How the COVID-19 pandemic changed the crime statistics in Germany in 2020

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Abstract

2020 was shaped by the new Coronavirus which influenced our whole life. It caused many deaths and a huge damage in different parts of society all around the world. The change in social life as well as all the different restrictions that were put in order also had an impact on the crime statistics for the year 2020 in Germany. Compared to the years prior there has been a significant change in the reported cases for various crimes during the effected time periods.

1 Introduction

Crime is influenced by current events. The most significant in the last years being the COVID-19 pandemic. To see how crimes changed during these trying times could help us understand on another level how our society got changed. The media often reports how the overall crime rates decrease, but in 2020 we also heard about how domestic abuse and cybercrime boomed world wide and we wanted to see if these headlines were true for Germany by looking at the crime statistic data. We are going to look at the reported cases from 2015 to 2020. Doing this the years leading up to 2020 are a reference point to make it possible to conclude and verify that changes are related to anti-COVID measures like lockdowns, closure of retail and home schooling and not just normal annual changes. We will look at the reported cases each month to identify trends in the effected months and during the year itself. In figure 1 we see all crimes and can already see a clear trend, but does that mean that every crime shares this trend? To answer this question we are going to look at the specific crimes of shoplifting, robbery and theft, break ins in hotels, ecstasy violations, sexual harassment and assault on streets, child abuse, drug violations, violations against the infection control act, subsidy fraud, cybercrime and fraud.

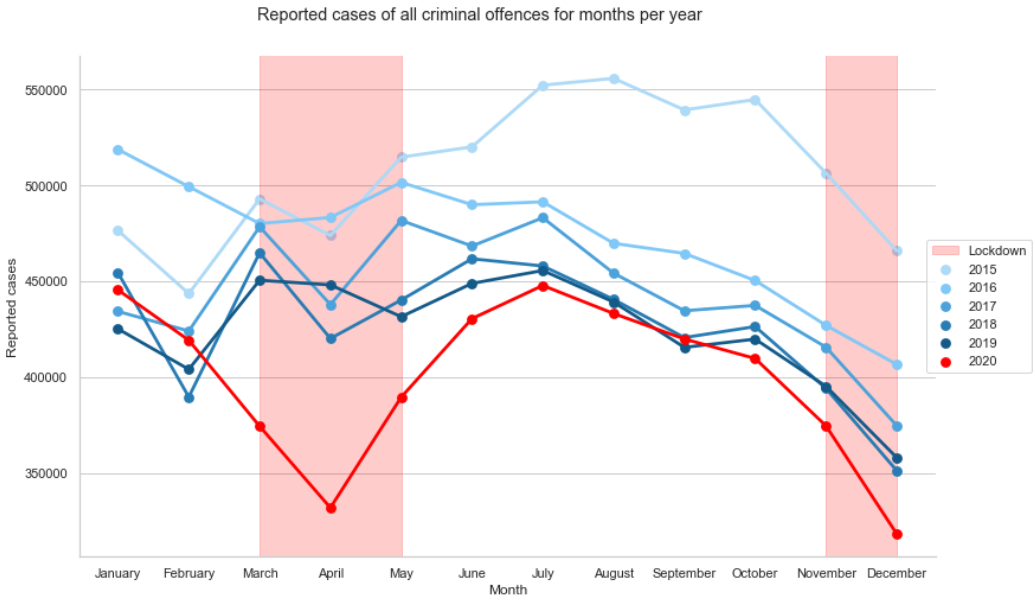

Figure 1: Reported cases of all criminal offences

2 Methods

The BKA[1] in Germany is a central government institution that, amongst other things, collects and analyzes all possible data that are related to criminal offences. They get their data from the 16 state criminal investigation offices through their specific country data and release yearly police crime statistics to the public since the 1950s. Some of the crime statistics can be found as a .csv-file, which were used for this a research question. The released statistics do not contain a specific cause and have a strict factual nature. The data is publicly available on the BKA website. We used the offence time statistics[1] (status: 24.06.2021). It entails a row for each specific crime and columns for the key, crime, the total number of cases, the number of cases each month, the number of cases with an unknown offence time and the validity time frame of the key. The reference point where the cases happened is Germany. We analyzed the offence crime statistics from 2015 to 2020 using Python (ver. 3.9.0) with the packages pandas (ver. 1.2.4), seaborn (ver. 0.11.1) and matplotlib (ver. 3.4.2). We selected the keys related to the crimes we wanted to look at, restricted the used columns, added a column to reference the year and plotted our data. The source code can be found here: `https://git.tu-berlin.de/nomedataba/datascience_crimestatistics`

[1] Bundeskriminalamt

3 Results

The Figures showcase the number of reported cases on the y-axis and the months on the x-axis. The cases for the year 2020 are in bright red, previous years are in blue, with a lighter blue indicating an earlier year. Each Figure represents a specific crime. The red markings are of relevant lockdown measures and are being described in the discussion section.

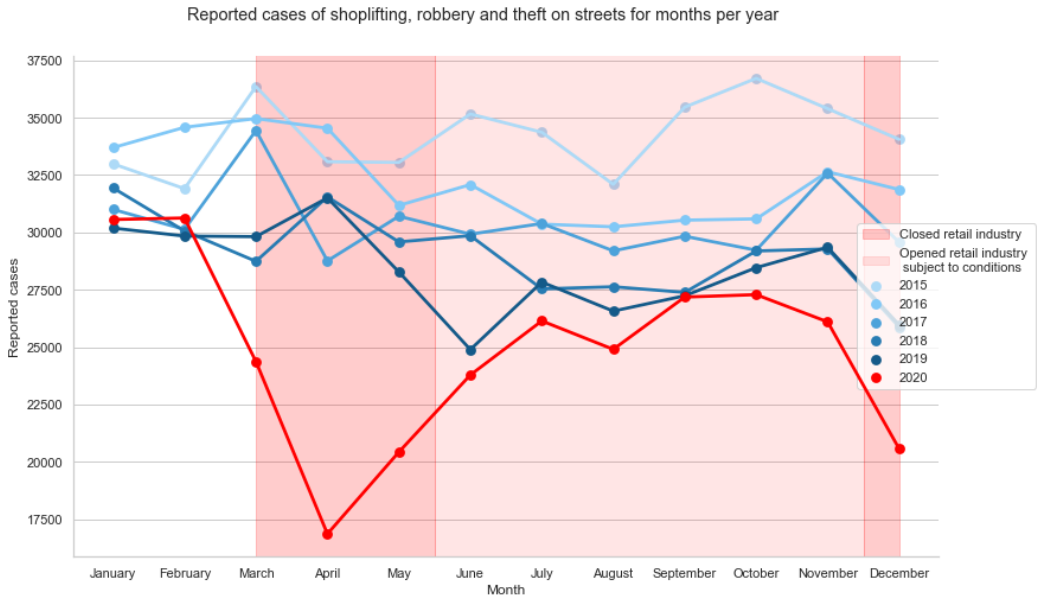

Figure 2: Reported cases of shoplifting, robbery and theft on streets

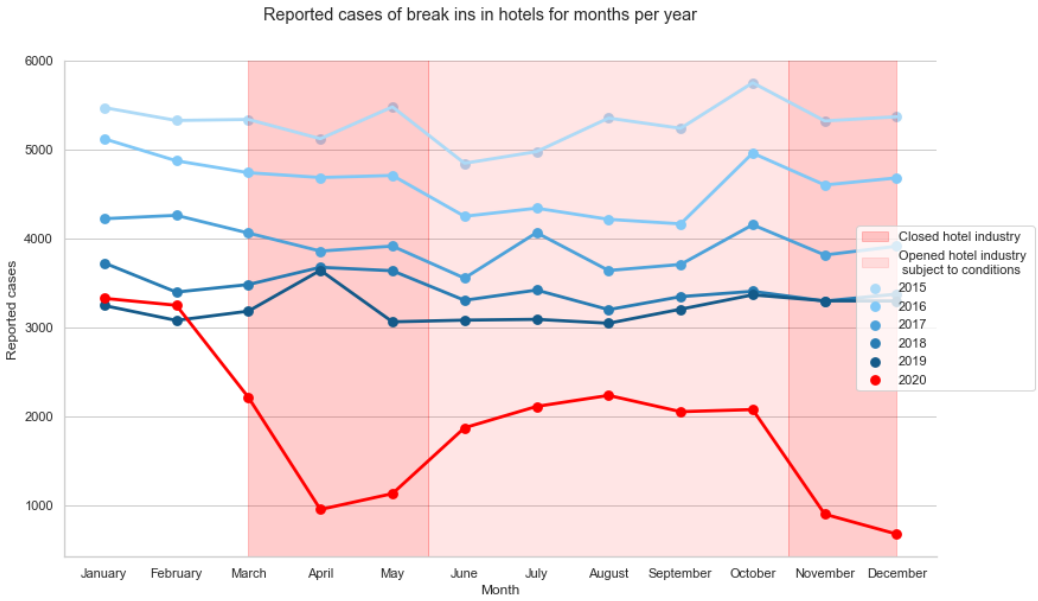

Figure 3: Reported cases of break ins in hotels

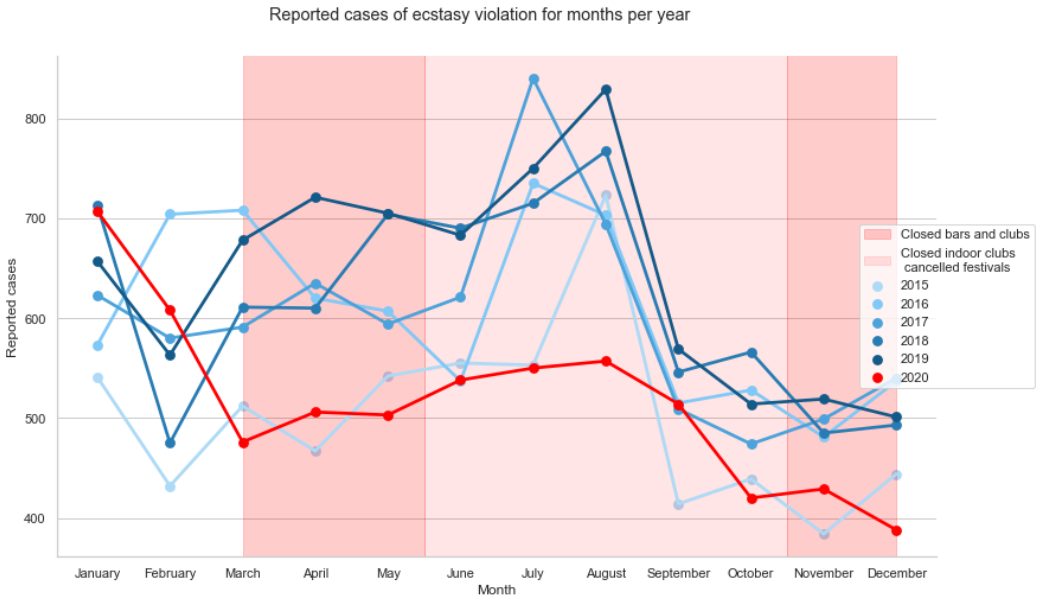

Figure 4: Reported cases of general violations in relation to ecstasy

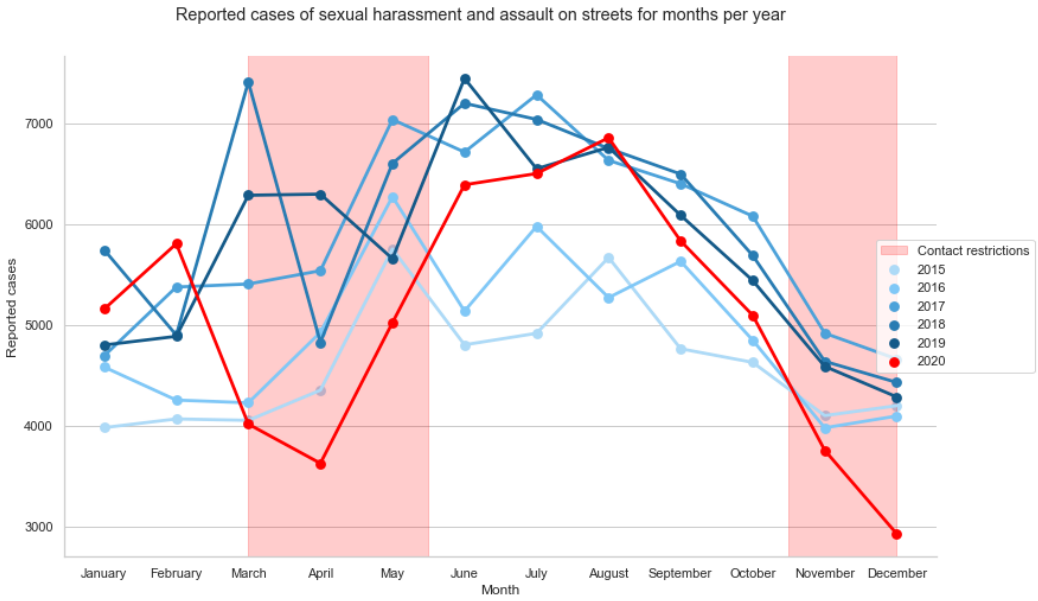

Figure 5: Reported cases of sexual harassment and assault on streets

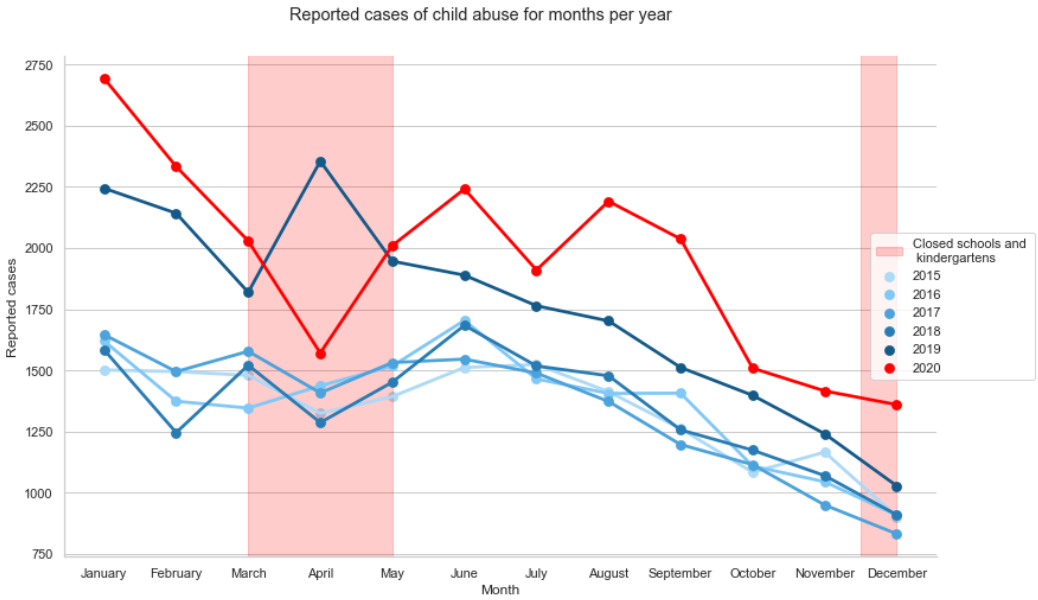

Figure 6: Reported cases of child abuse

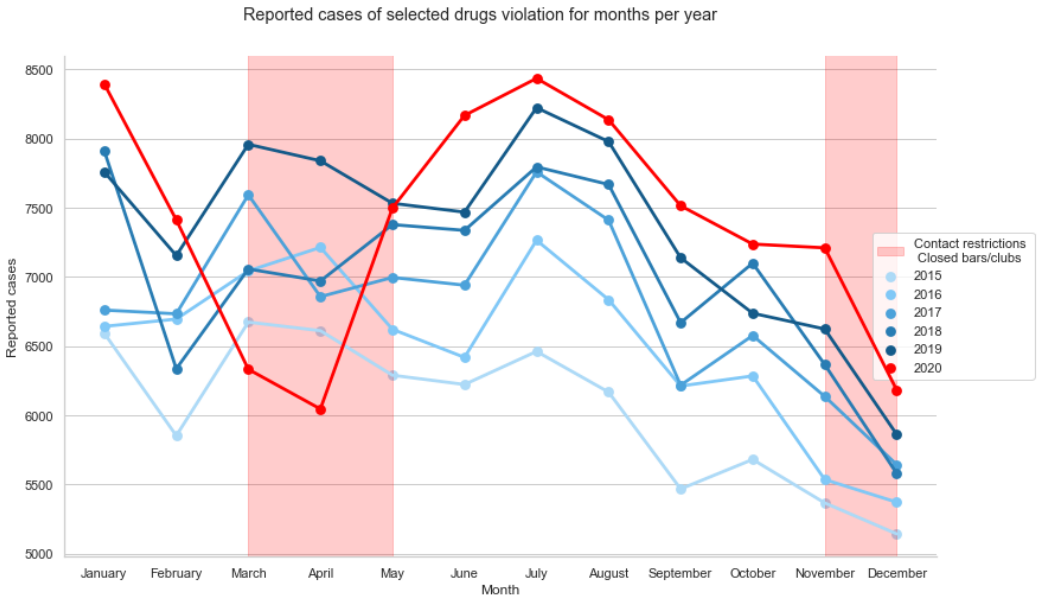

Figure 7: Reported cases of (selected) drugs violation

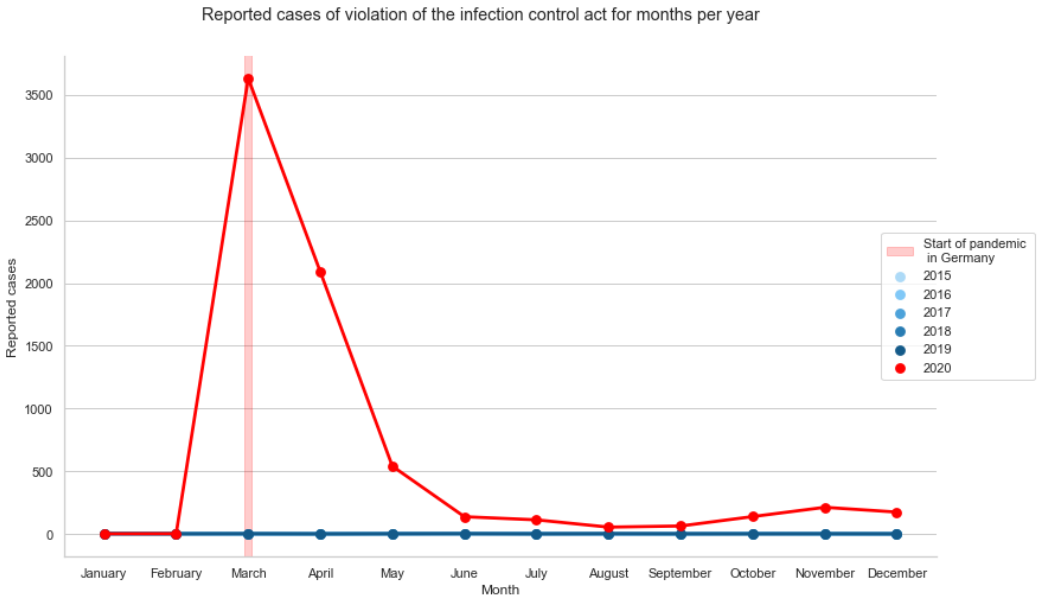

Figure 8: Reported cases of violation of the infection control act

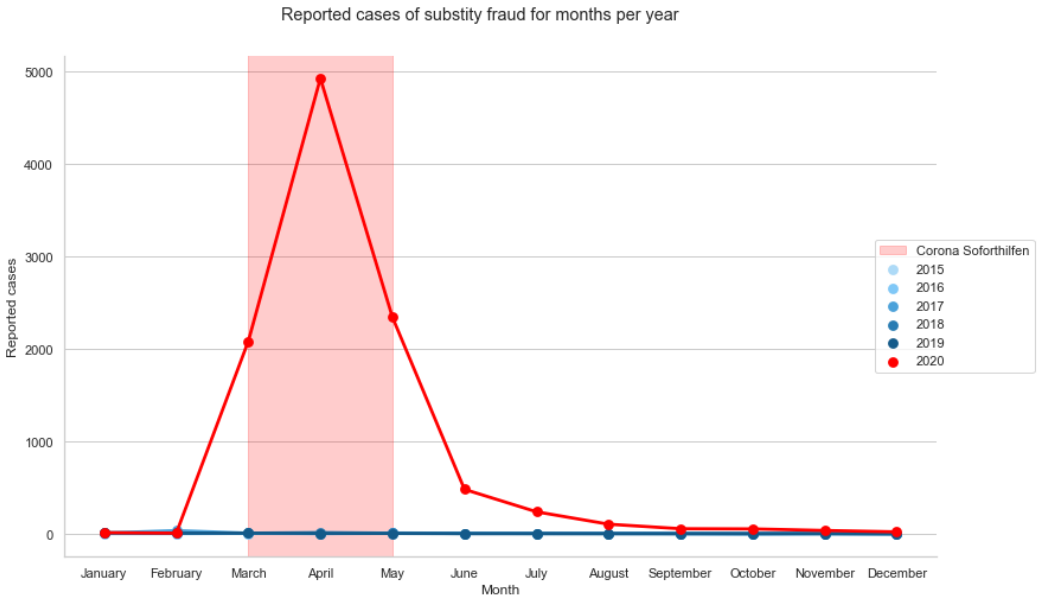

Figure 9: Reported cases of subsidy fraud

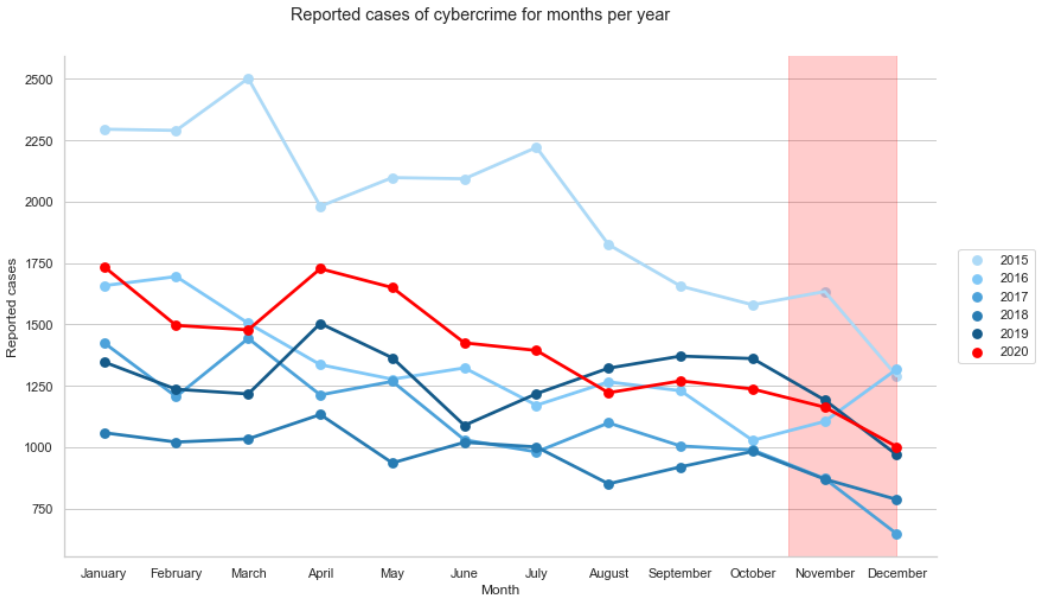

Figure 10: Reported cases of cybercrime

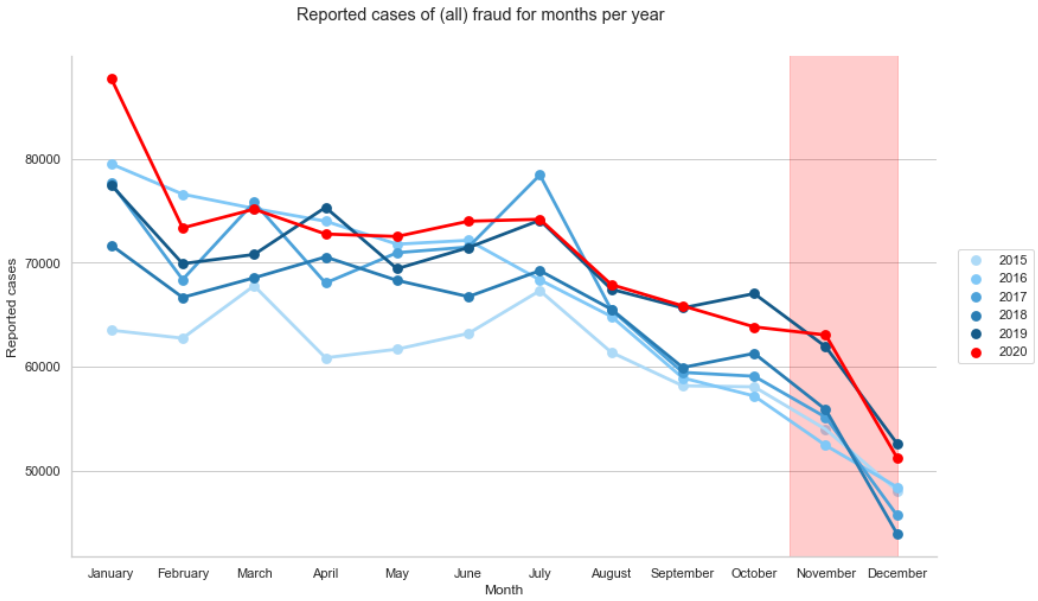

Figure 11: Reported cases of (all) fraud

Figure 2 shows the reported cases for shoplifting, robbery and theft on streets. It starts normal, but in March and April cases drop massively. They rise again till July, although still visibly lower then in the years before. There is a small drop in August, but this seems to be a trend from the previous years. The next drop starts in November, even though we normally see an increase during this time and a drop in December. The December of 2020 still showcased this seasonal drop.

Figure 3 shows the reported cases of break-ins in hotels. It displays a normal start to the year, but cases rapidly drop in March and April. They start to rise again in June. The number of cases never comes near previous years, however it shows the same trend of a constant albeit lower line. Normally an increase of cases happens in October but in 2020 they are pretty much the same as in September. The next drop shows up in November and brings the number even lower. This continues in December, contrary to the years before.

Figure 4 shows the cases in relation to ecstasy. We are looking at general violations against §29 of the narcotics act. This mostly includes illegal possession. 2020 has a high start, but also an instant drop in February, which seems to happen most years. It is less intense than in previous years. Then next drop happens in March, even though normally cases start to rise. The number of cases stays relatively low in April and May, but rises a bit in June with the

start of summer. The massive spike in July and August of the previous years fails to appear. Cases start to drop in September to a level of previous years. In those years September seemed to be a changing point in the number of cases. In October they drop lower and stay this way in November. The last visibly drop is in December, although the years before show more of an increase or stay nearly the same during this time.

Figure 5 shows the reported cases of sexual harassment and assault on streets. The graph corresponding to the year 2020 starts at the same level as previous years. In March and April it has a clear visible drop. From May on it steadily recovers and throughout summer and autumn it roughly stays at the same level as the years before. Between November and December it again has a drop compared to previous years.

Figure 6 shows the reported cases of child abuse. Throughout the year except for the month April the graph corresponding to the year 2020 stays higher than the previous years. Aside from the drop in April there is also a visible drop in July but compared to the one in April not as severe.
Figure 7 shows the reported cases of drug violation including heroin, cocaine, LSD, new psychedelic substances, amphetamine and methamphetamine. The numbers of reported cases of drug violation in 2020 is higher than the previous years except for March and April.

Figure 8 shows the reported cases of violation of the infection control act, i.e. breaking mandated quarantine rules etc. In the years prior to 2020 the cases were close to zero. In 2020, the amount of reported cases exploded in March then falling in the months after. In November and December there was a small, not comparable increase in cases as well.

Figure 9 shows the reported cases of subsidy fraud which includes the exploitation of aid programs of the government. Like in figure 8 the cases were close to zero in the years prior to 2020. In 2020 itself there was a huge increase to March and then to April that captured the highest number of cases. After April, the amount of reported cases suddenly decrease in each following month, getting closer to zero at the end of the year again.

Figure 10 shows the reported cases of cybercrime, i.e. all crimes that are connected with the use of computers. Usually, in all years since 2015, the cases start at a really high amount in January and slowly drop throughout the year with the exception of some sudden increases in some spring and summer months.
Figure 11 shows the reported cases of all kind of frauds. Like cybercrime the reported cases of frauds usually start at a high point at the start of each year, staying relatively constant in the first months with some natural fluctuations and ending in each year with a huge plummet in November and December.

4 Discussion

Our plots can be categorized into three main categories.

4.1 Changes in crime statistics possibly connected to lockdown

In figure 2 the closure of retail correlates to the steep fall in March and April, as well as in the second half of November and December. It is logical that the possibilities for theft decrease strongly when the profitable industry of clothes, make-up and more is closed down. The overall lower cases during the year is in sync with the open retail with restrictions. Restrictions included a limit of people that could be in a store simultaneously and thus makes it easier for security and harder for thefts. Because people couldn't really go shopping anymore, they had a lot less reasons to carry money around or go out in general, this lowers the cases of thefts on streets.
In figure 3 you see that the massive drops in March and April, and in November and December correlates to the shut down of hotels.They could open again in late May, but there were many restrictions on the hotels themselves as well as travel restrictions overall. This is shows up in the altogether lower numbers in break-ins. Fewer people traveled and stayed in hotels, this means that there are less people with valuables as well as less cash in the hotels itself and even stronger security restrictions to keep people safe. Many hotels declared bankruptcy, so a break-in wasn't worth it.
Ecstasy is the stereotypical party drug. It is therefore no surprise, that in figure 4 the decrease in March and December correlates to the closure of bars and clubs. You see the Increase in June happening when some restrictions were lifted, so that for example outdoor clubs could open again and the weather got warmer. The spike that didn't appear is because of no concerts and especially no festivals being allowed during summer.

As visible in figure 5 the drop of reported cases of sexual harassment and assault on streets in 2020 corresponds to the lockdown restrictions such as contact restrictions as well as closing of bars and clubs. Due to these restrictions people were staying more at home instead of being outside and thus had less chances of getting into fights or being sexual harassed.
Figure 6 and 7 both show a similar pattern. While the numbers of reported cases in 2020 start relatively high we can see a drop corresponding to the lockdown restrictions. When some of the restrictions were lifted the graph quickly recovers and even exceeds the numbers of previous years.
For the reported cases of child abuse one of the lockdown restrictions that influenced the numbers could be the closing of schools and kindergartens. While one would expect an increase of reported cases with these establishments being closed and thus children being even more exposed to violent families, these establishments are usually the places were child abuse becomes visible and therefore could get reported. With schools and kindergartens being closed there are

less chances of detecting child abuse. This could explain the drop of reported cases. This hypothesis is supported by the vast increase of reported cases in June which could include cases that weren't detected the months before. Another indication of this hypothesis is the higher number of overall reported cases compared to previous years. With schools and kindergartens being closed in December again, one would expect another drop. However, there are Christmas holidays in December and thus the lockdown measures led to these establishment only being closed one week earlier, thus not having a big impact on the numbers of reported cases. Oddly in December the number of reported cases even slightly increase which could be the result of people being more aware of the vulnerability of children during lockdown periods.
The drop in the reported cases of drug violation also seems to correspond with lockdown measures such as contact restrictions as well as closed bars and clubs. Once these restrictions were lifted in summer the reported cases went up again. During the second lockdown in November the graph shows again a drop but compared to previous years this seems to be subject to annual changes during winter months. This could suggest that during the second lockdown period the numbers weren't as much influenced by restrictions which could be the result of people taking lockdown measures less serious as during the first lockdown.

4.2 Changes in crime statistics possibly connected to COVID-19

The crime of the violation of protection control act might be connected to COVID-19 in our opinion because of the new rules like violation of a quarantine order or violation of the ban on contact or a curfew. This might be the reason for the massive increase in spring of 2020 what was clear to see in the graph of said crime. In addition to this crime, another possibly connected to COVID-19 crime was the subsidy fraud. This crime has a mighty increase in the first quarter of 2020, with the peak in April. The reason of that might be the corona aid program which started in March. People tried to fraud the country in order to get money in a easy way. Both of above mentioned crimes are obviously connected to the pandemic!

4.3 No clear trend visible in crime statistic

The interesting thing in the cybercrime cases is the increase in April and May. But there was this increase in 2018 and 2019 as well. And because we thought that the home office measures led to a huge increase of cybercrime cases, the graph actually says otherwise because of the continuous decrease of the reported cases throughout the year. But because the severity of the attacks are not captured in the given data set, it is still possible that the damage, caused by those cybercrimes, is greater in 2020 than in the years before.

The noticeable drops in fraud are from January to February and then towards the end of the year. But because any other year seemed to behave in the same

way, there is no causation due to the lockdown measures. We actually expected that there will be a huge increase between March and May, e.g. regarding the "grandparent scams" or credit card scams online because of the excessive usage of the internet due to the home office period, which statistically did not occur.

4.4 Limitations

As briefly mentioned in section 4.3 the data provided by the BKA has only little information about the severity of the committed crimes or the impact it has on the victims. In the case of cybercrime for example one might get the feeling that cyberattacks have been increasing since it is more present in the media nowadays. However, this could be due to the fact that the media is more interested in cyberattacks against big companies. Additionally attacks against big companies usually affect a lot of people. Though the given crime statistics do not give any information about the amount of affected people. Therefore one needs to keep in mind that this report was only looking at the pure amount of cases given by the BKA. Another limitation is that this report takes only the reported crimes into account. The true amount of committed crimes might be much higher than the amount of reported crimes. This amount of unreported cases might have also had an increase during the COVID-19 pandemic. Because of school and kindergarten closings as well as cancelled festivals a lot of offences like child or drug abuse might not have been detected.

4.5 Conclusion

To conclude all of the findings, COVID-19 and the lockdown measures had a huge impact on the crime statistics at least in Germany. The reported cases overall were on an absolute low point since 2015 and it shifted the observed crimes that require "human-to-human contact", e.g. sexual harassment, child abuse, theft on streets and the crimes that are connected to different establishments (hotels, stores and night clubs) to crimes that just became more apparent due to the lockdown restrictions (violation of the infection control act) or subsidy fraud, which includes the exploitation of the corona aid program. But it didn't influence all crimes that can be linked directly to the lockdown and home office measures, as we found out with cybercrime and fraud.
But even if it seems so, it is not possible to understand the actual impact the COVID-19 pandemic and the lockdown restrictions had on crimes in general, because as mentioned in Section 4.4, the severity of the crimes are not captured, which makes it impossible to evaluate the actual damage with the data set. Furthermore, it is possible that some crimes like child abuse and drug possession are actually more under reported than in any other year before, because of the measures. Less child abuse and drug possession may be discovered and therefore be reported, which could lead to the false conclusion that the lockdown measures had a positive effect on some crimes.

References

[1] PKS Bundeskriminalamt, T08 Tatzeitstatistik, 2015, status: 30.04.2016
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