

Do video games cause aggression and what is their impact at all?

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Abstract. Computer games are very popular in our days. There are even international competitions with millions of dollars of the prize fund. Unfortunately, they are often blamed for some crimes (especially school shootings) or bad results in school/university. Such thoughts became popular starting from 1999 when computer games were blamed in causing the Columbine High School massacre. Not so long ago (October 2019) American president Trump and some politicians spoke against games. But there are also such people as Mr. Fox, a professor of criminology at Northeastern University. He said, "Video games are an easy scapegoat. They [politicians] don't lose votes by blaming the video-game industry. You can lose votes blaming the gun industry, which is why some people choose not to do that." Despite there are a lot of researches (mostly in psychology and sociology), there is no one common opinion about this and discussions are going on. In my research, I want to find out which version is more likely true and what other impacts on our life do video games have.

Index Terms—Keywords should be taken from the taxonomy (<http://www.computer.org/mc/keywords/keywords.htm>). Keywords should closely reflect the topic and should optimally characterize the paper. Use about four key words or phrases in alphabetical order, separated by commas (there should not be a period at the end of the index terms)



1 INTRODUCTION

THIS research aims to observe a correlation between school shootings and video games, and the impact of video games on those who play them. I don't know whether every point of my plan will be done since I'll use free access data, which provides not all info that is needed.

2 GAME SALINGS

I started by observing how much games are sold, and, what is more important, what genres are the most popular. The results are quite predictable. The largest number of players are from the USA. In the last years, the number of sold games in Europe is almost the same as in the USA, but earlier it was much smaller. One of the reasons can be that in post-Soviet countries game torrenting (downloading a hacked game, but not licensed one) is very popular. The number of purchased games in Japan is almost the same as half of the European ones, which is actually a big number for such a country. The interesting thing is that the number of games sold was growing till 2008 (267 million), but starting from 2012 this number is constantly in the range from 180 to 200 million copies.

Some game genres are popular at the some period of time, and some have a more or less constant number of copies sold. The most popular ones overall time are "Action," "Shooter," and "Sports." "Sports" (the talk is about Wii Sports mostly, I suggest) has the peak of its populari-

ty in 2008-2011, "Action" in 2012-2015, and "Shooters" are that games, which have almost stable popularity. The last two genres have a lot of killings and violence scenes inside of them. Most psychologists say that such possibility allows people to expel their aggression in games and to not do this on their relatives or friends. That's good, right? If it's true, then yes, of course. But some people state that such behavior in games wakes up aggression in real life. In my opinion, if a person has good mental health, he/she understands where is a game, and where real life. However, these thoughts are not facts. Now, we will take a look at numbers and try to figure out some conclusions about the real impact of video games.

3 STUDENTS HEALTH

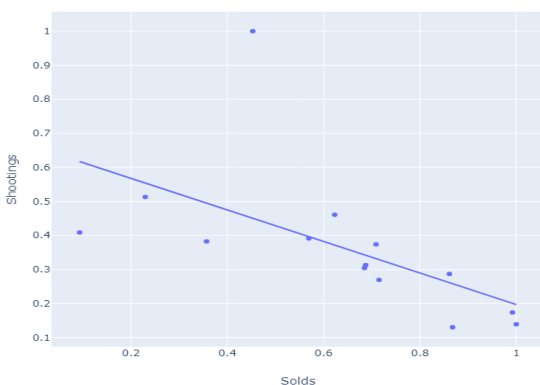
There is some data gathered surveying students in the high schools of the State of Connecticut anonymously. Students answered about their grades, smoking, marijuana or alcohol usage, and some others. One of the questions was about their computer games experience. As a result, we have categorical data. For example, for "average grade," there are three categories: "A's and B's," "C's," and "D's and F's." We also know how many students in each category play computer games. Knowing this, we

can test the null hypothesis that computer games do not influence the specific aspect of students' life with the chi-squared test.

As a result, we have such a situation that among boys, games are associated with never smoking, never having used marijuana, high caffeine consumption, and higher grades. This not necessarily means that games make boys smarter and teach not to take drugs; it also can demonstrate that most such boys play video games. For girls, the situation is a bit similar - games are associated with occasional smoking, never having used marijuana, never sipping alcohol, high caffeine use, no history of depression, getting into serious fights, and carrying a weapon. Shortly speaking, games are associated with no bad habits for health, but also with problematic, maybe aggressive behavior.

4 SCHOOL SHOOTINGS

We often hear about school shootings in the USA. It's a big problem for that country. So, it's easiest to find data about it but not about other countries. In general, we have enormous growth in cases of school shootings starting from 2010. It's good (if we can say so) that the number of killed doesn't grow so fast, but even five persons (1990, 2011) is a significant number of humans' lives. We don't know who of shooters played computer games, so we can't provide totally clear results. However, here is the correlation between cases of shootings and the number of games sold. The data is scaled. Years from 2005 to 2018 are observed.

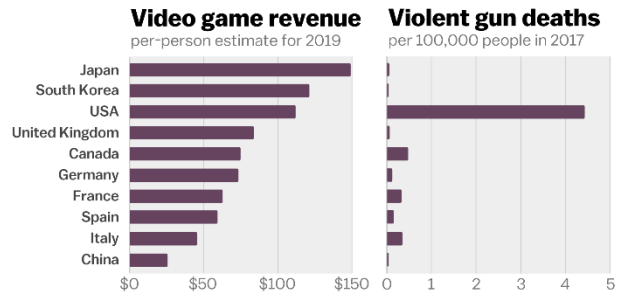


The coefficient of correlation is -0.4633 with a constant 0.6603. Likely, that games really help you to expel your aggression in virtual world as it was said earlier.

5 LAW ON FIREARMS

Again, there are troubles to get info about the whole world. But here is a plot published by Vox. They take data from Newzoo, which has paid subscriptions.

We see that from countries which give the biggest profit to the game industry, the only USA has such a problem with school shootings (actually, data on plot includes also other guns death like police shootings while catching-



Violent gun death data from the Institute for Health Metrics and Evaluation; video game revenue data (which does not include hardware sales) from Newzoo, a gaming analytics company

Vox

criminal). And it's not a coincidence that the only two countries where permits or licenses are not required to obtain and possess firearms are the USA and Yemen.

There are still some states where you need permission to purchase such deadly item.

6 ECONOMY

As we saw, the number of games sold is measured in millions of copies. It's a reason to think that the game industry promotes GDP growing. In 2013 and 2015, part of the game industry in the total US GDP is 0.06%, which is actually not such a small number, especially counting that it is 11.571 billion out of 18.1207 trillion (in 2015).

And, finally, we came to sources – games don't appear by themselves; they are made by people. In 2013 there were about 57K employed persons in the US who makes games. In 2015 this number grew to 60K. And it grows fast. Comparing to most popular industries in the USA, the game industry is one of the fastest-growing.

Annual growth rate in %



7 CONCLUSION

We cannot unambiguously say how computer games influence on our minds, but here are some things that are definitely associated with video games.

- higher grades among boys
- lower alcohol consumption, no history of depression, getting into serious fights and

- carrying a weapon among girls
- lower smoking and marijuana usage
- higher caffeine consumption
- lower school shootings rate (keeping in mind that it's not totally clear result, because we didn't have enough data for this)
- growth of employment rate
- high contribution in GDP

Hence, despite video games can be related to girls' aggression, but in general, they are blamed not for their crimes. Moreover, they are even benefit.

REFERENCES

- [1] <https://www.kaggle.com/gregorut/videogamesales>
- [2] <https://www.kaggle.com/tamber/steam-video-games>
- [3] <https://www.kaggle.com/rush4ratio/video-game-sales-with-ratings>
- [4] <https://www.kaggle.com/kendallgillies/video-game-sales-and-ratings>
- [5] <https://www.kaggle.com/sidtwr/videogames-sales-dataset>
- [6] <https://www.kaggle.com/nikdavis/steam-store-games>
- [7] <https://www.kaggle.com/houstongen/videogame>
- [8] https://corgis-edu.github.io/corgis/csv/video_games/
- [9] <https://www.kaggle.com/uciml/student-alcohol-consumption>
- [10] <https://www.kaggle.com/ecodan/school-shootings-us-1990present>
- [11] <https://www.kaggle.com/mikaelhuss/swedish-school-fires>
- [12] <https://www.kaggle.com/aljarah/xAPI-Edu-Data>
- [13] https://corgis-edu.github.io/corgis/csv/school_scores/
- [14] <https://www.infoplease.com/history/world/timeline-of-worldwide-school-and-mass-shootings>
- [15] <https://www.chds.us/ssdb/category/shooting-incidents/>
- [16] <https://www.chds.us/ssdb/category/graphs/>
- [17] <https://www.chds.us/ssdb/>
- [18] <https://www.schoolshootingdatabase.com/>
- [19] <https://www.kaggle.com/szamil/who-suicide-statistics>
- [20] <https://www.kaggle.com/sathutr/global-suicide-data>
- [21] https://en.wikipedia.org/wiki/Overview_of_gun_laws_by_nation
- [22] <http://www.yenisymposium.com/Pdf/TR-YeniSempozyum-47b2facc.pdf>
- [23] <https://www.learntechlib.org/p/107270/>
- [24] <https://www.vox.com/2019/8/5/20753797/gun-violence-el-paso-dayton-mass-shootings>
- [25] <https://www.vox.com/2019/8/5/20754769/trump-video-games-mass-shooting-el-paso-toledo>
- [26] <https://www.vox.com/policy-and-politics/2019/8/5/20755092/gun-shooting-video-game-chart>
- [27] <https://www.forbes.com/sites/lisettevoytko/2019/08/05/trump-blames-video-games-for-shootings-but-research-doesnt-support-that/#1da4102311dc>
- [28] https://en.wikipedia.org/wiki/Video_game_controversies
- [29] <https://www.washingtonpost.com/nation/2019/08/05/kevin-mccarthy-dan-patrick-video-games-el-paso-shooting/>
- [30] <https://www.theesa.com/wp-content/uploads/2019/03/2017-EIR-National-Report.pdf>