International Journal Of

Recent Scientific Research

ISSN: 0976-3031

Volume: 7(1) January -2016

WEB AND SMS BASED GEOGRAPHIC INFORMATION SYSTEM TO MONITOR BURGLARY IN A SAMPLE URBAN CENTRE IN TAMIL NADU

Priya P., Anand P.H and Thirumalai P

THE OFFICIAL PUBLICATION OF
INTERNATIONAL JOURNAL OF RECENT SCIENTIFIC RESEARCH (IJRSR)
http://www.recentscientific.com/ recentscientific@gmail.com

ISSN: 0976-3031

Available Online at http://www.recentscientific.com

International Journal of Recent Scientific Research
Vol. 7, Issue, 1, pp. 8414-8419, January, 2016

International Journal of Recent Scientific Research

RESEARCH ARTICLE

WEB AND SMS BASED GEOGRAPHIC INFORMATION SYSTEM TO MONITOR BURGLARY IN A SAMPLE URBAN CENTRE IN TAMIL NADU

Priya P[1]., Anand P.H[2] and Thirumalai P[3]

[1,2,3]Department of Geography, Government Arts College (Autonomous), Kumbakonam, TamilNadu, India

ARTICLE INFO

Article History:

Received 05th October, 2015
Received in revised form 08th November, 2015
Accepted 10th December, 2015
Published online 28st January, 2016

Key words:

Burgalary, urban crime, public housing, Web-based

ABSTRACT

Introduction: Burglary becomes a day-to-day affair in the majority of urban centers, particularly in the metropolitan areas. The main reason for this continued crime against society is socio-economic inequality. With ever increasing population in the urban areas due to immigration in search of jobs and less man power in the police department is one of the reasons for this kind of activity. This can be managed with the friendly police concept. For a sample work a Web-based GIS, which is an exciting new method of disseminating of information, organized using Geographic Information Systems (GIS) for Kumbakonam 45 wards have been taken up for the study. The street wise maps were digitally converted into images and they were re-registered using GPS control points. Once the data (house locked and the date in which they would return back) is entered using any gateways, then the end user, the police department would list the details at their end to view the locked houses on that day. They can keep an additional watch on the locked houses during their night petrol. Though there are 358 households in this sample wards only the houses locked and entered on the web site only BLINKS and the use of mouse pointer would give the details of the household to mark the police personal for monitoring. For those who do not have access to internet based WEB solution an alternate method of entering their house lock-in period has also been devised using Short Message System (SMS). This type of system would reduce the day to day burglary event in near future.

INTRODUCTION

The incidence of crime in public housing has yet to be routinely and systematically measured. In the vast majority of jurisdictions with public housing, official police statistics on crimes specific to those areas are just not available. The majority of law enforcement organizations base their statistics on relatively large geographic areas often called precincts or districts. Police rarely publish official crime statistics for small parcels of land such as public housing developments. Few of the biggest public housing developments (i.e., 1000+ units) come close to even qualifying for consideration as distinct crime reporting zones.

In any event, these 1000+ unit developments are exceedingly rare, appearing in less than one-half of one percent of the Nation's 3300+ public housing authorities. Furthermore, these very large developments constitute less than one-half of one percent of the roughly 14,700 public housing developments in the United States. While a handful of criminologists have attempted to gauge the levels of some crimes in public housing, even the most rigorous attempts have been unable to generate comparisons between ostensibly high-crime public housing developments and their adjacent neighborhoods or even adjacent blocks.

That being the case, it is possible that many inner-city public housing developments—by comparison—may prove to be calm islands in the midst of neighborhoods beset by crime and disorder. GIS has the ability to generate crime statistics in arbitrarily defined geographic areas, including small areas such as individual public housing developments and/or neighboring areas within an arbitrary distance from a development. In the recently completed HUD study, RTI performed such tasks in the context of an investigation of GIS-based methodologies for measuring crime in and around individual public housing developments. In the course of that research, GIS was used to aggregate data from all of a city's public housing developments. In effect, a single imaginary public housing police "precinct" was created in each of the HUD study's three cities.

Corresponding author:* **Priya P
Department of Geography, Government Arts College (Autonomous), Kumbakonam, TamilNadu, India

Burgalary Problem in urban areas

Burglary is otherwise known House break theft is a day-to-day affair in the majority of urban centers, particularly in the metropolitan areas. The main reason for this continued theft is socio-economic inequality and the recent reports indicate that the unemployed youths are involved in such type of activities. With ever increasing population in the urban areas due to immigration in search of jobs and less man power in the police department is one of the reasons for this crime activity. This can be managed with the friendly police concept. Basic initiative in the project is to pass confidential information to the Police department as and when a house is locked for quiet some time / unattended for longer time periods / which may likely instigate an intruder to break the house. Police department, which, if a house is unattended for longer time interval, the period of absence may be intimated to the nearest police station, is informing the Public and they in turn keep additional watch during night patrols to curtail and reduce the burglary in urban areas.

Objectives of the Project

1. To devise a GIS based WEB solution for all the 45 wards in the study area and gather individual household information including their contact telephone, mobile numbers to connect and keep the house hold and police department in a common platform, to exchange details, when they are away.

2. To advance further, if the households are not accessible to WEB, they have an alternate to send and receive SMS facility to inform the dates of non-availability at home, to like the Police department, in tern their houses shall be monitored, during the absence.

METHODOLOGY

Geographical Information System has been used as a common platform to connect the Household and Police department on a WEB solution with a software designed using .NET: Household is the information provider and the Police department is the end user/ decision maker. In the present study, based on the highest house break theft data available in the Kumbakonam Police jurisdiction all the wards have been selected for the study and they were converted into various digital maps and all the household details were attached with attribute tables. Global Positioning System (GPS) has also been used to re-register the individual household with satellite tracking mechanism. The street wise maps were digitally converted into images and they were re-registered using GPS control points. There are 23,697 sample households in this town which have been re-surveyed using GPS to exactly demarcate the locations of individual households by a team of 12 students. Then a WEB based GIS software has been devised using .NET. It works simple and the household information provider and the end user are connected on a common network. If a household is to enter the information on the web site (specifically designed) they have to clear the entry by given user name and password. Then they have to enter the date in which they intend to leave the house locked and the date in which they would return back home. Once the data is entered using any gateways, then the end user, the police department would list the details on their end to view the locked houses on that day. They can keep an additional watch on the locked houses during their night petrol. Though there are 358 households in this sample wards only the houses locked and entered on the web site only BLINKS and the use of mouse pointer would give the details of the household to mark the police personal for monitoring. For those who do not have access to internet based WEB solution an alternate method of entering their house lock-in period has also been devised using Short Message System (SMS). This is possible for any user in the town, by registering their mobile number with the Police department can get a registered message followed by the date in which a household would leave/ locked for a long period/ the date of lock-out and the date of lock-in. Once this message is sent back to the Police department through SMS it would automatically registers the date of non availability of a specific head of household. The rest of the function is the same as in WEB solutions. This type of system would reduce the day to day burglary event in near future.

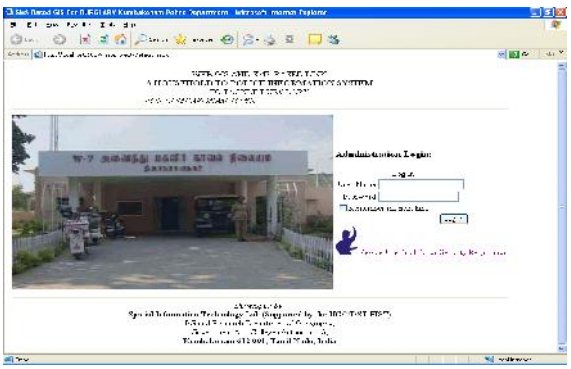
Study Area Description

Kumbakonam, one of the special grade Municipal Towns of Tamil Nadu, is the second bigger town in Thanjavur District. It is situated 10^{o} 57" north latitude and 79^{o} 28' Longitude. It is located about 313 Kilometers away from madras on the south, about 90Kms. from Tiruchy on the east and about 40kms from Thanjavur on the North East. The town is surrounded by two rivers namely River Cauvery on the north and River Arasalar on the south. It has a gentle slope towards south from North. Kumbakonam is located at 10.97° N 79.38° E. It has an average elevation of 24 metres (78 feet). Kumbakonam is located 273 km south of Chennai, 96 km east of Tiruchirappalli, and about 40 km north-east of Thanjavur. Two rivers bound the town, the Kaveri River on the north and Arasalar River on the south. There is a gentle slope from north of the town to south.

GIS based WEB and SMS solution for Burglary Monitoring

Home Page

The Home Page provides with user login and Admin login facilities to navigate through the details about the inhabitants of the town.



User Login

The User, by clicking on the link "people Use this link for security Registration", will be shown the slot to enter in his Id, password, and the information regarding his absence so as to suggest from which date up until which date he will be absent, as has been shown below.

User_Id : 1w100
Password : Raja
From Date : dd/mm/yyyy
To Date : dd/mm/yyyy

The User Id is a conglomeration of the user's ward no and Id no and his name is given as password. The Police department uses Admin login to get the details of the inhabitants of the town, whereas the public (the common man who is in need of security) uses "people Use this link for security Registration".

Note: Common man (public) has nothing to do with Admin log in

Admin Login

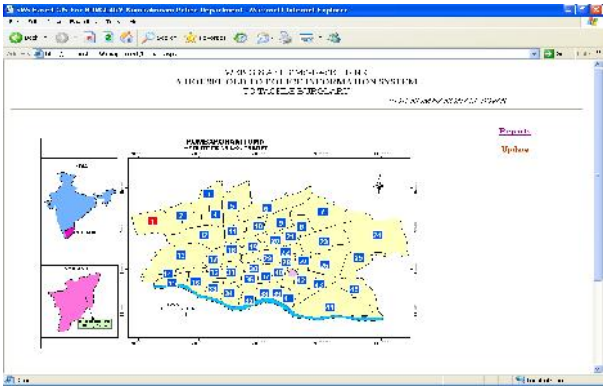
The Admin login is used by the Cop crew (police) to get to know of the user's (common man) territory to provide Security with.

This reads like,
User Name : admin
Password : admin

Clicking the log in button will eventually take the User to the full map view of the town kumbakonam, used as a specimen town to try this new strategy out.

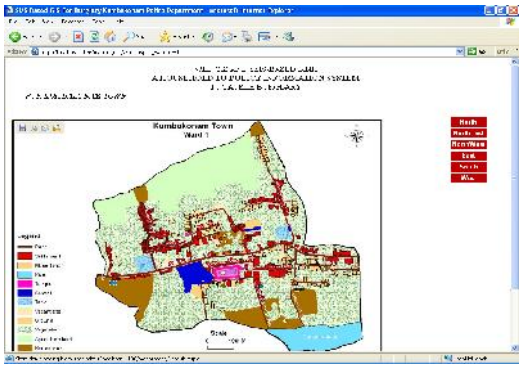
Full Map

Full map shows the full view of the town Kumbakonam, with the wards well marked. Every ward has got a button indicator showing blue color. Once the User (Police) clicks on the ward he wants to have a close look at, the color blue turns blinking red, taking him to the zone he wants to peer through.



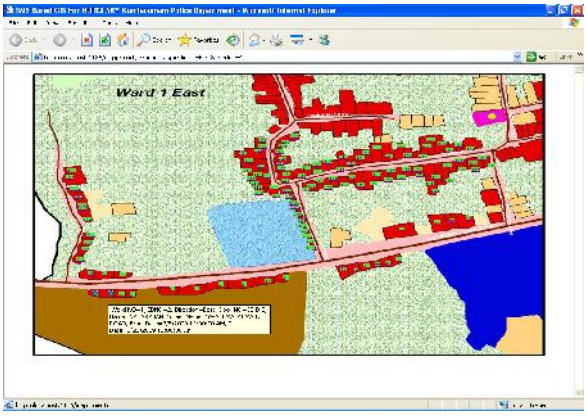
Ward Map

Ward Map helps the police to view all the features of every ward of the town. To let the User decipher directional confusions, a direction indicator is placed on the right side of the map. The moment the User (police) enters into the ward he wants to check about, by moving the cursor on, he will be let known of the details about the inhabitants of that particular ward.



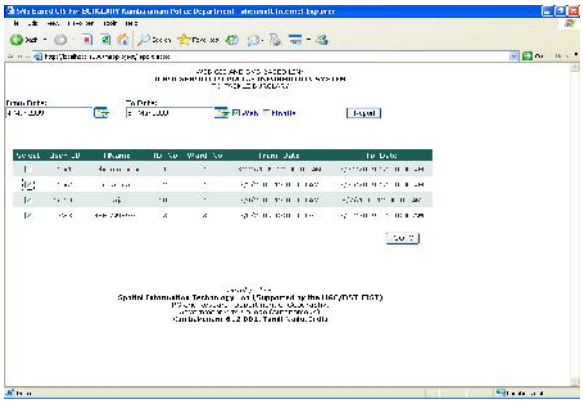
Direction Map

Direction map enables the User to be well aware of directions. The moment he moves on the cursor to click on the button indicators, individually (one by one), he will be shown the details about the inhabitants of every ward.



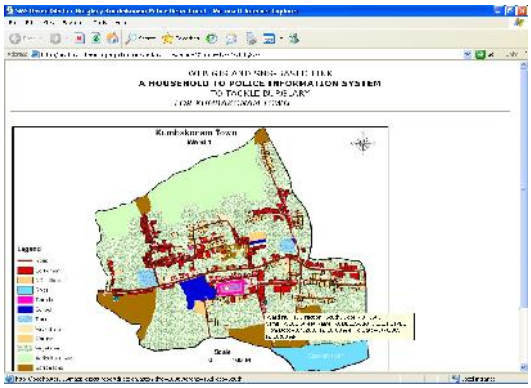
Report (For the common man's purpose)

Clicking on the option "**Report**" on the right side of the full map page, makes it possible for the police to know from which date up until which date a person is going outstation leaving his residence locked. This Web based system also encourages the common man to be optional in selecting the via-media to inform the police of his absence. This means, one can let the police know of his absence through two different sources. One is through web, another through mobile.

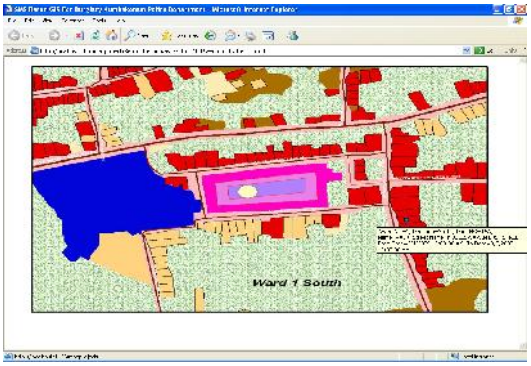


The option **Report**, once clicked, shows an entablature rolling out, giving information about the user_id, Hname, id no, ward no, from date and to date. Then the police can move on to click on the option "GOTO", to get to the full map view of the town, and from there go to review the ward in which, the above given details fix correctly up. Since the ward details are given by the common man it is very easy for the police to get into his territory without any problem.

Clicking the relevant ward will show the ward page.



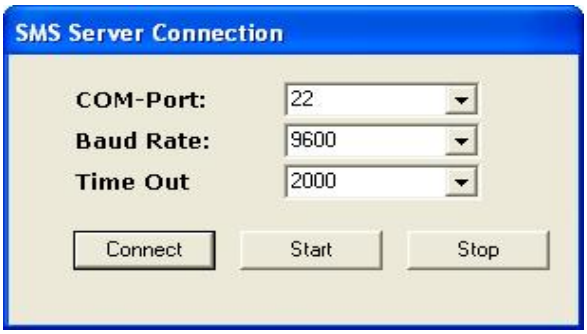
Clicking the id_no will take the User to the direction page, then clicking the same will get the User back to ward page.



SMS Based Solution

How to connect Server

Running the setup project, giving the Port no (for example 5), clicking the Connect button, gets a e response from the server coming in in the form of a a message that reads "successfully connected" .



A new window will open

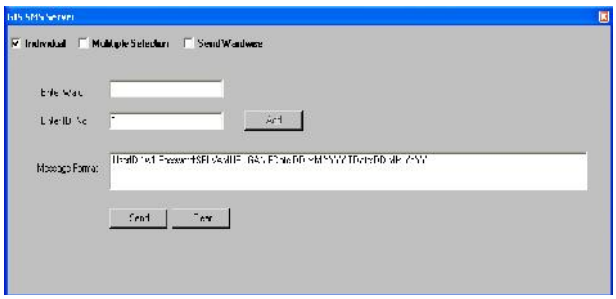
- click the message menu send button will appear
- Click the Send button three options will be viewed.
-

a. Individual
b. Multiple
c. Ward Wise.

Individual

a. Click the Individual check box
   a box will appear
b. enter the ward no, idno (of that particular ward which has been dealt with) then click the send button. The below format will be send to the End User.

Userid: 1w100 Password: Raja Fdate: dd.mm.yyyy Tdate: dd.mm.yyyy.

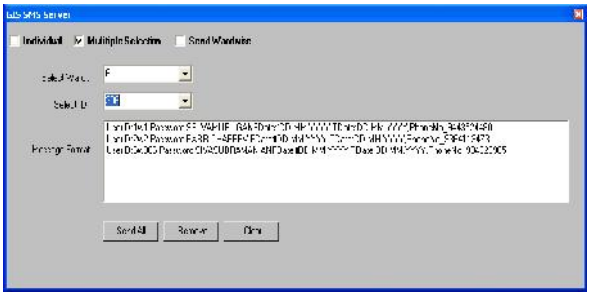


Multiple

a. Click the Multiple check box
   box will appeared
b. select the ward no, id no (of that particular
c. ward which has been dealt with)
d. click the send button

The information shown below will be sent to the End User.

Userid: 1w100 Password: Raja Fdate: dd.mm.yyyy Tdate: dd.mm.yyyy.

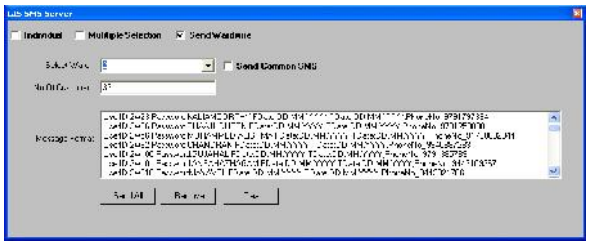


Ward Wise

1. Click the Ward wise check box
   a box will appear
2. select the ward no
   click the send button

The information shown below will be sent to the End User.

User id: 1w100 Password: Raja Fdate: dd.mm.yyyy Tdate: dd.mm.yyyy.



Login

End Users edit the format (only Fdate & Tdate) and send it as an sms to admin.

Admin No: 9791220355

The Server receives the SMS and replies to the End User which reads "**Logged Successfully**" only If the End User has sent in the information in the apt format otherwise the reply will read "**Invalid Format**" otherwise they send the sms thro' some other mobile, the SMS will come "Access Denied".

Update

To update one's change of address, one must intimate the police department of that modification or change, so that they will update the details about that person on their web based system which, of course, contains all the facilities to edit any information of the inhabitants with. Particularly, the option "update" on the right side of the Full map view page, makes this editing possible.

End

CONCLUSION

Burglary is becoming common in urban centers. Every day there is a reported case in Tamil Nadu and it is difficult to manage this crime by the police personal. People's participatory approach is the need of the hour and based on the friendly police concept, being in existence in most of the urban centers in Tamil Nadu this can be controlled. This WEB-GIS solution has been developed using .NET transmits the day to day information about the information provider (about their absence period) to the police department for on line monitor and they will be able to at least locate the houses to be locked for some time and access to overall list on that particular day and post their personal for additional monitoring during night patrols. This software has been implied for a specific ward as a sample, and this can be applied to other towns and cities for better monitoring and management, to curtail the burglary.

References

Barr, R. and K. Pease (1990). Crime placement, displacement and deflection. In: M. Tonry and N. Morris (eds.), Crime and Justice: A Review of Research, Vol. 12. Chicago, IL: University of Chicago Press.

Block, R.L. and C.R. Block (1997). Risky places in Chicago and The Bronx: Robbery in the environs of rapid transit stations. Paper presented to the Spatial Analysis of Crime Workshop, Hunter College, New York, 1997. [Workshop organized jointly by NYPD and CUNY under NIJ grant #95-IJ-CX-0103, Identify and evaluate methods for measuring and analyzing crime patterns and trends with GIS.]

Brantingham, P.L. and Brantingham, P.J. (1995). Location quotients and crime hot spots in the city. In: C.R. Block, M. Dabdoub, and S. Fregly (1995). Crime Analysis through Computer Mapping. Washington D.C.: Police Executive Research Forum, pp. 129-149.

Brown, S., D. Lawless, X. Lu, and D.J. Rogers (1998). Interdicting a burglary Research Forum pattern: GIS and crime analysis in the Aurora Police Department. In: N. LaVigne, and J. Wartell (eds.) (1998). Crime Mapping

Case Studies: Successes in the Field. Washington D.C.: Police Executive, pp. 99-108.

Geggie, P.F. (1998). Mapping and serial crime prediction. In: N. LaVigne and J. Wartell (eds.) Crime Mapping Case Studies: Successes in the Field. Washington D.C.: Police Executive Research Forum. Chapter 13, pp. 109-116.

Harries, K. (1971). The geography of American crime, 1968. Journal of Geography, 70:204-213.

Harris, R., C. Huenke, and J.P. O'Connell (1998). Using mapping to increase released offenders' access to services. In: N. LaVigne and J. Wartell (eds.) Crime Mapping Case Studies: Successes in the Field. Washington D.C.: Police Executive Research Forum, pp. 61-66.

LeBeau, J.L. and K.L. Vincent (1997). Mapping it out: Repeat-address burglar alarms and burglaries. In: D. Weisburd, and J.T. McEwen (eds.) (1997). Crime Mapping and Crime Prevention. Monsey, NY: Criminal Justice Press, pp. 289-310.

Lee, Y. and F.J. Egan (1972). The geography of urban crime: The spatial pattern of serious crime in the City of Denver. Proceedings, Association of American Geographers, 4:59-64.

Levine, N. (1996). Spatial statistics and GIS: Software tools to quantify spatial patterns. *Journal of the American Planning Association*, 62:381-391.

Olligschlaeger, A.M. (1997). Artificial neural networks and crime mapping. In: D. Weisburd and J.T. McEwen (eds.) Crime Mapping and Crime Prevention. Monsey, NY: Criminal Justice Press, pp. 313-347.

Pyle, G.F., E.W. Hanten, P.G. Williams, A.L. Pearson, J.G. Doyle, and K. Kwofie (1974). The Spatial Dynamics of Crime. Chicago: University of Chicago Department of Geography.

Roncek, D.W. and A. Montgomery (1995). Spatial autocorrelation revisited: Conceptual underpinnings and practical guidelines for the use of the generalized potential as a remedy for spatial autocorrelation in large samples. In: C.R. Block, M. Dabdoub, and S. Fregly (1995). Crime Analysis through Computer Mapping. Washington D.C.: Police Executive Research Forum, pp. 99-110.

Sherman, L.W., D.C. Gottfredson, D.L. MacKenzie, J. Eck, P. Reuter, and S.D. Bushway (1998). Preventing Crime: What works, What Doesn't, What's Promising. Washington D.C.: U.S. Department of Justice, National Institute of Justice, 1998.

Sorensen, S.L. (1997). SMART mapping for law enforcement setting: Integrating GIS and GPS for dynamic, near-real time applications and analysis. In: D. Weisburd and J.T. McEwen (eds.) Crime Mapping and Crime Prevention. Monsey, NY: Criminal Justice Press, pp. 349-378.

****

How to cite this article:

Priya P., Anand P.H and Thirumalai P.2016, Web and Sms Based Geographic Information System To Monitor Burglary In A Sample Urban Centre In Tamil Nadu. *Int J Recent Sci Res.* 7(1), pp. 8414-8419.

TSSN 0976-3031