titles. Note that visual displays on the Dashboards typically only represent the top “x” (e.g., six) of each location by count, depending on which display within the Dashboard was being inspected. Category lists with drilldowns were found within the data tables that contained a hover-over feature to learn more about the corresponding visuals.

Table 1*Location Category Titles for State-Based NIBRS Dashboards*

<i>Category Group Title</i>	<i>Use</i>	<i>Count</i>
Residence/Home	Stand-Alone	8
Other/Unknown	Stand-Alone	8
Commercial	Drilldowns	8
Government/Public Building and Other	Drilldowns	7
Road/Parking/Camps	Drilldowns	7
Construction/Industrial/Farm	Drilldowns	6
Educational Facility	Drilldowns	6
Abandoned/Condemned Structure	Stand-Alone	5
Cyberspace	Stand-Alone	4

Note: Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee public NIBRS-based Dashboards were used for this count.

Of the eight states whose NIBRS Dashboards were inspected, three of the Dashboards (Massachusetts, Mississippi, and New Hampshire) utilized all of the category group titles shown in total and excluded any other categories. When the above category group titles were not utilized, it was because the state used an “Other” category group title, created multiple additional category groups, and/or listed the items contained within that group individually as standalone categories.

Table 2*Drill-Down Items for Commercial Category Group*

<i>Location Item Title</i>	<i>Count</i>	<i>Location Item Title</i>	<i>Count</i>
Commercial Office Building	8	Bar/Nightclub	6
Convenience Store	8	Bank/Savings and Loan	6
Department/Discount Store	7	Shopping Mall	6
Grocery/Supermarket	7	Rental Storage Facility	6
Specialty Store	7	Restaurant	6
Hotel/Motel	7	Liquor Store	6
Service/Gas Station	7	Air/Bus/Train Terminal	5
Auto Dealer New/Used	7	ATM Separate from a Bank	5
Gambling Facility/Casino/Race Track	6	Drug/Store/DoctorsOffice/Hospital	5

Note: Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee public NIBRS-based Dashboards were used for this count.

When the items above were not included in the Commercial category group, they were typically contained within an “Other” category group, or were placed into smaller category groups, or were listed individually as standalone categories.

Table 3

Drill-Down Items for Government/Public Building and Other Category Group

<i>Location Item Title</i>	<i>Count</i>	<i>Location Item Title</i>	<i>Count</i>
Church/Synagogue/Temple/Mosque	7	Shelters-Mission/Homeless	6
Government/Public Building	7	Military Installation	5
Park/Playground	6	Amusement Park	4
Community Center	6	Arena/Stadium/Fairgrounds/Coliseum	4
Jail/Prison/Penitentiary/Correctional Facility	6		

Note: Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee public NIBRS-based Dashboards were used for this count.

When the items above were not included in the Commercial category group, they were typically contained within an “Other” category group, or were placed into smaller category groups, or were listed individually as standalone categories.

Table 4

Drill-Down Items for Road/Parking/Camps Category Group

<i>Location Item Title</i>	<i>Count</i>	<i>Location Item Title</i>	<i>Count</i>
Highway/Road/Alley/Street/Sidewalk	7	Parking/Drop Lot/Garage	7
Field/Woods/Waterways/Camps	7	Rest Area	7

Note: Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee public NIBRS-based Dashboards were used for this count.

When the items above were not included in the Commercial category group, they were typically contained within an “Other” category group, or were placed into smaller category groups, or were listed individually as standalone categories.

Table 5

Drill-Down Items for Construction/Industrial/Farm Category Group

<i>Location Item Title</i>	<i>Count</i>
Construction Site	6
Industrial Site	5
Farm Facility	6

Note: Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee public NIBRS-based Dashboards were used for this count.

When the items above were not included in the Commercial category group, they were typically contained within an “Other” category group, or were listed individually as standalone categories.

Table 6

Drill-Down Items for Educational Facility Category Group

<i>Location Item Title</i>	<i>Count</i>	<i>Location Item Title</i>	<i>Count</i>
School-Elementary/Secondary	6	School/College (Historical)	6
School-College/University	6	Daycare Facility	6

Note: Arizona, Colorado, Connecticut, Massachusetts, Mississippi, Missouri, New Hampshire, and Tennessee public NIBRS-based Dashboards were used for this count.

When the items above were not included in the Commercial category group, they were contained within an “Other” category group. The “Other” category group for these items was only used for states that did not have an Educational Facility group.

Discussion

Property Types

The overwhelming majority of states that have a publicly accessible NIBRS Dashboard do not currently make property information readily locatable. Of those states that do provide property information, all but one state provides groupings of the property types. This information may be useful in assigning property-based items to categories in order to increase inter-state congruence for later research and/or collaboration. The assignment choices for grouping individual data elements into larger categories could also be helpful for states that are considering their own categorization schemes. Additional research should consider the potential applications of including a property category within a NIBRS Dashboard.

Location Types

While most states that have a NIBRS Dashboard do not display location-based data, when they do display such data, they are slightly more likely than not to group the individual data elements into categories. For elements within the categories, there were no instances of clear division wherein an equal number of states assigned the element to one category while an equal number assigned the element to a second category. This indicates that while there may be some variation in how they choose to categorize specific elements, there are no elements that are highly decisive. Among states that both display and group location-based data, there are numerous apparent trends. Because these trends are relatively strong among the study group, they may be particularly useful to states interested in designing location-based category visuals for Dashboard displays. The eight Dashboards in question used a similar number of categories, with nine specific frequently appearing titles. Within each of these category titles, there is a good deal of consistency in which ones become standalone categories and which are used for a drill-down of category items. Within each category that offers a drill-down, there is a good deal of consistency in the items that are typically included within that category.

Limitations

This study utilized a relatively small population which limits its ability to inform Uniform Crime Reporting programs of state-wide consistencies and inconsistencies in displaying NIBRS-based Dashboards with property and location information. The timeframe for this project was necessarily rushed to allow the Hawaii NIBRS Dashboard to be made public in a timely manner, and without unnecessarily delaying edits to the property and location category displays. Because this research was time-limited and occurred during a period where portions of the JIRN website were unavailable, it was impossible to locate and fully investigate all the state-level NIBRS Dashboards. The inclusion criteria for this project included that a state or which could be

hosting a NIBRS Dashboard (FBI, 2023). Other territories that would meet the updated inclusion criteria include American Samoa, the Bureau of Indian Affairs, Guam, and the Virgin Islands (FBI, 2023). Additional research should allow sufficient time and resources to locate, inspect, and compare Dashboards from each state and territory to glean a better understanding of interstate, and perhaps, national, trends. While the current sample size was small enough to permit manual counting, further research should consider utilizing qualitative software to track and compare changes between categories.

Recommendations

Information on up-to-date Dashboards for all states should be readily accessible on websites that act as a central hub for NIBRS and other UCR-related information. The creation of national guidelines or recommendations on the display and grouping of NIBRS categories within Dashboards could provide adequate structure to Dashboard creation and editing, with flexibility for individual states to make minor changes based on their unique needs. Current NIBRS Dashboards have some degree of interstate consistency, which could serve as a solid starting point for the creation of national guidelines/recommendations on grouping NIBRS information. Please refer to the individually labeled tables within this document for information on specific items and/or category titles to enhance interstate consistency.

Conclusion

Most states now have a NIBRS-based Dashboard for displaying crime data to the public. While there are inconsistencies between the types of data items and grouping structures that are used to display NIBRS data, there are overlaps in some of the organizational structures used for specific categories, such as property types and location types. Location-based information is viewable on public NIBRS Dashboards almost as often as not, and when provided is most often

categorized. Having a NIBRS Dashboard that communicates information to the public about important crime elements can help keep the community informed, facilitate interstate research about crime, and increase the accessibility and transparency of crime-related data for the general population. Reviewing the publicly available NIBRS Dashboards for different states reveals interstate overlaps in data display organizational features which can be used to inform states hoping to create a NIBRS Dashboard or update their existing Dashboard. Providing NIBRS Dashboards that have similar organizational features makes it easier to find and compare data elements between individual states. This kind of congruence may be especially useful as states are being encouraged to move towards interstate collaboration on criminal justice research.

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Appendix A

State	Website	Locations Displayed	Locations Grouped	Property Displayed	Property Grouped
Alabama	https://crime.alabama.gov/Data/TwentyTwentyStatewideCrime	No	No	No	No
Alaska	https://www.uaa.alaska.edu/academics/college-of-health/departments/justice-center/alaska-justice-information-center/crime-dashboards.cshtml	No	No	No	No
Arizona	https://azcrimestatistics.azdps.gov/tops	Yes	Yes	No	No
Arkansas	https://www.dps.arkansas.gov/dashboard/	No	No	No	No
Colorado	https://coloradocrimestats.state.co.us/tops/	Yes	Yes	No	No
Connecticut	https://ct.beyond2020.com/ct_tops	Yes	Yes	No	No
Delaware	https://data.delaware.gov/Public-Safety/State-of-Delaware-NIBRS-Crime-Report-Totals-by-Jur/&njrfz7r	No	No	No	No
Florida	https://www.fdle.state.fl.us/CJAB/UCR/Annual-Reports/FIBRS	No	No	No	No
Idaho	https://nibrs.isp.idaho.gov/CrimeInIdaho	Yes	No	Yes	No
Illinois	https://ilucr.nibrs.com/	No	No	No	No
Iowa	https://icrime.dps.state.ia.us/CrimeInIowa	No	No	No	No
Louisiana	https://doc.louisiana.gov/demographic-dashboard/	No	No	No	No
Massachusetts	https://ma.beyond2020.com/ma_tops	Yes	Yes	No	No
Minnesota	https://dps.mn.gov/divisions/ojp/statistical-analysis-center/Pages/Criminal-Justice-Dashboards.aspx	No	No	No	No
Mississippi	https://mscrimestats.dps.ms.gov/tops	Yes	Yes	Yes	Yes
Missouri	https://showmecrime.mo.gov/CrimeReporting/CrimeReportingTOPS.html	Yes	Yes	No	No

State	Website	Locations Displayed	Locations Grouped	Property Displayed	Property Grouped
Montana	https://mbcc.mt.gov/Data/Montana-Reports/Crime-Dashboards	No	No	No	No
Nevada	https://nevadacrimestats.nv.gov/tops/	No	No	Yes	Yes
New Hampshire	https://crimestats.dos.nh.gov/tops	Yes	Yes	Yes	Yes
New Jersey	https://public.tableau.com/app/profile/nj.office.of.justice.data/viz/CriminalJusticeDataDashboard_16859717734230/Intro	No	No	No	No
New York	https://www.criminaljustice.ny.gov/crimnet/ojsa/tableau_index_crime.htm	No	No	No	No
North Carolina	https://ncreports.ondemand.sas.com/SASVisualAnalytics/	Partial	Partial	No	No
North Dakota	https://crimestats.nd.gov/tops/	Yes	No	No	No
Ohio	https://dpsoibrspext.azurewebsites.net/	No	No	No	No
Oregon	https://www.oregon.gov/osp/Pages/Uniform-Crime-Reporting-Data.aspx	No	No	No	No
Pennsylvania	https://www.ucr.pa.gov/PAUCRSPUBLIC/Home/Index	No	No	Yes	Partial
Rhode Island	https://riucr.nibrs.com/ReportsIndex/List	Yes	No	Yes	No
South Carolina	https://beyond2020.sled.sc.gov/tops/	Yes	No	No	No
South Dakota	https://sdcrime.nibrs.com/Home/Index	Yes	No	No	No
Tennessee	https://crimeinsight.tbi.tn.gov/tops	Yes	Yes	No	No
Texas	https://txucr.nibrs.com/	Yes	No	No	No
Utah	https://bci.utah.gov/crime-in-utah-dashboards/	No	No	No	No
Washington	https://sac.ofm.wa.gov/sites/default/files/public/cjdb/nibrs.html	No	No	No	No
Wisconsin	https://www.doj.state.wi.us/dles/bjia/wibrs-data	Yes	Partial	No	No
Wyoming	https://crimestats.wyo.gov/tops/	No	No	No	No

Note: States/Territories for whom no publicly available NIBRS Dashboard could be located include California, Georgia, Indiana, Kansas, Kentucky, Maine, Maryland, Michigan, Nebraska, New Mexico, Oklahoma, Vermont, Virginia, West Virginia, DC, Puerto Rico, Northern Mariana Islands.