

The Police Shooting Incident “SHOT” Database System

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Abstract - Gun violence is a serious issue in the United States. Over recent years, statistical data has revealed that there is a significant increase in the number of police shootings. Basic information is currently kept for police shooting each year; however, there currently does not exist an application that allows the input, querying, and analysis of the extensive information associated with police shootings in the United States. This work is directed towards establishing a national database system of police shooting incidents.

I. INTRODUCTION

The need for accurate data on police shootings has never been greater: During the first five months of 2015, 385 people have been shot by police nationwide. This is twice the rate of police shootings over the past decade, as tallied by the Federal government, although many experienced professionals believe that the Federal government’s count is inaccurate [1].

Many experts feel that the only way to reduce the number of these incidents is to provide an accurate picture of why they are happening. “These shootings are grossly under-reported,” said Jim Bueermann, a former police chief and president of the Washington-based Police Foundation, a nonprofit organization dedicated to improving law enforcement. “We are never going to reduce the number of police shootings if we don’t begin to accurately track this information “[2].

There is a lack of accurate data collection among government agencies concerning police shootings. Various police departments, the front line of reported police shootings, do not keep up to date, accurate, and detailed information about local and national police shootings. A 2012 report by the Massachusetts State Police Use of Force Committee included a graph that indicated that the Massachusetts state police did not discharge their weapons at all that year; however, the

introduction to that report stated that Massachusetts state police officers discharged their weapons a total of four times that year [1].

II. RATIONAL

The SHOT Database System will provide an answer to inconsistencies in reported police shootings and appropriately track and monitor shootings as they appear. Utilizing a show database will also allow individuals to query the system in order to find out specific information about each incident. The query system could then be used to identify trends about each shooting incident and provide accurate statistics to help solve the unanswered increase in police shootings. Similar statistics have been in place with the Arrest-Related Deaths (ARD) program, provided by The Bureau of Justice Statistics (BJS). The problem with the BJS report is that it does not only monitor police shootings. ARD is defined as “an annual national census of persons who died either during the process of arrest or while in the custody of state or local law enforcement personnel. The ARD program collects data on civilian deaths caused by any use of force by state or local law enforcement personnel as well as those not directly related to actions of law enforcement, such as deaths attributed to suicide, intoxication, accidental injury, and illness or natural causes” [5].

In this instance “arrest-related” refers to all occurrences associated with events/actions that happen when a police officer detains an individual. More specifically “all juvenile and adult deaths of criminal suspects and noncriminal individuals attributed to events that occurred while the decedent either attempted to elude police during the course of apprehension or while in the custody of law enforcement are reportable to the ARD program”.[5] ARD does not apply to bystanders, hostages, fatalities amongst law enforcement officials, criminals killed prior

to police arrival and individuals killed in a vehicle without direct force from the police .

This program, although valid, does not fit the needs of strictly police shootings. In addition, the ARD was not a query oriented database, so trends would be more difficult to identify. Data collection for this program also stopped in late 2009 [5].

III. METHODS

Last semester (Fall 2015), construction of the SHOT Database system began. The following features were added to the system:

- Database constructed
- Function to create a new incident
- Function to search on incidents based on the incident name.
- Function to edit and delete incidents

This semester (Spring 2016), the application will be completed, by adding the following functionality:

- Adding the database maintenance feature to perform add, update, and delete operations on the many supporting database tables.
- Add security to the application to require user to login to the appliaiton, and a new user management function to add, update or delete users as well as specify which function they will have access to.
- Add the report function that will allow a user to produce several, to be determined reports bases on several filtering criteria.
- A one time load of previously collected incidents that are currently in a spreadsheet to the application database.

IV. FUNCTIONALITY

The final SHOT Database system will consist of the following functionality:

Security

Users of the application need to have the ability to login to the application. There will be an administrator to manage the users of the application such as adding, editing, and deleting users that can login. Adding this security feature will provide integrity of the data entered, insuring that only users with access can edit and update the existing data entries. *Figure 4.1* below shows the opening screen when you logon to the current database.



Figure 4.1: Opening Login Screen for SHOT Database

New Incident

The application will provide a way for users to input new shooting incidents. All fields such as, “Location” and “Location Details” will be selected from a drop down list box. This will give users to convenience of not having to hard type in these entries. A screenshot of the “add new incident” feature in the database is shown in *Figure 4.2* below.

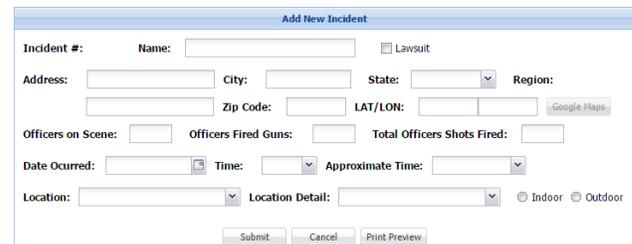


Figure 4.2: Add New Incident

After the users have entered their desired information to add a new incident, they will click the submit button to log their new entry. If they have neglected to enter a required field or entered information incorrectly, an error message will be displayed as shown below in *Figure 4.3*.

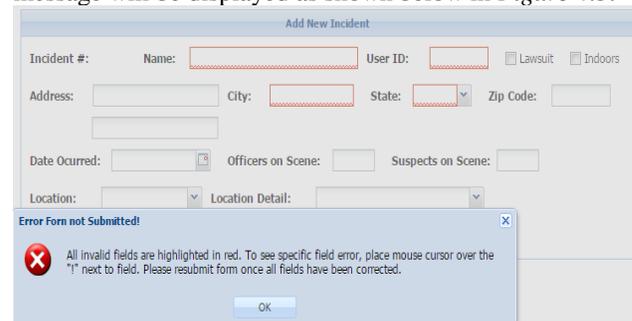


Figure 4.3: Incorrect Field Error Message

The user can also choose to see a print preview of the incident by clicking “Print Preview”. Once a new incident has been added, a table structure with three separate tabs will become visible near the bottom of the screen. This window will allow users to add one or more sources, officers, or suspects for the incident that was recently added as shown below in *Figure 4.4*.

Figure 4.4: Add More Sources to the Added Incident

For each of the tabs, you can add, edit, or delete a source, officer, or suspect. Figure 4.5 below, shows an example of the view to add or edit a suspect.

Figure 4.5: “Edit Incident” Feature in the Database

Another added feature in the database is the LAT/LON section in the “Add New Incident” tab. The user can enter the exact latitude and longitude of the incident. When the user enters both accurate coordinates, the Google Maps button will become available that the user can click on. When clicked, the user will see a Google Maps screen pop up of the exact location of the incident on a map. Adding the Google Maps feature to the application assists the user in identifying and recalling the incident, along with other key information. See *Figures 4.6, 4.7* below for an example process.

LAT/LON:

Figure 4.6: Example Coordinates

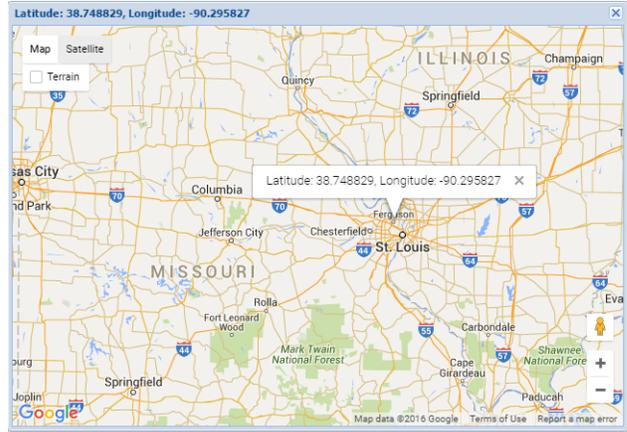


Figure 4.7: Google Maps Results When Clicked

Edit Incident

Incidents are typically built from multiple sources. Shortly after an incident occurs, a number of press articles will come out to the public. A user can create a new incident and add the information from the available sources. As time goes on, further details may emerge prompting more articles after the incident. Users need a way to update the incident that has already been created with new details. To update incidents, users will click the “Update/Delete” menu button. From there, they will have the ability to search on all incidents that have been previously entered into the system. Once they enter a search term in the “Search Name” textbox and click on the search button, a list of all incidents with a name that matches the search pattern will be displayed. The user can then edit or delete that incident, shown below in *Figure 4.8*.

Name	Date	City	State
The Miami Shooting	5/2/2013	Miami	Florida
The Bronx Shooting	4/2/2013	New York	New York
Shooting in Ramsey	5/18/2013	Ramsey	New Jersey
Jersey City Shooting	1/2/2013	Jersey City	New Jersey
The Orlando Shooting	5/3/2013	Orlando	Florida
The Austin Shooting	3/2/2013	Austin	Texas
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida
The Miami Shooting	5/2/2013	Miami	Florida

Figure 4.8: Existing Incidents in the Database.

The views/pages that are used to edit an incident are the same as those used to add an incident, except that all values will be pre-populated on the screens.

Reports

By choosing the “Reports” tab on the home menu, the user can enter information into the SHOT database, and generate a report shown in *Figure 4.9* below.

Figure 4.9: Generate Report Screen

The top fields and columns are information the user can enter into order to generate a quick report. In order to get reports already created by the database, the user can click the dropdown option at the bottom that reads “Reports”. This will open options for the user to choose which report he/she would like to view. The options for the reports are listed below

- Race of Subject (Pie Chart)
- Race of Officer (Pie Chart)
- Incidents by Year (Bar Chart)
- Incidents by Location Detail (Grid Report)
- Incidents by State (Grid Report)
- Incidents by Location (Grid Report)
- Incidents by Officer Assignment (Pie Chart)
- Incidents by Region (Pie Chart)
- Incidents by Officer Experience Cluster (Pie Chart)
- Incidents by Approximate Time (Pie Chart)
- Incidents by Officer Department Type (Pie Chart)
- Incidents by Officer Status (Pie Chart)
- Incidents by Subject Mental State (Pie Chart)
- Incidents by Subject Weapon Used (Pie Chart)
- Incidents by Subject Aggression Type (Pie Chart)

Figure 4.10 below shows an example if the user chooses “Incidents by Approximate Time”.

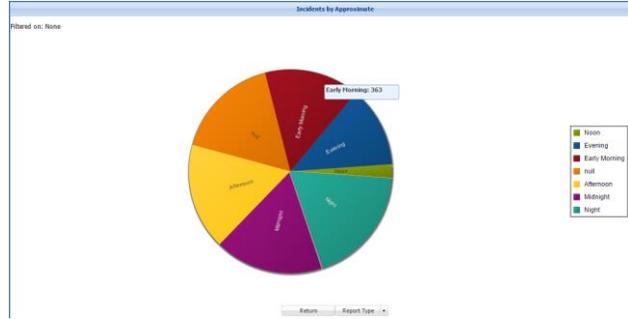


Figure 4.10: Incidents by Approximate Time Report.

To make it more user friendly, when the user highlights over a section of the chart, the user can see the numerical value associated with the section. The database also allows the user to return to the previous section, simply by clicking the “Return” button at the bottom of the screen. The user can also change the type of graph he/she would like to view at the bottom of the page, using the drop down menu. The user can choose the pie chart, grid report, or bar chart. *Figure 4.11* below, shows an example of the user choosing to view a bar graph.

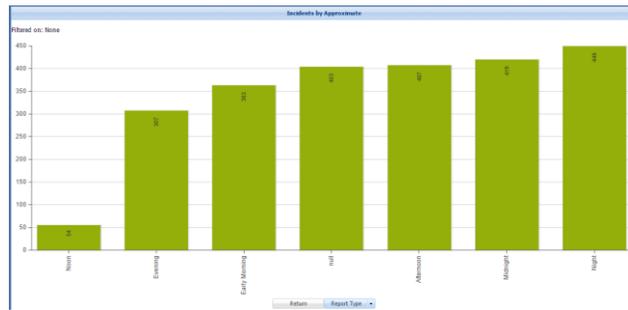


Figure 4.11: Bar Chart Incidents by Approximate Time

Although not in the reports tab, the home screen of the SHOT application is shown in *Figure 4.12* below. As incidents occur and more data enters the database, the statistic charts will continue to update accurately in order to give the user a clear overview of quick information the database currently holds. Not only is this information easily accessible at the home page, but it can easily be sorted by clicking on the top bar of the specific chart the user is looking to view. Currently, the home page shows the:

- Total number of shootings
- Shootings this year
- Death/Injury
- Suspect gender percentage
- Top 5 cities and states per incidents
- Office race percentage

- Suspect race percentage
- Top 5 police departments with the most incidents



Figure 4.12: Home Screen Statistics

Query Incidents

A facility will be provided for users or a delegated administrator to manage all the supporting tables, such as Race, Location, Newspapers, etc., that are used to populate the drop down list boxes when adding/editing incidents, sources, officers, or suspects. Users will have the ability to add, edit, or delete rows in provided tables. Deletes will not be accepted by the application if the value deleted is used in a row in belonging to another table to maintain referential integrity. Below, show examples of edit screen of sources, adding a new source, and the addition, edition, or deletion of a subject screen in Figures 4.13, 4.14, and 4.15 respectively.

Edit Source

Title: Author:

Date Written: Newspaper:

Link: Type:

Abstract:

Figure 4.13 Example Edit Screen of Sources

Setup New Source

Title: Author:

Date Written: Newspaper:

Link: Type:

Abstract:

Figure 4.14: Example of Adding a New Source

Incident Subjects:

Name	Gender	Race	Fatality	Weapon Type	Aggression
Byron Logan	M	Black	true	FIREARM	FIREGUN

Figure 4.15: Example of Add, Edit, or Delete a Subject

The users of the database need to a way to easily find information in the database. The SHOT application has a tab called “Query Incidents” as shown below in Figure 4.16.

Existing Incidents

Name Region City State ZIP From To Subject Search

Name	Date	City	State
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Figure 4.16: Query Incidents Screen

In the Query Incidents function, the user can type a search into the search name field. The application is able to search by:

- City (textbox) can be partial match
- Subject Name (textbox) can be partial match
- Incident keywords

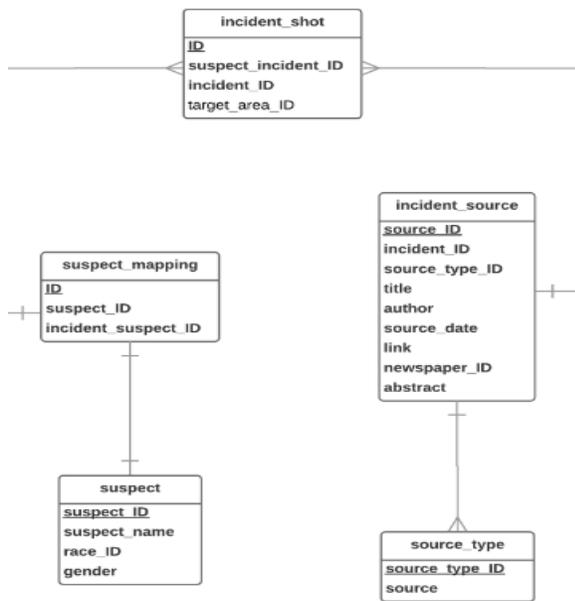


Figure 5.2: Database ERP diagram.

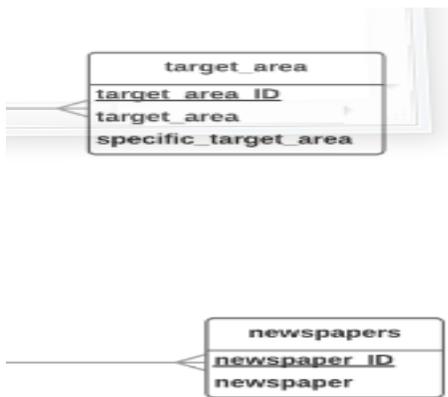


Figure 5.3: Database ERP Diagram

VI. PHASES

Phase 1 will deliver a functioning system with a database that will allow a user to add, query, edit, or delete an incident. This is what team 6 has completed during the fall, 2015 semester.

Phase 2 will add database maintenance and reporting functions to the system, as well as login and user maintenance functionality and load previous collected data from the spreadsheet by writing a program. While currently in Phase 2, the SHOT application has added to the opening home screen, by giving overall main statistics that are logged in the application. To see an example see *Figure 4.13*. The application has also added a Google Maps feature where the user can enter a latitude and longitude and a Google Map will pop up on the screen where the user can see the exact location. See *Figures 4.6 and 4.7* for examples

VII. FUTURE APPLICATION CHANGES

One of the future changes to the application would be to make the “Query Incidents” tab more user friendly. Currently when the user views a specific incident, he/she has to return to the opening screen without their previous search results. A future feature could be to bring the user back to the previous search results before they clicked on a specific incident.

Another feature could be to add additional security to the “Query Incidents” portion and only allow users to access the query function if they have query view or query update access. If they have query view access, then they will only be able to view the details of an incident. (select an incident from the grid and click view). If they have query update access then they will see a view, update, and delete button and can do any of these functions.

A print feature should be added when the user enters a specific report or when they chose one of the auto generated reports from the drop down menu. A feature similar to the one available in the “Query Incidents” and “Edit Incidents” tab.

Another feature can be on the Add Subject popup page (that can be accessed when adding a new subject through the Incident Subject tab and through Database Maintenance), add the following controls: Note: it would not be mandatory to add an image of the subject.

- An image uploaded to find the image path on your PC and a button to start the upload.
- A textbox to enter the source of the image.
- A date picker to select the date of the image.
- A small Image View to display the image after it is uploaded.

- On the Incident Subject tab, add a button that is enabled only if an image of the subject was uploaded. If the user clicks the button then a popup page will retrieve the image of the subject from the SHOT database and display it for the user. The popup page must have a close button.
- Add the fields needed to hold the image information to the incident_suspect database table. BLOB column.

In order to make the database as detailed as possible, the application should have a number of added fields. When a user views an incident, along with the details there should be an option for a brief summary of the events from either the source of the incident or administrator of the application. The application could also have additional variables for the officers and the subject. See *Chart 7.1* below for possible additional variables.

Officer Variables	Suspect Variables
Gender (M/F/Not Indicated)	Age (Numerical)
Race (White, Black, Asian, etc.)	Age Group (Numerical)
Experience (Years)	Mental State (Stable, Ill, Depressed, etc)
Experience in Group (Years)	Use of Vehicle (Yes/No)
Officer-Status (On-Duty/off)	Car Chase (Yes/No)
Officer-Fate (Injured/Killed, etc)	Foot Chase (Yes/No)
Officer Assignment (Undercover, State Trooper, etc)	Gang Affiliation (Yes/No)
Outside Agency Assistance (Yes/No)	Suspect-Fate (Injured/Killed, etc)

Chart 7.1: Future Additional Variables

In addition to the Officer and Suspect variables, the Incident could also use some added fields. Some of which including: season, target area, total rounds fired, and total rounds hit.

VIII. CONCLUSION

The SHOT database and its members have now completed Phase 2 of the application. During the Spring 2016 semester, the SHOT database has seen tremendous improvements and changes in order to make this application as effective as possible. Some of the main improvements are seen in the list below:

- Security to the home screen
- Redesign of Query Incidents
- Google Maps Feature
- Print Preview Feature
- Fixed Reports
- User Generated Reports
- Home Screen Database Charts
- Imported Database Data from Excel
- User Friendly “Return” button

Although the application has gone through an extensive makeover, there is still room for many improvements for a continuation of the program. This capstone project should be continued next semester in order to make the SHOT Database as effective as possible and to help track the amount Police Shootings per year. The features that the database holds such as the reports functions and easy querying methods, makes this database crucial for America and a must have for any police agency. The database will be extremely critical for solving the problem of escalated Police shootings that could potentially save lives.

IX. REFERENCES

- [1] "Government Fails to Track Data about Police Shootings." RSS. N.p., 15 Feb. 2014. Web. 17 Apr. 2016. <<http://www.baystateexaminer.com/articles/government-fails-track-data-police-shootings>>., Retrieved on September 2015.
- [2] Kimberly Kindy, and reported by Julie Tate, Jennifer Jenkins, Steven Rich, Keith L. Alexander and Wesley,” Fatal police shootings in 2015 approaching 400”, May 30, 2015, Retrieved on Oct 17, 2015.
- [3] Hasan Arslan, and Daniel Farkas, “SHOT: Developing a Database for Police Shooting Incidents in the United States”, Retrieved on Sep 16, 2015
- [4] Jones, C.D., A.B. Smith, and E.F. Roberts, *Book Title*, Publisher, Location, Date.
- [5] Duren Banks, Lance Couzens, Caroline Blanton, Devon Cribb “Arrest-Related Deaths Program Assessment”, Bureau of Justice Statistics, March 2015, <http://www.bjs.gov/content/pub/pdf/ardpatr.pdf>, Accessed: November 2015.