Impact Of Alcohol/Drugs On General Health and Rise Of Crimes

Introduction

Overuse of alcohol/drugs/tobacco can have an impact on the general health of an individual as well as is one of the main reasons behind the rise of crimes which is not hidden from anyone. We will further highlight how the overuse of alcohol, tobacco, and drugs like marijuana, LSD, steroids are the main reasons behind an increase in crime rate. We have analyzed data collected by the US National Longitudinal Study of Adolescent to Adult Health (Add Health) as Wave IV data. The data consist of answers to survey questions asked on various health, personal and background related topics like general health, diet, education, criminal background, health insurance background, sleep patterns, relationships and many more. We are specifically interested in the use of alcohol/drugs/tobacco and its impact on general health as well as the main reason behind increasing crime rates. The main aim of the report is to highlight why policymakers should invest money/resources to control the use of alcohol, drugs like marijuana and tobacco which can result in an overall healthy society with little crime rates. Over the course, we'll be presenting various basic stats (counting, summation, aggregation, etc) which will highlight how each of these is related to one another as well as have an impact. Our analysis proves that the use of alcohol, drugs like marijuana, LSD, etc and tobacco has an impact on the general health of citizens and is one of the main reasons behind the rise of *gun violence* as well.

Background

As a part of our analysis, we even looked at other papers published in the literature that have almost the same research characteristics as ours. [Volkow et. el 2016] suggests that the use of marijuana can have serious health issues like interference in brain development during adolescence, anxiety, depression, etc. It also points out that long term and consistent usage can increase the chances of lower-income, greater need for socio-economic assistance, unemployment, criminal behavior, and lower satisfaction with life. The paper claims that these kinds of effects happen if consumption is continued for a long time. Research published by [Popovici et. el 2011] suggests that there is a deep-rooted relationship between alcohol overuse and criminal activities. Paper also had analyzed the same Add health data like us and published. It highlights that heavy drinkers are likely perpetrators of criminal activities than victims. They

also suggest the government invest in the treatment of alcohol abuse which can have an impact on crime rates indirectly. Another paper [Hakansson et. el 2018] suggests that the overuse of drugs has a correlation with violent crimes. Their results specifically state that there is a deep correlation between violent crimes and sedatives and alcohol usage. Their analysis was done on prisoners which consists of all types of peoples from drug addicts, alcohol addicts to sedatives addicts. Their logistic regression model found out that binge drinking and sedatives are closely associated with violent crimes.

Analysis Overview

Our analysis starts with basic stats of finding the relation between the use of alcohol, drugs, tobacco, and a list of common attributes of a person like gender, education, military background, personal income, language, citizenship, health insurance, religion, general health, sleeping issues, etc. We then go ahead and expand on finding the distribution of usage of alcohol, various drugs, and tobacco among people. We also look at the distribution of various crime types. We further enhance our analysis by finding a relationship between usage of alcohol/drugs/tobacco and various kinds of offending as well as violent crime activities. We then try to verify our claims as well by looking at correlations between various attributes considered for analysis. Our analysis also included a simple logistic regression, random forest, and gradient boosting machine learning models that can predict based on addictions what kind of crime is likely to commit.

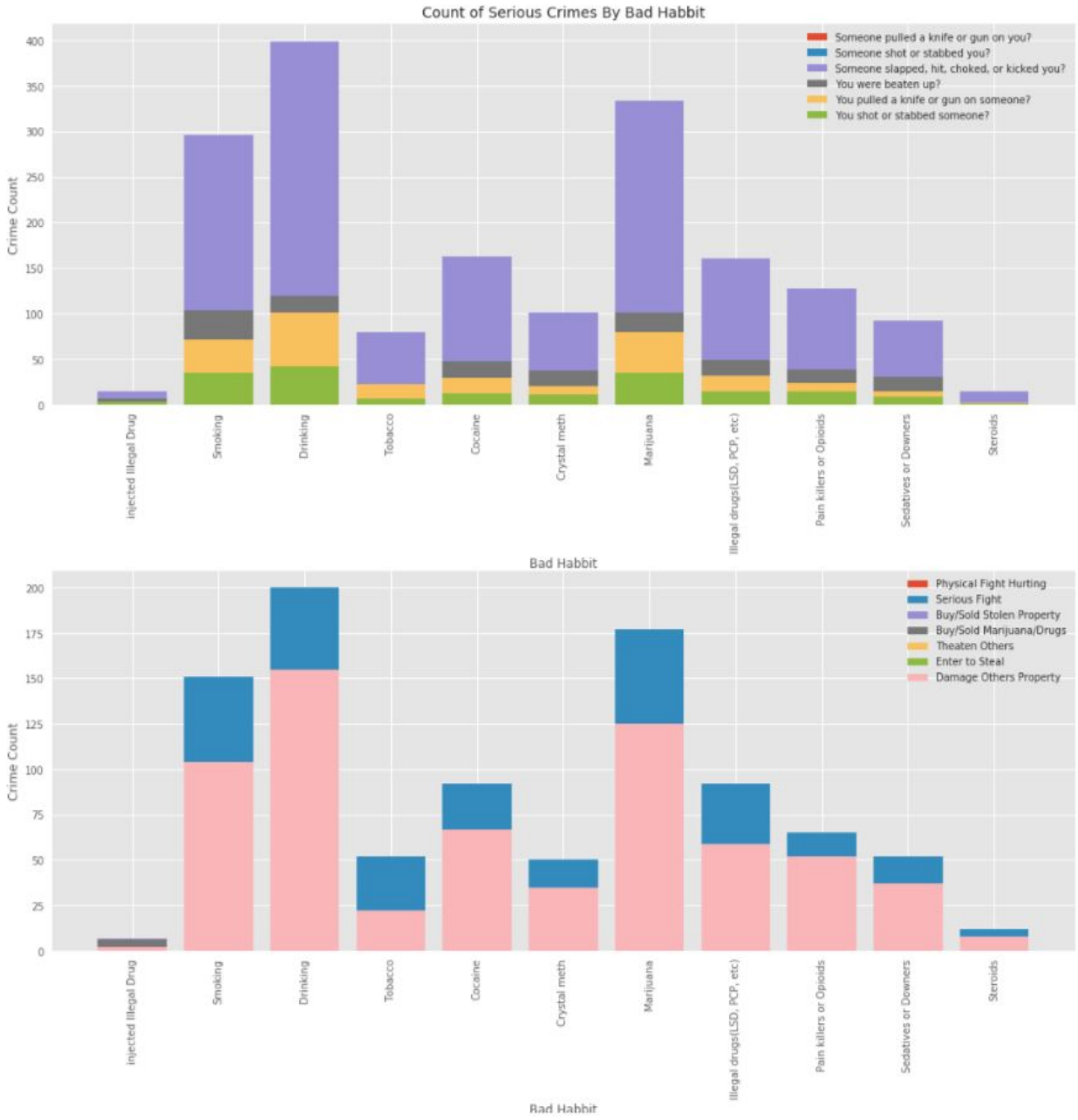
Results

Our analysis was able to find that alcohol/drugs/tobacco consumption distribution between males and females was almost the same with around 45%-55% distribution of consumption. However, the distribution of crime rates was on the high side of males **(Fablillah, Mr. [2020] 'Gender-wise distribution of usage of alcohol/drugs/tobacco and crime rates', Jupyter Notebook, Appendix 1.)**. The answers to a question about general health reveal no visible patterns between alcohol/drugs/tobacco takers as they might be hiding details with most people identifying general health as above fair. Questions related to weight perception got to answer with more than 50% of people considering themselves overweight who smokes, consume beer, marijuana, cocaine, and other drugs **(Fablillah, Mr. [2020] 'Relation of weight with alcohol/drugs/tobacco', Jupyter Notebook, Appendix 2.)**. Our analysis further revealed that

around 10%-20% of people who consume alcohol/drugs/tobacco has received some kind of psychological or emotional counseling in the last 12 month **(Fablillah, Mr.[2020] '**Received emotional/psychological counseling in the last 12 months due to the consumption of alcohol/drugs/tobacco**', Jupyter Notebook, Appendix 3.)**. It was found out that nearly 5%-7% of Parents who consume alcohol/drugs/tobacco seems to have resulted in a child getting influenced **(Fablillah, Mr. [2020] '**Parents consuming Alcohol/Drugs/Tobacco influencing children**', Jupyter Notebook, Appendix 4.)**. The analysis further threw light on that education seems to have a good correlation with the consumption of alcohol/drugs/tobacco with consumption quite less in people who has some kind of degree or more education. On the other hand, Alcohol/Drug consumption is observed quite high in people who have education till high school only **(Fablillah, Mr. [2020] '**Relations of Less Education with consumption of alcohol/drugs/tobacco**', Jupyter Notebook, Appendix 5.)**. Our analysis noticed that nearly 25%-30% of people who consume alcohol/drugs/tobacco suffer from sleep problems nearly 1-5 times per week **(Fablillah, Mr. [2020] '**Sleep problems related to alcohol/drugs/tobacco**', Jupyter Notebook, Appendix 6.)**. This might be a reason behind the growth in the consumption of these items. We even examined attributes like citizenship, religion, language, military background but were not able to find a clear relationship with consumption. We noticed that nearly 3-4% of military background people were involved with some kind of consumption **(Fablillah, Mr. [2020] '**Military background and consumption of alcohol/drugs/tobacco**', Jupyter Notebook, Appendix 7.)**. Our analysis also identified that English & Spanish speaking people were more involved wit consumption but this can be possible because the majority of people in the US speaks these 2 languages only. This concludes our analysis of common personal attributes.

Our main analysis revolves around the relationship between consumption of alcohol/drugs/tobacco and criminal activity. We were able to discover that nearly from total addictions counts, 30.2% of people are alcoholic, 20% consumes marijuana, 17% smokes regularly and nearly 5-10% consume other hard drugs likes cocaine, crystal meth, LSD, etc **(Fablillah, Mr. [2020] '**Distribution of Consumption of Alcohol/Drugs/Tobacco**', Jupyter**

Notebook, Appendix 8.). We even analyzed the distribution of criminal activities and were able to discover that hitting/kicking someone, damaging other's property, pulling knife/gun at someone is quite commonly occurring criminal activities which might have been done due to influence of alcohol/tobacco/drugs **(Fablillah, Mr. [2020] '**Distribution of Criminal Activities**', Jupyter Notebook, Appendix 9.)**.



We further tried to analyze deeply relation between consumption of alcohol/drugs/tobacco and criminal activities and came to some striking conclusions. We noticed that people with drinking,

smoking, and marijuana addicts are highest than other addiction at committing violent crimes. We even noticed people with these 3 addictions are more likely to get involved in crimes like shoot/stab someone, serious fight, pull gun/knife at someone, hitting/choking/slapping someone and damaging other's property. This hints that the use of alcohol/drugs could be one of the reasons behind the rise in gun violence as well. Our analysis also highlights that people who consume cocaine, illegal drugs(LSD, etc) and pain killers are also high compared to other addictions.

As a part of our analysis, we also tried to perform a simple machine learning classification model using algorithms like logistic regression, random forest and gradient boosting **(Fablillah, Mr. [2020] '**Gradient Boosting Model Weights**', Jupyter Notebook, Appendix 10.)**. Our classification task consists of a list of variables which are all different types of alcohol/drugs/tobacco addiction and the target variable was the involvement of a person in one or more types of criminal activities. We even analyzed p-values of addiction type for classification model and noticed that all have quite lower values meaning good relation to criminal activities **(Fablillah, Mr. [2020] '**P Values of Classification**', Jupyter Notebook, Appendix 11.)**. Our model performed above averaged but little skew on side of predicting multiple crimes for people with more than one type of consumption. The main reason behind this was the low samples available. with a history of alcohol/drugs/tobacco consumption and criminal activity.

Limitations

Even though our analysis is very well curated it has a few limitations that we would like to highlight. It seems from our analysis that people with smoking seem to be committing many crimes but it's possible that people have more than one kind of addiction. Many people were involved with more than one kind of overlapping due to which our ML classification model was not able to do extremely well. We even tried to see a correlation between all addictions and all crime types **(Fablillah, Mr. [2020] '**Correlation between addiction and crime types**', Jupyter Notebook, Appendix 12.)**. Our correlation graph indicated that apart from drinking and marijuana addiction, tobacco, cocaine, crystal meth, steroids and illegal drugs (LSD, etc) has a correlation with different types of criminal activities. This hints that people involved with more

addiction might be doing crime and common addictions like smoking seem highly reason behind criminal activities. This concludes our report.

Appendix

1. **Fablillah, Mr. [2020] '**Gender wise distribution of usage of alcohol/drugs/tobacco and crime rates.**', Jupyter Notebook**

Gender	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
Male	1163	1945	260	407	79	1404	561	255	618	25	505
Female	1149	2142	199	314	16	1374	411	204	478	13	26

Gender	In the past 12 months, how often did you hurt someone badly enough in a physical fight that he or she needed care from a doctor or nurse?	In the past 12 months, how often did you get into a serious physical fight?	In the past 12 months, how often did you buy, sell, or hold stolen property?	In the past 12 months, how often did you sell marijuana or other drugs?	In the past 12 months, how often did you use or threaten to use a weapon to get something from someone?	In the past 12 months, how often did you go into a house or building to steal something?	In the past 12 months, how often did you deliberately damage property that didn't belong to you?	Someone pulled a knife or gun on you?	Someone shot or stabbed you?	Someone slapped, hit, choked, or kicked you?	You were beaten up?	You pulled a knife or gun on someone?	You shot or stabbed someone?
Male	75	175	74	61	23	13	117	202	88	285	87	95	40
Female	12	59	29	27	11	8	61	110	70	193	64	31	18

2. **Fablillah, Mr. [2020] '**Relation of weight with alcohol/drugs/tobacco.**', Jupyter Notebook**

How do you think of yourself in terms of weight?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
Very Underweight	25	31	3	4	1	26	11	5	10	0	2
Slight Underweight	208	302	50	73	7	239	98	38	105	7	60
About Right	777	1431	178	263	40	988	379	180	455	17	206
Slight Overweight	981	1762	176	290	41	1182	390	190	427	12	225
Very Overweight	321	559	52	91	6	343	94	46	99	2	38
Refused	0	1	0	0	0	0	0	0	0	0	0
Dont Know	0	1	0	0	0	0	0	0	0	0	0

3. **Fablillah, Mr. [2020] '**Received emotional/psychological counseling in the last 12 months due to the consumption of alcohol/drugs/tobacco.**', Jupyter Notebook**

In the past 12 months have you received psychological or emotional counseling?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
No	2045	3644	380	604	86	2434	819	399	930	23	486
Yes	266	442	79	117	9	343	152	60	166	15	45
Dont Know	1	1	0	0	0	1	1	0	0	0	0

4. **Fablillah, Mr. [2020] '**Parents consuming Alcohol/Drugs/Tobacco influencing children.**', Jupyter Notebook**

(Has/did) your biological mother ever (spent/spend) time in jail or prison?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
No	2174	3916	441	690	91	2641	915	424	1039	36	507
Yes	103	133	12	26	4	109	48	29	46	2	21
Refused	0	0	0	0	0	0	0	0	0	0	0
Dont Know	35	38	6	5	0	28	9	6	11	0	3

(Has/did) your biological father ever (spent/spend) time in jail or prison?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
No	1765	3267	345	557	75	2169	731	321	863	28	428
Yes	394	584	86	123	16	440	171	106	165	9	79
Refused	0	1	0	0	0	0	0	0	0	0	0
Dont Know	153	235	28	41	4	169	70	32	68	1	24

5. **Fablillah, Mr. [2020] '**Relations of Less Education with consumption of alcohol/drugs/tobacco.**', Jupyter Notebook**

What is the highest level of education that you have achieved to date?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
8th Grade/Less	14	10	1	2	1	9	5	3	4	0	0
Some High School	264	254	40	55	6	216	98	59	75	3	42
High School Grad	458	595	70	120	19	434	172	109	162	7	116
Some Vocational Training	104	150	18	24	7	104	47	31	45	1	30
Completed Vocational/Technical Training	166	260	33	53	9	168	63	38	70	4	41
Some College	842	1386	192	289	37	968	355	169	411	22	187
Bachelor Degree	330	872	77	119	11	567	162	33	224	1	84
Some Graduate School	46	171	8	17	1	99	24	6	39	0	11
Masters Degree	45	215	8	22	1	113	23	5	34	0	8
Some Graduate Training Beyond Masters	13	50	4	9	1	30	8	2	11	0	3
PHD	5	29	2	2	0	13	2	0	4	0	2
Some Law,Medical,Nurse	9	31	2	3	2	16	6	2	5	0	1
Completed Law,Medical,Nurse	16	64	4	6	0	41	7	2	12	0	6
Dont Know	0	0	0	0	0	0	0	0	0	0	0

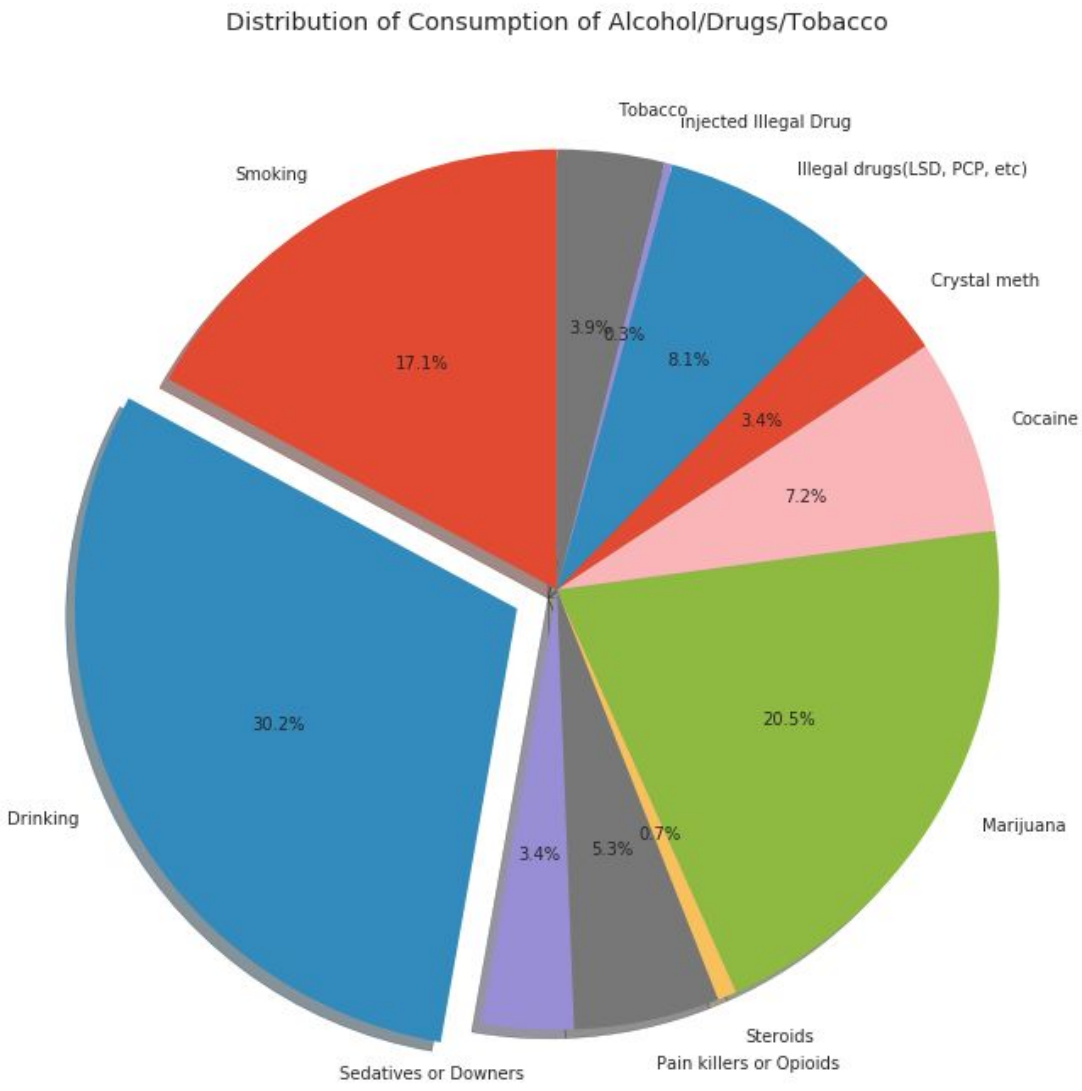
6. **Fablillah, Mr. [2020]** ‘Sleep problems related to alcohol/drugs/tobacco.**’, Jupyter Notebook**

How often did you have trouble falling asleep?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
Never	996	1857	151	260	46	1204	389	182	450	13	247
less than once a week	398	798	91	142	17	526	191	69	224	6	98
1 or 2 times a week	422	764	91	143	14	511	188	90	203	7	99
3 or 4 times a week	207	309	53	75	8	240	92	49	93	5	40
5 or more times a week	270	320	64	89	10	269	102	62	114	5	40
not asked on pretest	18	39	8	12	0	27	9	7	11	2	7
don't know	1	0	1	0	0	1	1	0	1	0	0

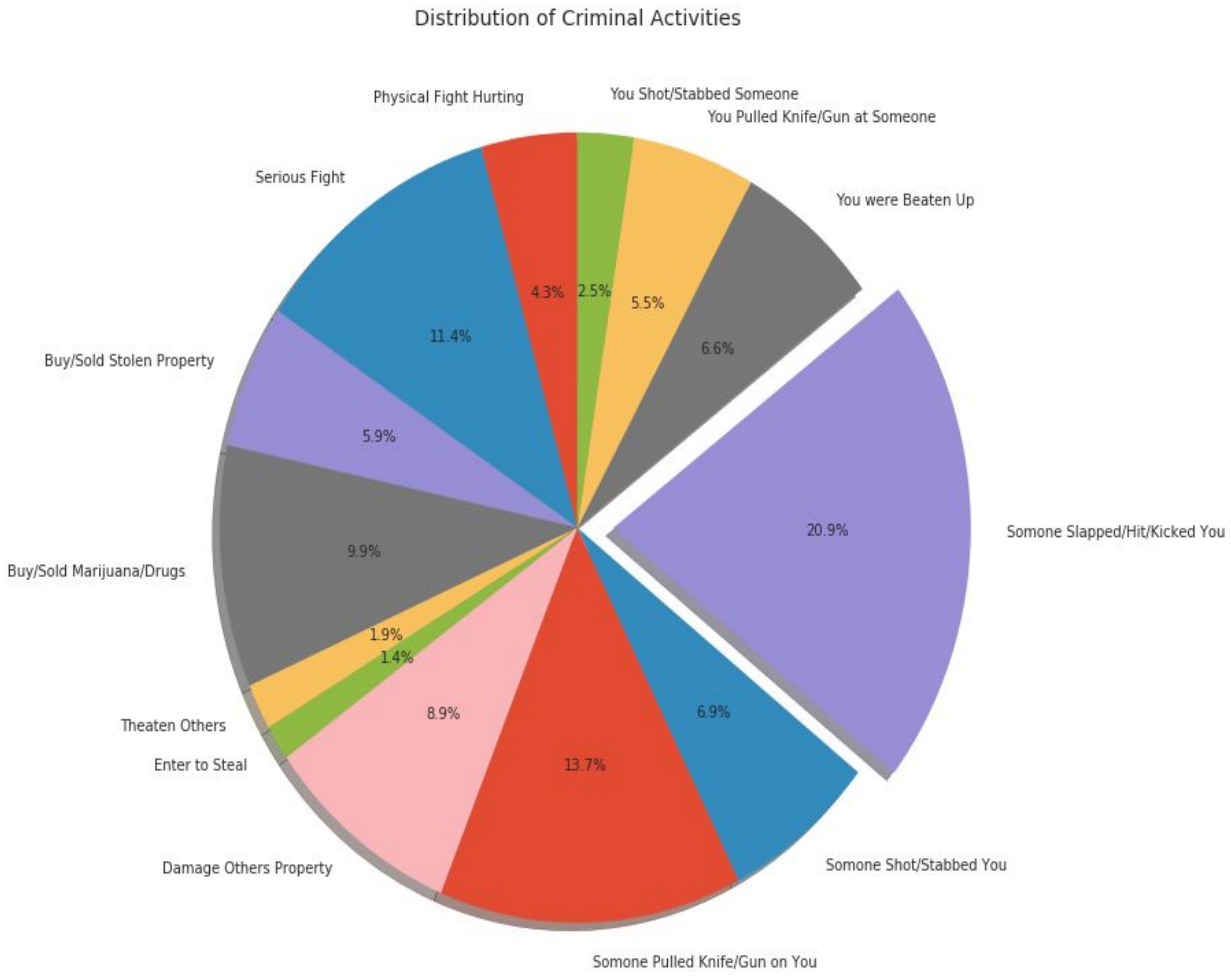
7. **Fablillah, Mr. [2020]** ‘Military background and consumption of alcohol/drugs/tobacco**’, Jupyter Notebook**

Have you ever been in the military?	Smoking	Drinking	Sedatives	Pain killers	Steroids	Marijuana	Cocaine	Crystal meth	Illegal drugs(LSD, PCP, etc)	injected Illegal Drug	Tobacco
No	2134	3786	423	669	90	2594	906	426	1025	36	459
Yes	178	301	36	52	5	184	66	33	71	2	72

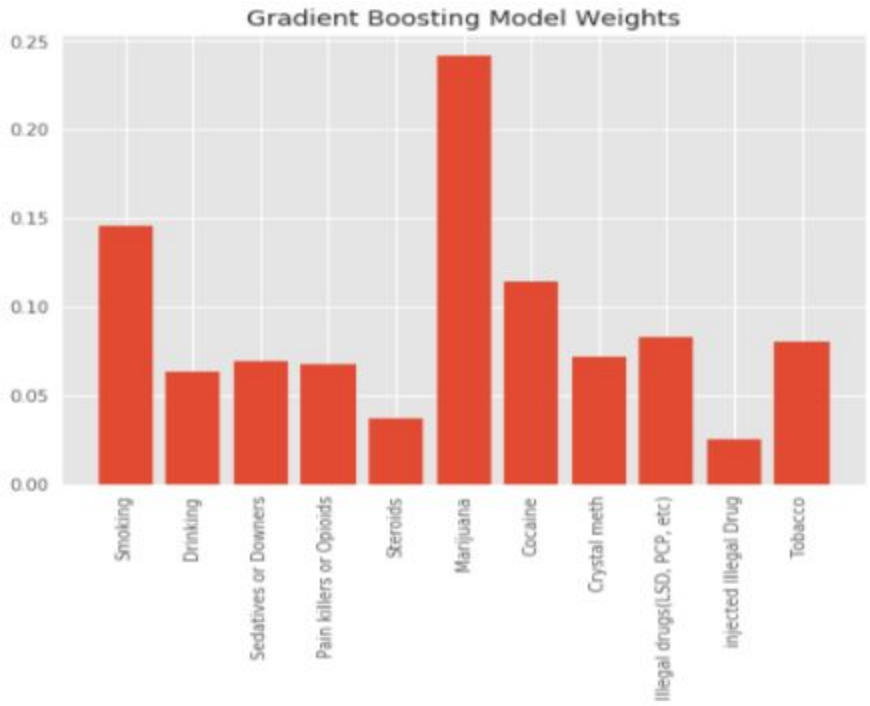
8. **Fablillah, Mr. [2020]** ‘Distribution of Consumption of Alcohol/Drugs/Tobacco**’, Jupyter Notebook**



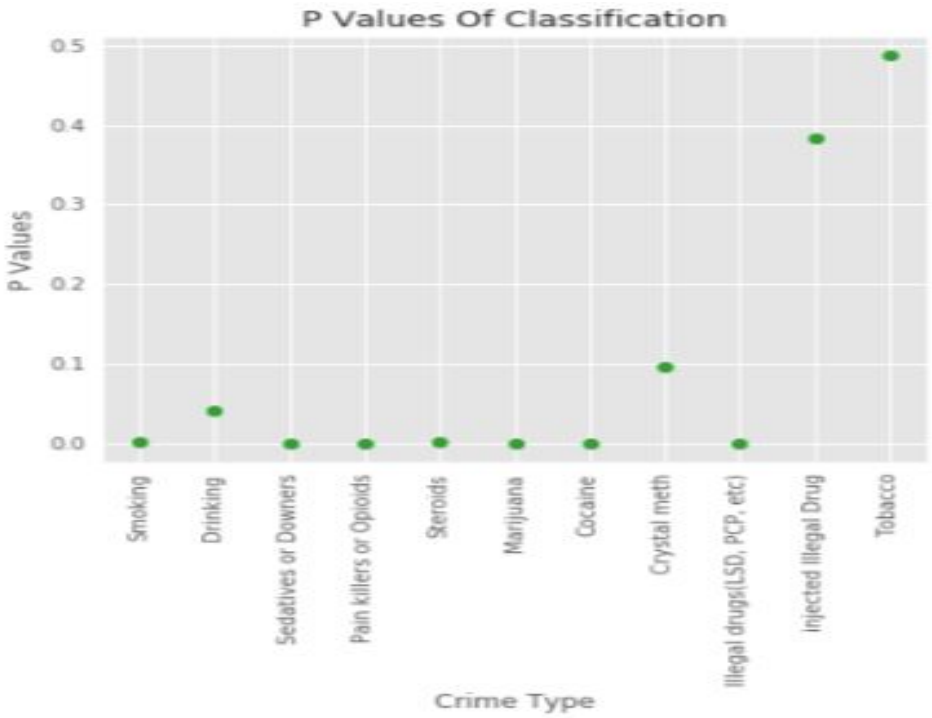
9. **Fablillah, Mr. [2020]** ‘Distribution of Criminal Activities’**, Jupyter Notebook**



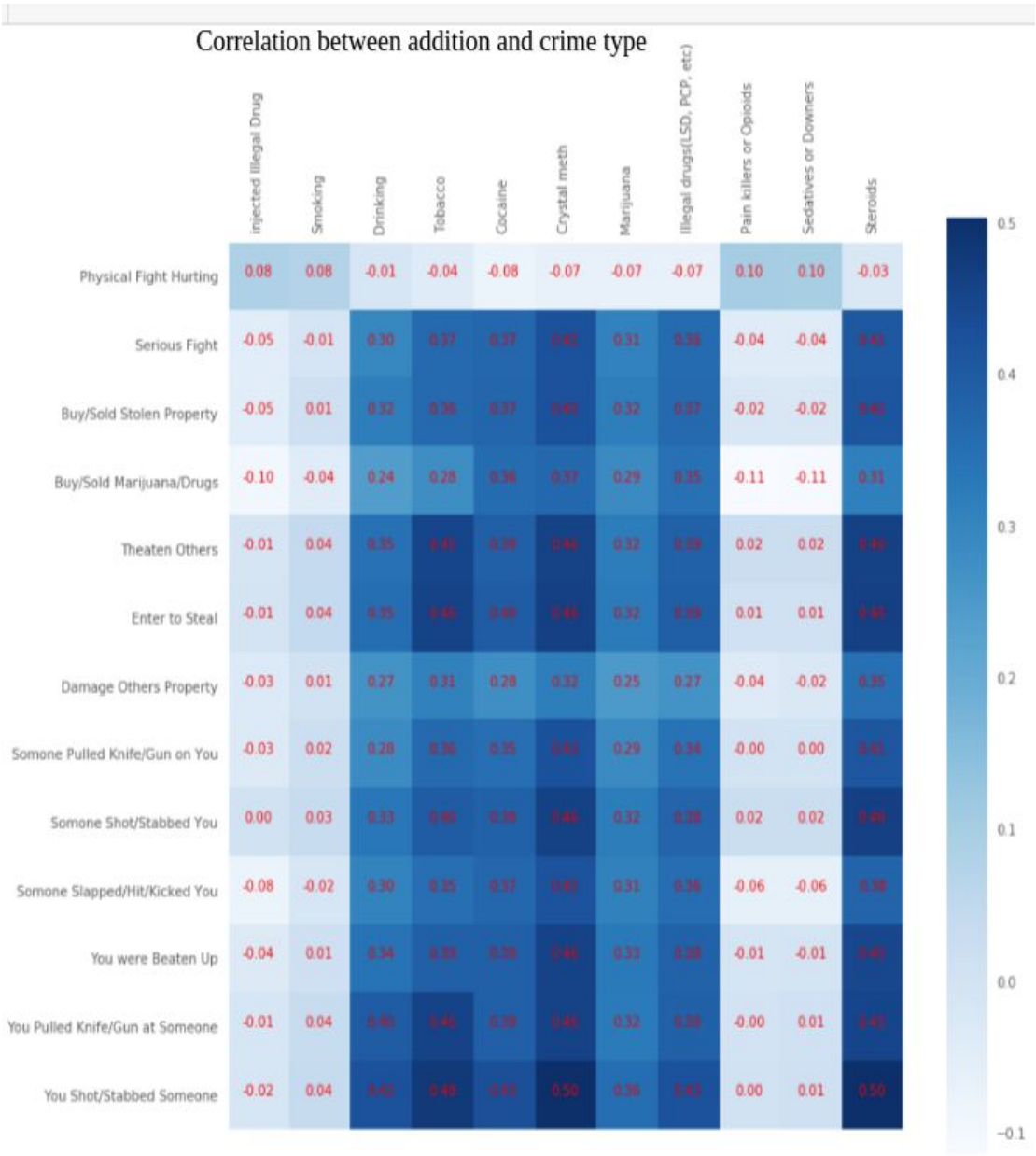
10. Fablillah, Mr. [2020] ‘Gradient Boosting Model Weights’**, Jupyter Notebook**



11. Fablillah, Mr. [2020] ‘P Values Of Classification’**, Jupyter Notebook**



12. **Fablillah, Mr. [2020] '**Correlation between addiction and crime types**', Jupyter Notebook**



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