Project Proposal

GUNS RESEARCH¿?¿?

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**Problem domain**

Violence in schools constitute a serious problem in many countries, especially where weapons such as guns or knives are involved. Although school is meant to be a secure and friendly place for every person, a place to meet new people and learn interesting stuff, many children are afraid to go there. They are often threatened and bullied by other children. That kind of environment is unacceptable and something has to be done in order to prevent further violence. Bullying can have serious consequences for the rest of the children’s lives.

Lots of different factors can contribute to school violence. For example, the home environment can be major factor. The Constitutional Rights Foundation suggests long-term exposure to behaviours and habits such as gun violence, parental alcoholism, domestic violence, physical abuse of the child, and child sexual abuse teaches children that criminal and violent activities are acceptable.

In this project we are focusing on some of the individual's characteristics in order to predict their behaviour, how those characteristics are connected and how important they are.

**Data**

We will use data from the 2015 “Youth Risk Behavior Survey (YRBS)[[1]](#footnote-1)” which “monitors six types of health-risk behaviors that contribute to the leading causes of death and disability among youth and adults” (Centers for disease control and prevention) in the United States.

This data is public and contains the answers given by 15.624 students to 99 different questions (plus a few extra parameters about the students and their schools). Some of the students might be discarded for this study because they didn’t answer some questions or their answers were discarded because they were inconsistent (YRBSS, 2015).

We will use the following attributes for our Bayesian network. They are all related to some question asked in the mentioned survey:

|  |  |  |
| --- | --- | --- |
| **Name of the variable** | **Type** | **Related question in YRBS** |
| Race | Discrete (1 to 8) | Raceeth (Q4 and Q5) |
| Age | Discrete (1 to 7) | Q1 |
| Sex | Binary | Q2 |
| Carry weapon in school | Binary | Q15 |
| Feel unsecure at school | Binary | Q16 |
| Participate in a fight last year | Discrete (1 to 4) | Q18 and Q20 |
| Bullied in school | Binary | Q24 |
| Suffered depression last year | Binary | Q26 |
| Alcohol use last month | Discrete (1 to 4) | Q43 and Q44 |
| Sports practiced | Discrete (1 to 4) | Q80 |
| Grades | Discrete (1 to 4) | Q89 |

**Implementation plan**

We will implement our Bayesian Network using probability tables and any of the Python's libraries suggested (*pgmpy* or *libpgm*).

**Inference problem**

Main goal of our Bayesian Network is predicting how likely is for a given individual to carry some kind of weapon in school. That prediction is based on the individual's basic info (age, sex, race, grades) and some other important factors like how often that individual gets drunk, whether he/she is depressed etc.

Furthermore, we want to investigate which variables have the greatest impact on carrying weapons to schools. Last but not least, we want to find out if whether there are more bullied individuals in schools where students are more likely to carry a weapon.

# **Bibliography**

*Centers for disease control and prevention*. (n.d.). Retrieved 20 12, 2016, from http://www.cdc.gov/healthyyouth/data/yrbs/index.htm

YRBSS, S. Y. (2015). 2015 YRBSS Data User's Guide. 5-10.

1. <http://www.cdc.gov/healthyyouth/data/yrbs/index.htm> [↑](#footnote-ref-1)