

INTRODUCTION

Investigative Assistance for Violent Crimes Act of 2012 classifies an incident as mass shooting if the number of casualties is at least 3. In recent years the number of mass shooting has been rising significantly. According to the analysis of Mother Jones’ data, the rate of mass shooting has tripped since 2011. After every mass shooting incident, there is a discussion of mental health of the shooter and how was the gun obtained.

OBJECTIVE

The main objective of this project is to see if we can find a correlation between number of casualties and mental health of the shooter and how obtaining the firearm legally affects the number of victims.

DRAWBACKS

- The model is under fitted because of smaller dataset.
- There were several undermined data points which may have played a role in the prediction.
- The accuracy of the model can’t be fully trusted because of the possibility of under fitting.

MASS SHOOTING AND MENTAL HEALTH

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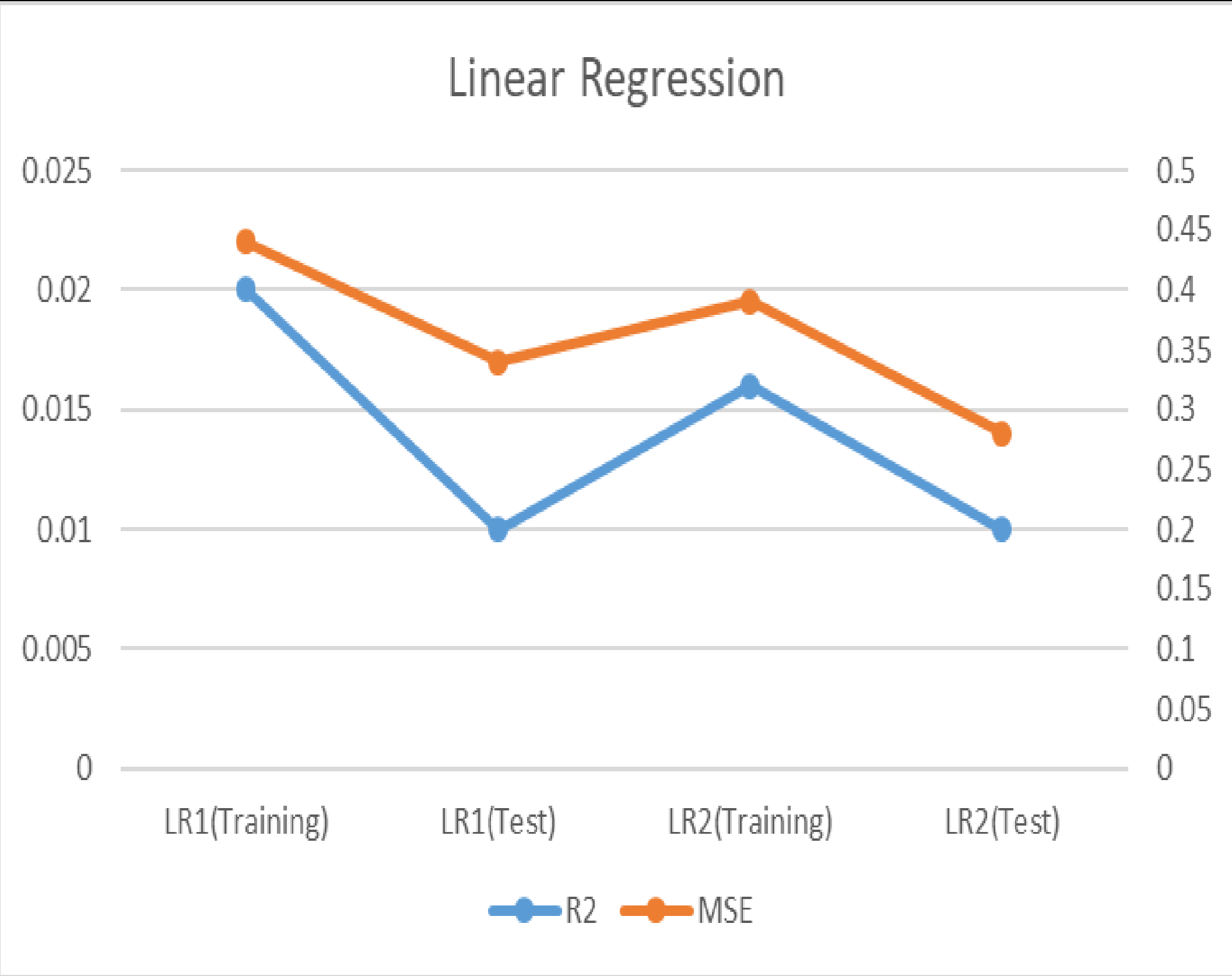
METHODS

- Source: Mother Jones’ (mass shooting from 1982-2019)
- Features: 24 columns(both numeric and categorical), 110 rows
- 6 columns were dropped and non of the rows had empty attributes
- Data Split- 70% training and 30% test
- X-feature: total victims; Y-feature: prior_signs_mental_health_issues
- Machine learning algorithms : Support Vector Algorithms (SVM) and Decision Tree Classifier to calculate the metrics
- Clustering of weapons_obtained_legally and prior_signs_mental_health_issues

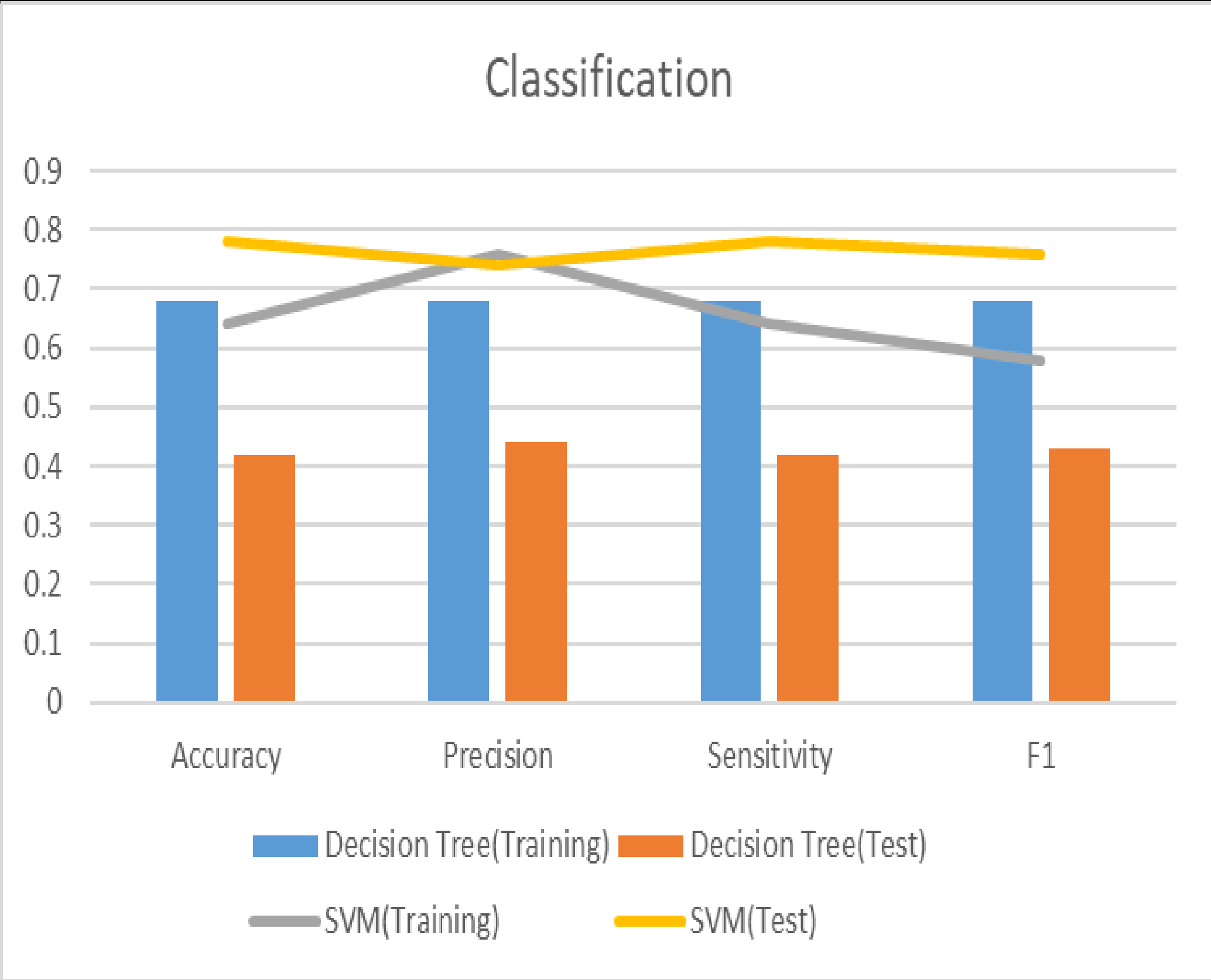
case	location	date	summary	fatalities	injured	total_vict	location	age_of_spr	sig_mental	weaponswhere_o	weapon	race	gender	sources_mental	sources	latitude	longitude	type	year				
Harry Pro Aurora, IL		2/25/2019	Gary Mar	5	6	11	Workpla	45	0	pending	1	-	handgun	Smith & Black	M	https://n	-	41.7537 -88.3311	Mass	2019			
Pennsylvania State Colleg		1/24/2019	Jordan W	3	1	4	Other	21	-1	-	0	-	handgun	-	White	M	https://w	-	40.7851 -77.8394	Spree	2019		
SunTrust Sebring, FL		1/23/2019	Zephen J	5	0	5	Workpla	21	0	Xaver wa	0	-	handgun	9 mm ha	White	M	https://n	https://n	27.471 -81.4365	Mass	2019		
Mary Ho Chicago, IL		11/19/2018	Juan Lop	3	0	3	Workpla	32	-1	-	-1	-	semi	aut	9mm har	Lat1	M	https://n	-	41.8477 -87.832	Mass	2018	
Thousand Thousand C		11/7/2018	Ian Dawi	12	22	34	Other	28	0	Per the U	0	A gun st	semi	aut	Glock 21, 45	call	lat	M	http://w	http://w	34.1799 -118.875	Mass	2018
Tree of Li Pittsburgh, I		10/27/2018	Robert D	11	6	17	Religio	46	-1	-	0	1	times	semi	aut	AR-15, G	White	M	https://n	-	40.4439 -79.9214	Mass	2018
Rite Aid Flemman, N		9/20/2018	Stacia M	3	3	6	Workpla	26	-1	-	0	-	semi	aut	Glock 9	Black	F	http://w	-	39.4557 -76.2065	Mass	2018	
T&T Trus Bakersfield		9/12/2018	Javier Ca	5	0	5	Workpla	54	-1	-	0	-	handgun	Smith & Li	Lat1	M	http://w	-	35.3494 -118.916	Spree	2018		
Fifth Thr Cincinnati, I		9/6/2018	Omar Ent	3	2	5	Workpla	29	0	Perez file	0	A local g	semi	aut	9mm har	Lat1	M	https://n	-	39.102 -94.5118	Mass	2018	

RESULTS

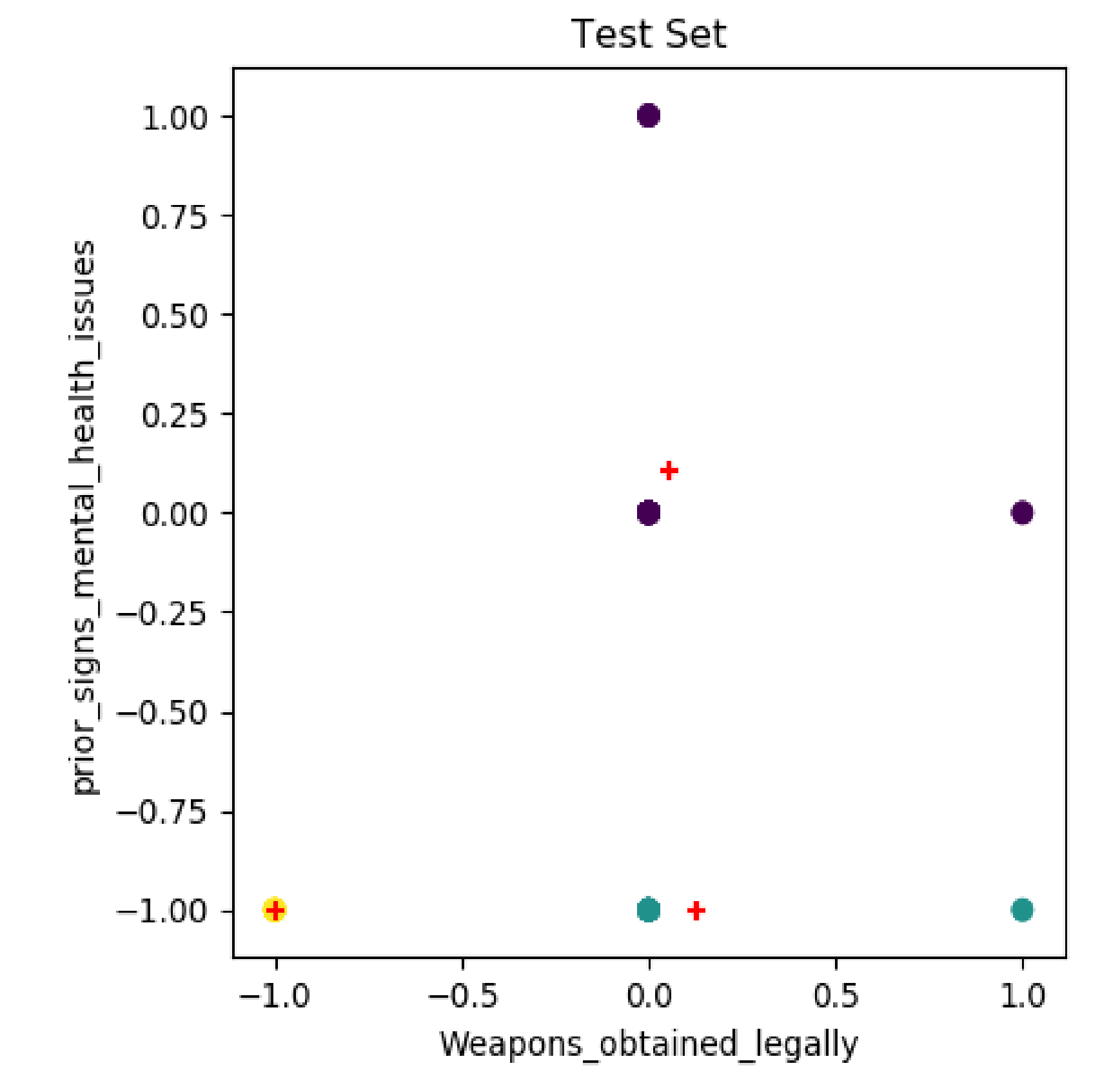
Result 1: Linear Regression



Result 2: :Classification



Result 3: Clustering of Test Set



CONCLUSION

- A smaller relation between total victims and prior history of mental health and the relationship even decreased when weapons obtained legally was added.
- SVM classifier gives better result that Decision Tree in this model.
- There is no relation between prior signs of mental health and obtaining weapon legally.

REFERENCES

• <https://www.gunviolencearchive.org/methodology>
• <https://www.motherjones.com/politics/2012/12/mass-shootings-mother-jones-full-data/>
• <https://www.cato.org/blog/are-mass-shootings-becoming-more-frequent>