iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 7 **Issue:** VIII **Month of publication:** August 2019

DOI: http://doi.org/10.22214/ijraset.2019.8020

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 7 Issue VIII, Aug 2019- Available at www.ijraset.com

Secularistic Terrorism and its Impact on Global Migration

Theres Ann Mathew[1], Dr. Deepa V Jose[2]
[1, 2]*Department of Computer Science, Christ University Bangalore, India*

Abstract. Terrorism is a serious trait of significance with the increasing number of casualties and migrants across the globe. Migration becomes a controversy when economic crisis and resource sharing add fuel to the fire of security. Migration and terrorism are affined, says the news-reports from Syria and Iran. This research generates a study on the impact of terrorism on migration and refugee crisis. It also tries to throw light on the secularism of terrorism as against the common notion that countries with Islam as the major religion are more prone to terrorist attacks. A linear model is created from the datasets obtained from the World Terrorism Database and the United Nations Migration Database. Attribute columns of major religions are added manually from web resources. The association between number of terrorist attacks, number of emigrations and major religion is then studied. The correlation between the terrorism and migration ratio is then studied. This is helpful to tackle refugee crisis and also the religion-based stigma that remains reciprocated to the former. The correlation between terrorism and migration isn't linear. Moreover Islam isn't the only religion that has caused terrorism. Causes such as brain drain are a reasonable trigger behind migration.

Keywords: Terrorism, Migration, Refugee Crisis, Linear model, Classification, Predictive Analysis, Search Volume

I. INTRODUCTION

Data mining is the process of extracting knowledge from the vast amounts of data supplied to the system, says Silwattananusarn and Kulthidatuamsuk [1]. The process of data-mining inclines in line with machine learning, databases and statistical-sciences. In this field of knowledge extraction, perceptive relational models are generated by applying intuitive methods. A data-mining system itself does not transform to knowledge. The deeply relevant fields are subjected to excerption and then the affinity between these attributes is identified to afford a data-mining model. As per the studies of Margaret H Dunham, [2], the different steps in a data mining model include pre-processing, model generation, interestingness and complexity considerations, accuracy predictions, post-processing and finally ideating the analysis. Patterns are discovered usually using cluster analysis, anomaly detection, association rule mining and sequential pattern mining. The patterns generated can be used in machine learning and predictive analysis. Stumme and Wille [3] suggests that data archaeology is an interesting term that is used to describe data mining. Knowledge discovery in data bases was also coined to term data-mining. R. Aspinall in his book "An inductive modelling procedure based on bayes' theorem for analysis of pattern in spatial data" [4] presents the idea that Bayes's Theorem as well as regression analysis was used to generate pattern in the old times. As the size of data grew, also did the technology to analyze it. Automated processing techniques such as neural networks and genetic algorithms began to be used since 1950s, depicts the 'Neural Networks – History' [5].Decision trees, decision rules helped in selecting choices based on the rules generated. From the 'History of Support Vector Machines' [6] we have identified that Support vector machines also began to be popular by the 1990s.The models which are generated as a result of data mining activities are finally deployed into similar available datasets. All the domains where data-mining is used have already defined their future strategy of data-mining usage. From the studies of Wasan, Bhatnagar and Kaur [7], we understand that the patient-volume analysis, disease-spread analysis etc can be easily performed using modern day data mining tools. Market Basket analysis is a common mining technique that is useful both in super-markets, education, customer relationship management, manufacturing engineering, fraud detection, intrusion detection, lie detection, customer segmentation, banking, corporate surveillance, research analysis, criminal investigation, bio-informatics etc[8]. Incompleteness of data, distributed data and complexity of data are the main challenges when it comes to dealing with data mining[9].Data visualization is another deciding factor of the quality of data mining techniques. Data mining tools such as Weka, Knime, DataMelt, ELKI etc are JAVA based .There are also data mining tools such as Rapidminer, Orange, Apache Mahout, MOA,KEEL,RATTLE etc.

This study would be highly beneficial to the government authorities who are keen to find reasons behind migration. The study of RE Lucas on the Internal Migration in developing countries [10], is a clear indicator that migration can be a result of environmental, cultural, economic, political or social reasons. A study on the reasons on migration would definitely be an eye-opener for the ruling

©IJRASET: All Rights are Reserved

authorities to throw their serious concern on governing issues and the push-pull factor behind migration. The studies on American renaissance poses a necessity to find out if chain migration has a serious impact on the migration story[11]. Migration wouldn't always have a positive aim such as connecting the world. It isn'talways turning the world into a global village. This exemplifies the need of a study on causes of migration.

Terrorism is a terrific thought today. With an increasing number of terrorist attacks and related events, the number of migrants from Syria has increased. That is from a pre-war population of 22 million,4.8 million are displaced in locations outside Syria[12].Terrorist activities aim at creating fear among the masses. In the study, The History of Terrorism; From Antiquity to Al Qaeda by A Merari, it is identified that it was during the French revolution of 18^{th} century[13] that the word terrorism was first used. Terrorism is regarded as a crime in most countries. The studies of University of MaryLand has shown that, almost 140000 deaths have been recorded from 2000 to 2014[14].Terrorist activities can be classified as civil disorder, political terrorism, non-political terrorism, quasi terrorism, limited political terrorism, official terrorism etc. The reasons behind terrorism can be political effect,religious beliefs etc[15].Some terrorist incidents have also been caused to create revenge against ideologies and beliefs. Assurance of financial stability is also leading the youth today into terrorist activities.

The developing and under-developed nations have severe chances of being affected by terrorism because of the unavailability of resources to fight back terrorism[16] suggests St.Louis. That signifies the main reason why migrations happen at a greater extent from these countries. This research is thus a study on the impact of terrorism over migration. There is a common notion that there is linear correlation between terrorism and migration.

This correlation is analysed using a linear model. Moreover there is another notion on the religion-base of terrorism activities.

Migration is always an event in response. The generator event can vary. The proliferation of migration depends on the sweep of the generator event. The proportion of population affected by the event, the geographical nearness of neighboring countries, the age of the affected population, the education level of the citizens, the impact level of the incident etc are just a few parameters that decide the extend of exodus[17]. The Diaspora can also be the result of forced displacement rather than voluntary shift. The migration policies of different countries can also be a driving factor. In those countries where poverty is the stimulation behind migration, the former can be the result of corruption, lack of education, epidemic diseases, population, unemployment, debt, poor administration etc. When the causes of migration remain unpredicted it is necessary to scrutinize the recent newspaper reports from Syria. The country has seen its highest migration rates after the Syrian civil war, ie approximately 13.5 million migrants as estimated by the United Nations Organization in 2016[18].This study is a clear report on migration as a brunt of terrorism. As per the 2016 Global Terrorism Index, Iraq is the country with maximum number of terrorism incidents[19]. According to the list of countries with net migration rate, produced by the World Bank, the migration rate of Iraq is 16.65% which is a high index on the list. The confluence of the above mentioned indices show that there is a correlation between terrorism and world-wide migration. The study aims to find this extend of migration.

Shocking images of Aylan Kurdi can be remembered only with a heavy heart[20].The study has shown that the share of Islam in the perpetration of terrorism cannot be denied[21]. Though the other causes can be political, cultural or social. The Dar al-Islam and Dar-al-Harb are the ideologies that reinforced the thought of an Islamic world[22]. The western influence on the world was seen by the Muslim community as a forfeit for disobeying the words of the prophet. The re-Islam-isation based on Shariah-laws was the summoned solution. The creation of an Islamic state has from then become the agenda. With the increasing concern over the impact of terrorism, it's necessary to understand the secularism of terrorism as well. Thus this research searches for the majority religions in those countries affected by terrorism to generate an effective model to study secularism of terrorism.

II. PROBLEM STATEMENT AND PRELIMINARIES

One kind of classification algorithm for data-mining isID3 Algorithm. Short-comings of ID3 Algorithm is generated to obtain a more efficient ID3 Algorithm[23] by Tan,Qi and Wang. The information gain formula is improved to create the best division property. The collected data is then classified to generate the decision tree. The generated decision tree has less branches and lower height, has a speedy tree generation and also reduces space consumption. A classification model first generates label under which data can be chatacterised.ID3 Algorithm is top-down, greedy and inductive learning method[24].The attribute with the largest information gain is chosen as the classification attribute. An improved ID3 Algorithm proposes the uses of property with the largest information gain as the key attribute. Ant colony clustering works with the layman principle of ant colony creation. The ants who find food at the nearest location generate a chemical following which other groups of ants find the shortest possible route to the destination[25].

The terrorist attacks on 11 September 2011 have created a greater impact on national level security. Analysis can be performed on

©IJRASET: All Rights are Reserved

structured data using traditional techniques such as association analysis, cluster analysis, classification, prediction and outlier analysis. Entity extraction is the process of obtaining data from available resources. Clustering can be used to identify groups that have performed similar kind of crime and also categories crimes according to the available knowledge of people's performance. Concept space algorithm is sometimes used to generate association between entities in criminal forensics. Frequently occurring item-sets are found out using association rule mining. The patterns thus created are developed as rules. Frequently occurring sequences are identified during, sequential pattern mining. Sequential pattern mining is significant for time stamped data. Deviation detection or outlier detection is a methodology that helps to identify the variations that occur in the given data. Common properties among entries are found out and are organized into classes. A fully developed training and testing data is essential in the case of classification so as to increase the predictor accuracy. String comparators as the name indicates are another methodology of crime data analysis. Entity extraction, association, prediction and pattern visualization are methodologies for crime data mining[26].Centrality measures such as degree, between-ness and closeness are measured to find out the key members in each group.

Extending database analysis to large databases, letting grow the database technology into newer data dimensions, creating automated searches and creating legible patterns and models from data are the challenges mostly faced by the data-mining industry today .The need of the hour is not to create new data-mining tools but to create highly specialized solutions[27]. Disciplined approaches have to be generated together to bring together data mining and data warehousing approaches. It is necessary to understand ,how to retrieve necessary data from the huge amount of data available[28].To improve the quality of human intelligent decision making ,it can be possible to replace human analyst intervention with machine analysis.

A. Proposed Methodology

Table 1.Proposed methodology of study

Data Collection	• Global Terrorism Dataset • United Nations High Commission for Refugees Dataset
Data Pre-processing	• Nullified 133 columns from terrorism dataset due to irrelevance of the topics • Nullified 4 columns from migration dataset due to irrelevance • Merged terrorism dataset rows based on country wise terrorist attacks each year • Combined the terrorism and migration dataset on the base of country wise estimates • Added column name Islam to denote with 1 if the majority religion was Islam
Building Knowledge models	• Evaluation of linear model generated
	from the attack statistics and the migration statistics • Correlation study on the number of terrorist attacks and religion base of attacks
Model Evaluation	• Linear model that is generated is studied • Co-relation statistics studied • Shapiro Wilk test results studied

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 7 Issue VIII, Aug 2019- Available at www.ijraset.com

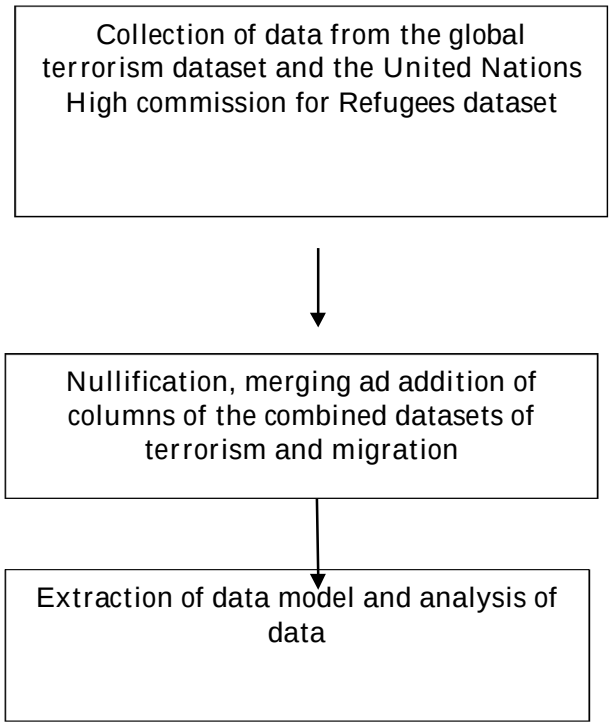


Fig1. Process Flow Diagram

B. Data Collection

The data for the research is the combination of two datasets, namely the Global Terrorism Dataset and the UNHCR Refugee dataset. The data from the both the datasets are collected only for the years from 2013-2016.Global Terrorism Database is a collection of Terrorism incidents from 1970 onwards[14].The dataset consists of statistics till 2016.It is preserved by the National Consortium for Study of Terrorism and Responses to Terrorism at the University of MaryLand. The refugee dataset is from the United Nations High Commissioner for Refugees. Both the GTD Database and UNHCR Database were last updated in 2017 [29].

C. Data Pre-Processing

The data collected is from the global terrorism dataset and has 57196 observations for 135 variables , out which 133 columns are removed as only the most relevant columns are taken into consideration. The columns which are considered for analysis are iyear(the year of attack),country code(the code used to identify each country and country name. The data for the years from 2013 to 2016 are only extracted from the dataset as analysis is done on migration data during the same years. The data generated from the terrorism dataset is converted to country-wise and year-wise frequency of attacks using the table function in R.

In the UNHCR refugee data, has 96064 observations of 7 variables. The dataset columns including Country or territory of asylum or residence, Refugees assisted by UNHCR, Total refugees and people in refugee-like situations^{**},Total refugees and people in refugee-like situations assisted by UNHCR are nullified to fabricate a subset consisting only of the pertinent attributes like country-name, year and number of migrants.

D. Building Knowledge Model

After pre-processing, the GT Dataset reduces to 57196 observations of 3 variables and the UNHCR dataset reduces to 96064 observations of 3 variables. The implementation is done using the R tool. The migration data set is further strained to match with the country names in the global terrorism dataset. The number of attacks from the terrorism dataset with the number of refugees from the UNHCR dataset is put together into a linear model. Here a linear function of explanatory variables is studied.

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.177
Volume 7 Issue VIII, Aug 2019- Available at www.ijraset.com

III. RESULTS AND DISCUSSION

The correlation between the number of terrorist attacks and migrations from each country yield 0.4 , which clearly indicates that there is a positive correlation between both. The direction of relationship between the variables is clearly positive[30]. Positive correlation is obtained when being assessed using all three types of correlation including Pearson, Kendall and Spearmans.

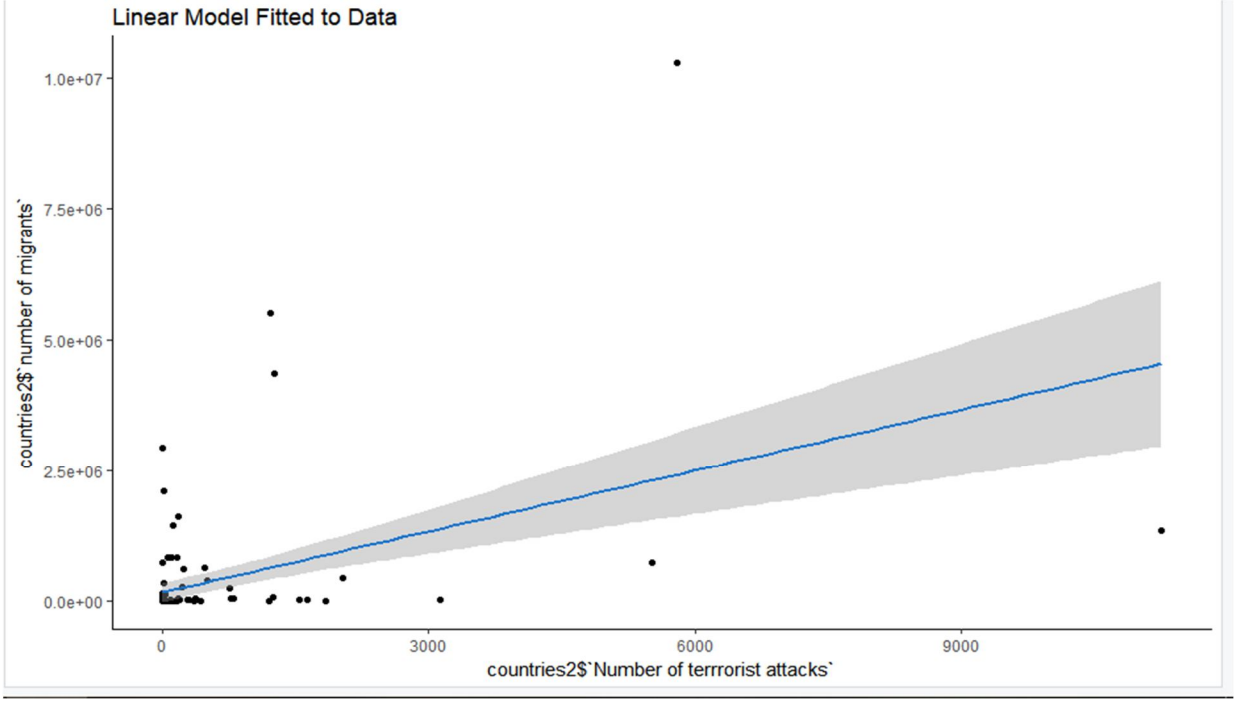


Fig.2 Linear model generated between number of migrants and number of terrorist attacks across countries

The adjusted R-squared value obtained,from the linear relationship between number of terrorist attacks and the number of migrants,is 0.179 indicating that 17% of variation in number of terrorist attacks can be explained by number of migrants.

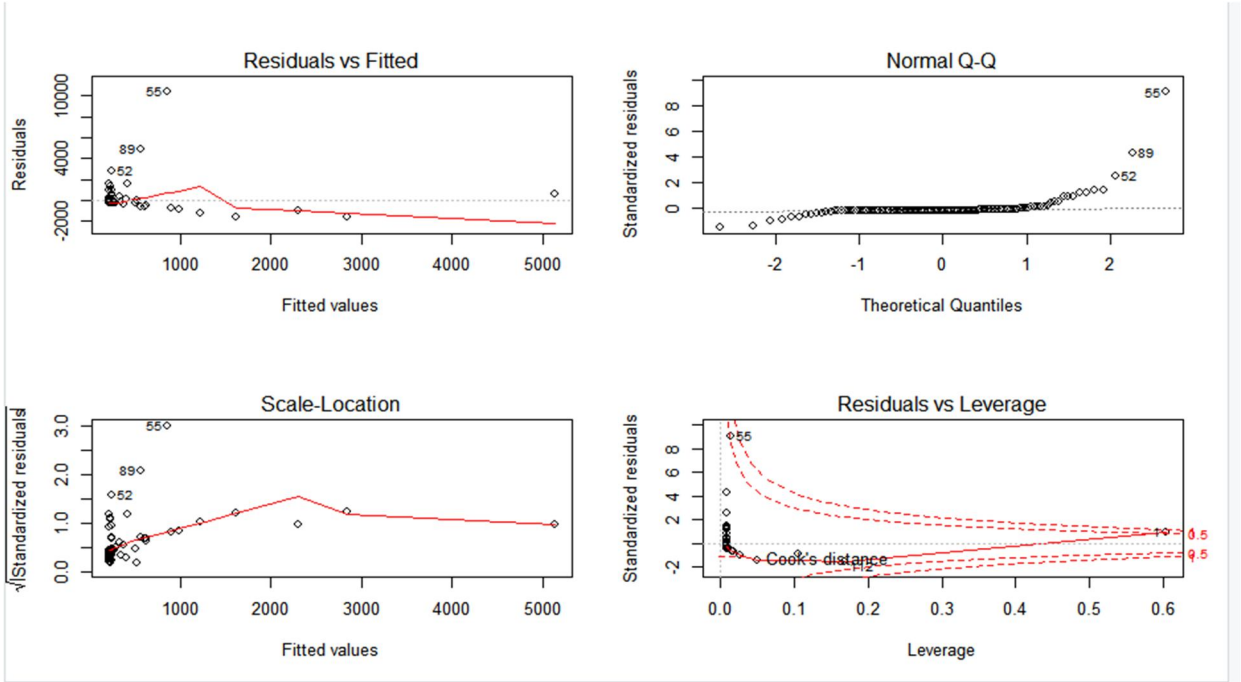


Fig.3 The plot of linear model generating residual versus fitted, residual versus leverage scale location and normal quantile to quantile distribution.

©IJRASET: All Rights are Reserved

Prediction of Quantitative response becomes easier with a linear model[31].For the first linear model evaluation, number of terrorist attacks are taken as the predictor variable and the second variable is taken as the response variable. Residuals contain the difference between the actual observed response values and the values predicted by the response variables. The normal q-q plot forms a symmetric but fat-tail distribution indicating that the distribution is normal.

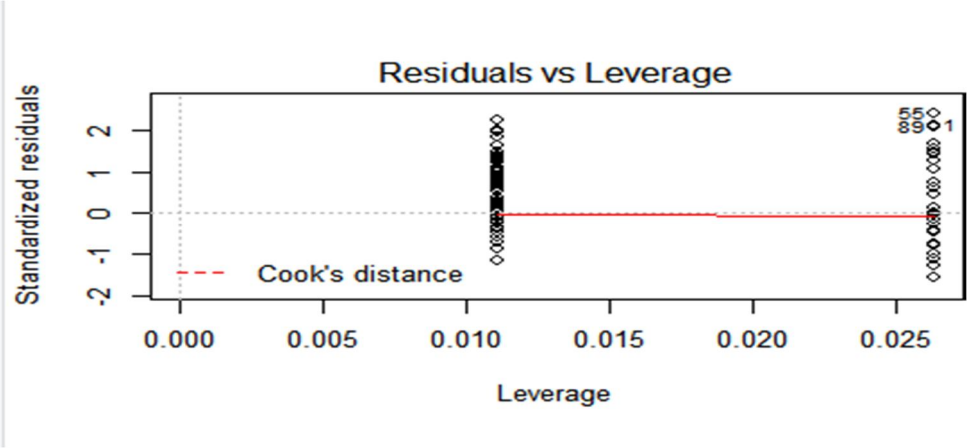


Fig 3 .The residual versus fitted graph for number of terrorist attacks and the majority religion as Islam

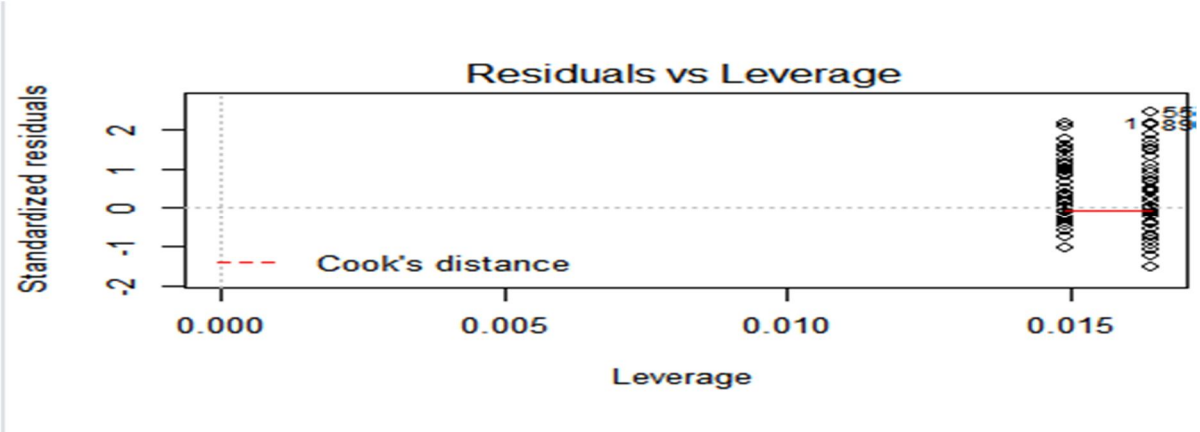


Fig 4.The residual versus fitted graph for number of terrorist attacks and majority religion as christianity

The graphs pinpoint to the influence of the 55th and 89th observations in the dataset.

IV. CONCLUSIONS

Though the graphs resemble the same shapes be it Islam or Christianity as the majority religions, the influential observations are Iraq and Pakistan, both being Islamic countries. Thus not all Islamic countries can be breeding grounds for terrorism as against the stigma associated with the religion base of terrorism. As the result of residual of linear model plot is centered around 0 ,the finding that the model fits the data well is unraveled[32]. 17 out of 100 migrations are caused by terrorism , which is serious issue to be looked upon.

The impact of growth of terrorism is also influenced y the modern media. As per the Forbes reports the deadliest terrorist groups in the world are Islamic States, Taliban, Al Shabaab and Boko Haraam in order. The media presence of these groups is really suprising. The internet search volume of IS is 2,10,000 per month whereas the search volume of Taliban is 49,500 per month. Proportional to their positions the search volume of Boko haraam is 33,100. As a future enhancement the media impact of terrorism and migration would e studied.

V. ACKNOWLEDGMENT

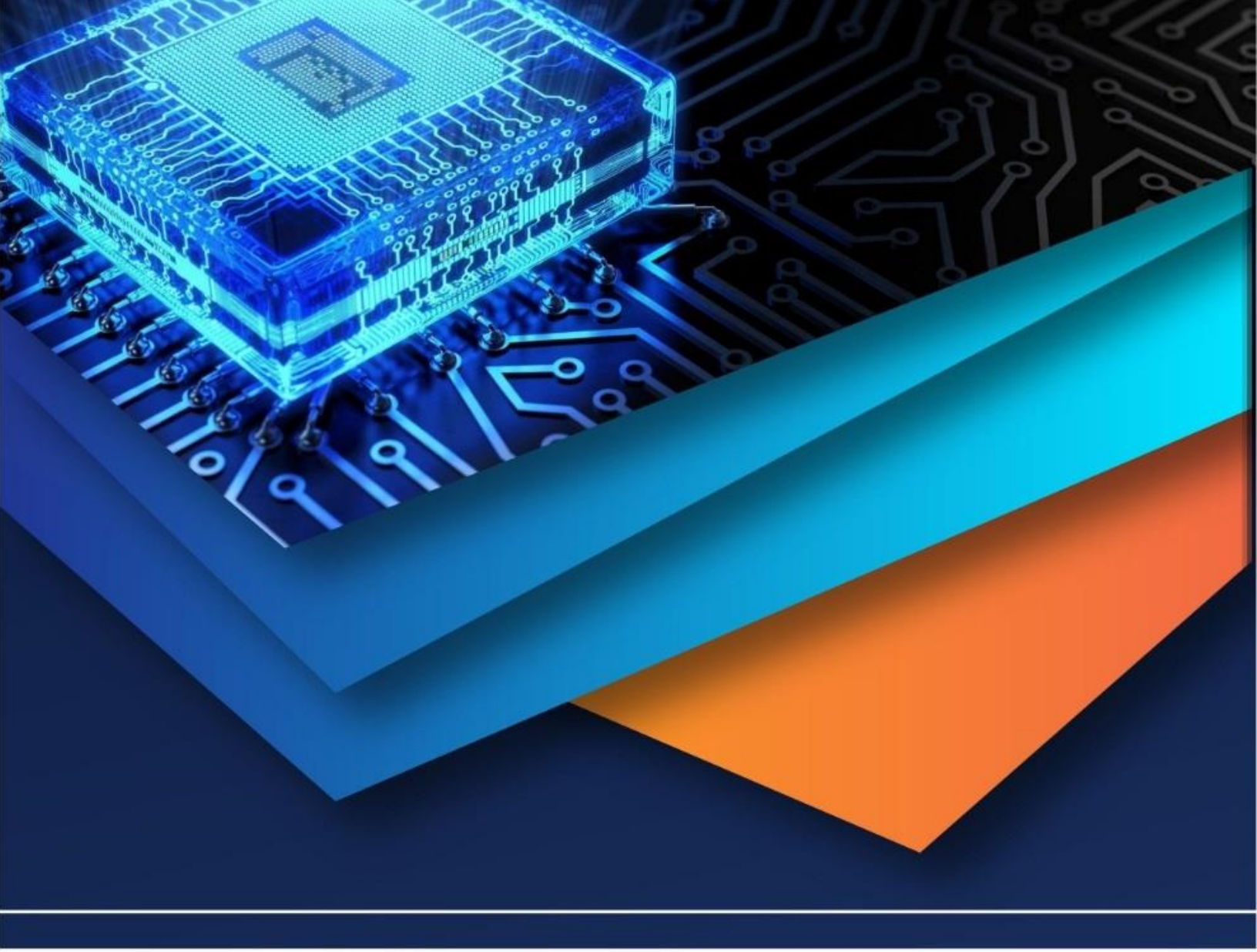
The authors also gratefully acknowledge the helpful comments and suggestions of the reviewers, which have improved the presentation.

©IJRASET: All Rights are Reserved

REFERENCES

[1] T. Silwattananusarn and A. P. Kulthidatuamsuk, "Data Mining and Its Applications forKnowledge Management : A Literature Review from 2007 to 2012," Int. J. Data Min. Knowl. Manag. Process, vol. 2, no. 5, pp. 13–24, 2012.
[2] "Data Mining: Introductory And Advanced Topics - Margaret H Dunham - Google Books."[Online].Available:https://books.google.co.in/books/about/Data_Mining_Introdu ctory_And_Advanced_To.html?id=O6F9iwsqZQwC. [Accessed: 12-Jul-2018].
[3] G. Stumme, R. Wille, and U. Wille, "Conceptual knowledge discovery in databases using formal concept analysis methods," Princ. Data Min. Knowl. Discov., 1998.
[4] R. Aspinall, "An inductive modelling procedure based on bayes' theorem for analysis of pattern in spatial data," Int. J. Geogr. Inf. Syst., vol. 6, no. 2, pp. 105–121, 1992.
[5] "NeuralNetworks-History."[Online].Available:https://cs.stanford.edu/people/eroberts/co urses/soco/projects/neural-networks/History/history1.html. [Accessed: 12-Jul-2018]. [6]"HistoryofSupportVectorMachines."[Online].Available:http://www.svms.org/history.htm l. [Accessed: 12-Jul-2018].
[6] S. K. Wasan, V. Bhatnagar, and H. Kaur, "The impact of data mining techniques on medical diagnostics," Data Sci. J., vol. 5, no. October, pp. 119–126, 2006.
[7] C. Apte, B. Liu, E. P. D. Pednault, and P. Smyth, "Business applications of data mining," Commun. ACM, vol. 45, no. 8, pp. 49–53, 2002.
[8] X. Zhu and I. Davidson, "Knowledge Discovery in Biomedical Data Facililtated by Domain Ontologies," Knowl. Discov. Data Min. Challenges Realities, pp. 189–201, 2007.
[9] R. E. Lucas, "Internal Migration in Developing Countries," Handb. Popul. Fam. Econ., vol. 1, pp. 721–798, 1997.
[10] "Immigration Multipliers: Trends in Chain Migration - American Renaissance." [Online].Available:https://www.amren.com/news/2017/09/immigration-multipliers-tren ds-chain-migration/12/. [Accessed: 12-Jul-2018].
[11] "Syrian Refugees." [Online]. Available: http://syrianrefugees.eu/. [Accessed: 13-Jul-2018].
A. Merari, "The History of Terrorism; From Antiquity to Al Qaeda," Terror. as a Strateg. Insur., vol. 27, no. 4, pp. 12–53, 2007.
[12] "Global Terrorism Database (GTD) | START.umd.edu." [Online]. Available: http://www.start.umd.edu/research-projects/global-terrorism-database-gtd. [Accessed: 12-Jul-2018].
[13] "Terrorism|Britannica.com."[Online].Available:https://www.britannica.com/topic/terror ism. [Accessed: 12-Jul-2018].
[14] "Impact of Terrorism on Developing Countries | St. Louis Fed." [Online]. Available: https://www.stlouisfed.org/publications/regional-economist/fourth-quarter-2017/impact
[15] -terrorism-developing-countries. [Accessed: 12-Jul-2018].
[16] T. Press, T. Press, and S. Science, "Exploring the Causes of Forced Migration : A Pooled Time-Series Analysis , 1971-1990 Author (s): Susanne Schmeidl Source : Social Science Quarterly , Vol . 78 , No . 2 (June 1997), pp . 284-308 Stable URL : http://www.jstor.org/stable/42864338 .," vol. 78, no. 2, pp. 284–308, 2015.
[17] "The Syrian conflict and its impact on migration - InfoMigrants." [Online]. Available: http://www.infomigrants.net/en/post/8077/the-syrian-conflict-and-its-impact-on-migrat ion. [Accessed: 12-Jul-2018].
[18] "MEASURING AND UNDERSTANDING THE IMPACT OF TERRORISM."
[19] G. Rayner and N. Squires, "'Let this be the last', says heartbroken father of Aylan and Galip Kurdi as he prepares to bury them," telegraph.co.uk, Sep. 2015.
[20] B. Hoffman, "The confluence of international and domestic trends in terrorism," Terror. Polit. Violence, vol. 9, no. 2, pp. 1–15, 1997.
[21] "The Religious Sources of Islamic Terrorism | Hoover Institution." [Online]. Available: https://www.hoover.org/research/religious-sources-islamic-terrorism.[Accessed:13-Jul- 2018].
[22] [23]Y. Tan, Z. Qi, and J. Wang, "Applications of ID3 algorithms in computer crime forensics," 2011 Int. Conf. Multimed. Technol. ICMT 2011, pp. 4854–4857, 2011.
[23] [24]J. Han, M. Kamber, and J. Pei, Data Mining. Concepts and Techniques, 3rd Edition (The Morgan Kaufmann Series in Data Management Systems). 2011.
[24] [25]D. Wang and L. Hao, "Application of ant colony clustering in computer forensics,"
[25] 2009 2nd Int. Conf. Inf. Comput. Sci. ICIC 2009, vol. 2, pp. 87–90, 2009.
[26] [26]H. Chen, W. Chung, J. J. Xu, G. Wang, Y. Qin, and M. Chau, "Crime data mining: A general framework and some examples," Computer (Long. Beach. Calif)., vol. 37, no. 4, pp. 50–56, 2004.
[27] [27]S. F. O. R. Insights, "INTO," vol. 45, no. 8, 2002.
[28] [28]D. Takahashi and Y. Xiao, "Complexity analysis of retrieving knowledge from auditing log files for computer and network forensics and accountability," IEEE Int. Conf. Commun., pp. 1474–1478, 2008.
[29] "UNdata | record view | Table with data on Refugees."[Online].Available:http://data.un.org/Data.aspx?d=UNHCR&f=indID%3AT ype-Ref.[Accessed:13-Jul-2018].
[30] "Review Reviewed Work (s): Applied Multiple Regression / Correlation Analysis for the Behavioral Sciences by Jacob Cohen , Patricia Cohen , Stephen G . West and Leona S . Aiken Review by : Rahul M . Dodhia Source : Journal of Educational and Behavioral S," vol. 30, no. 2, pp. 226–229, 2018.
[31] "Quick Guide: Interpreting Simple Linear Model Output in R," 2015. [Online]. Available:https://feliperego.github.io/blog/2015/10/23/Interpreting-Model-Output-In-R. [Accessed: 13-Jul-2018].
[32] "(1) How do I interpret the summary of a linear model in R? - Quora." [Online]. Available:https://www.quora.com/How-do-I-interpret-the-summary-of-a-linear-model-i n-R. [Accessed: 13-Jul-2018].

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)