

# Data Pirates - Tracking Effectiveness of Police Reform

## Checkpoint 2 - Data Exploration

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## Overview:

**Why track Police Reform?** Since August 15, 1835, the creation of the Chicago Police Department a lot of reformatory policies have been deployed to constantly improve the service to Civilians. Despite the efforts, many civilians have fallen victim to instances of police brutality and negligence. An institution that should have been a symbol of security, fostered a lot of unrest and distrust.

Tracking the effectiveness of these reformation efforts will provide insight on:

- (1) what misconducts were targeted by a certain reform
- (2) did it incite a positive change?
- (3) are these reformation efforts being enforced

With this information, statistically informed decisions can be made to ensure reform policies are updated accordingly and resources aren't wasted.

**Question 1:**

**What are the trends in complaint count overall and per complaint category over time and what are the effects on these counts with the introduction of various reforms?**

**Analysis:**

The Chicago Police Department was founded on August 15, 1835. Since then, instances of public outcry due to the unjust treatment of and the public failure in the handling of cases such as Laquan McDonald, Emmett Till, Diane Bond, and Rekia Boyd, etc. called for reformatory practices.

Some of these notable reformatory efforts over time are:

1.	Crisis Intervention Team (CIT)		1988
2.	Chicago Alternative Policing Strategy (CAPS)		1993
3.	TRR Reports (TRR)		2004
4.	Independent Police Review Authority (IPRA)	2007	
5.	Violence Reduction Strategy (VRS)		2009
6.	Watch Operations Lieutenant (WOL)		2014
7.	Body Worn Cameras (BWC)		2015
8.	Police Accountability Task Force (PATF)		2015
9.	Investigatory Stop Report Training (ISR)		2016
10.	Community Policing Advisory Panel (CPAP)		2016
11.	Civilian Office of Police Accountability (COPA)		2017
12.	Training Oversight Committee (TOC)	2017	
13.	Force Review Division (FRD)		2019

*These reforms vary from investigative oversight agencies to mental health wellness awareness training of police officers.*

## **Why visualize this?**

This visualization answers the questions: **What effect has a certain reform had? What is the effect of reform on overall policing? What effect has a targeted reform had on a category of complaints?**

The study of these trends will provide insight on reformative policy's success or failure and this consequently will provide valuable statistical information required to improve said policies.

## **Discussion:**

### **Visualization 1: Complaint Count Trends**

To visualize this trend, we used data from the `data_allegation` table. The attributes chosen were, `incident_date` and Complaint report ID. The count aggregate function is applied to the complaint report ID ( `CRID` ) to get the number of complaints per year. This data is then visualized using a line graph. We draw reference lines on this graph based on the dates of enforcement of reformative policies.

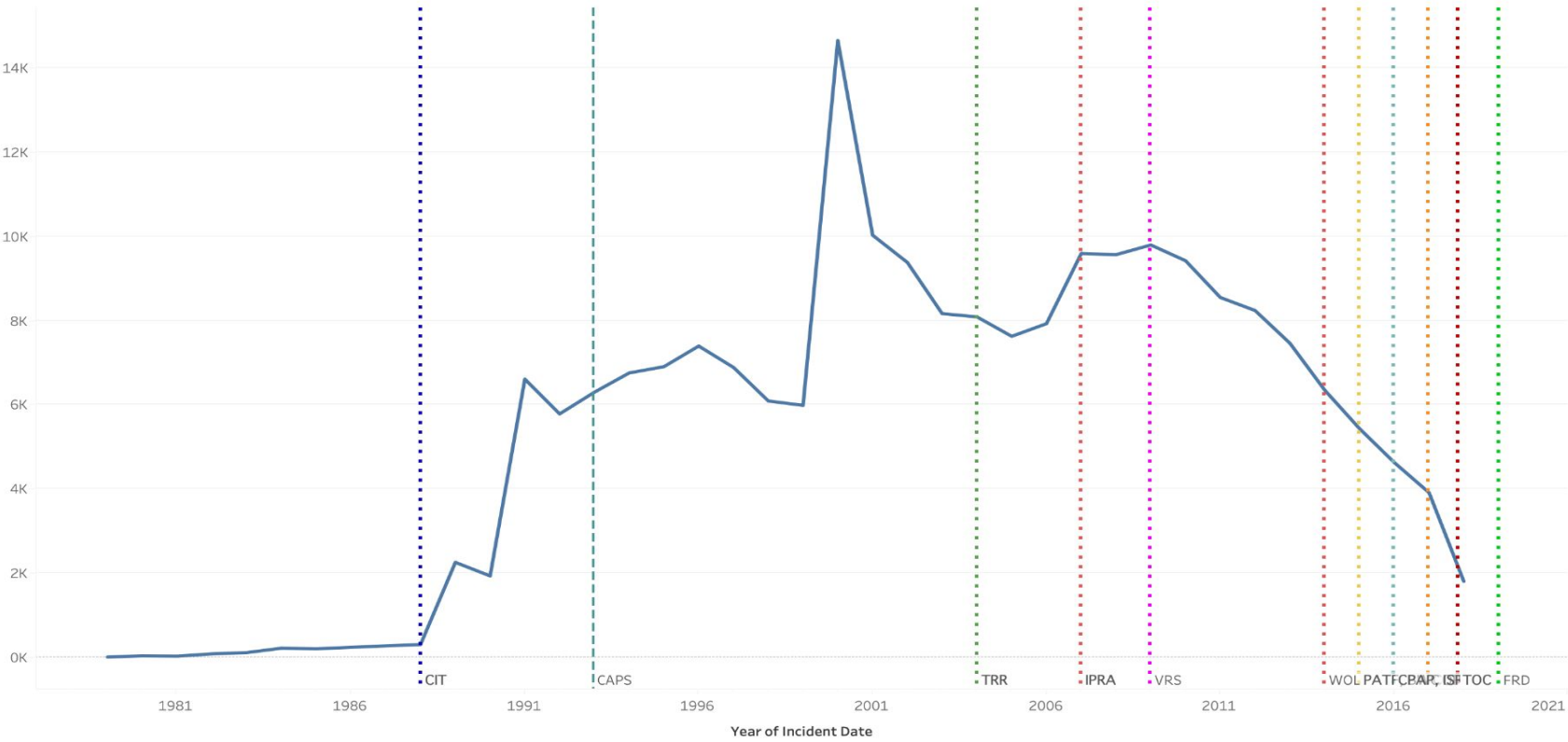
### ***Choice of graph:***

The line graph was chosen as the incident date attribute on the x-axis and the count of `CRID` attribute on the y axis were continuous variables. Line graph suits this visualization of a time series trend analysis.

Legend



Complaint Count Trends



## Conclusions:

From this visualization, at a glance, we can see that complaint counts have trended down with the introduction of TRR ( Tactical Response Reports ), which are forms filled after instances of the use of force.

We can also see that the complaint counts trend down with the introductions of the IPRA ( Independent Police Review Authority ) and the VRS ( Violence Reduction Strategy that focuses on investigations on all allegations and decreasing the impact of violent crime in the community respectively.

The downward trend of complaint counts post-2009 implies the success of the trifecta of TRR, IPRA, and VRS. The aforementioned, contribute to affecting changes in violent crime and the use of force.

We can observe that the Crisis Intervention Team and the Chicago Alternative Policing Strategy implemented in the years 1988 and 1993 that focus on de-escalating situations with persons in crisis and potentially in need of a psychiatric evaluation and policing respectively have not had a positive effect on the CPD misconduct count. The CIT's failure is most prominent in the case of Ricardo Hayes, a mentally disabled man who was shot down by off-duty Chicago police Sgt. Khalil Muhammad on August 2017. The CIT has since 1988 gone through iterative improvements but we can observe from trends that it is still a work in progress and detailed data collection and analysis is required.

***This visualization has to be inspected further per category to understand the success and failure of these reforms.***

## **Visualization 2: Complaint Category Trends**

To visualize this trend, we used data from `data_allegation` and `data_allegationcategory` tables. The attributes chosen were the incident date and category. The count aggregate function is applied to the category attribute to get the number of complaints in each complaint category per year. This data is then visualized using a line graph. We draw reference lines on this graph based on the dates of enforcement of reformative policies.

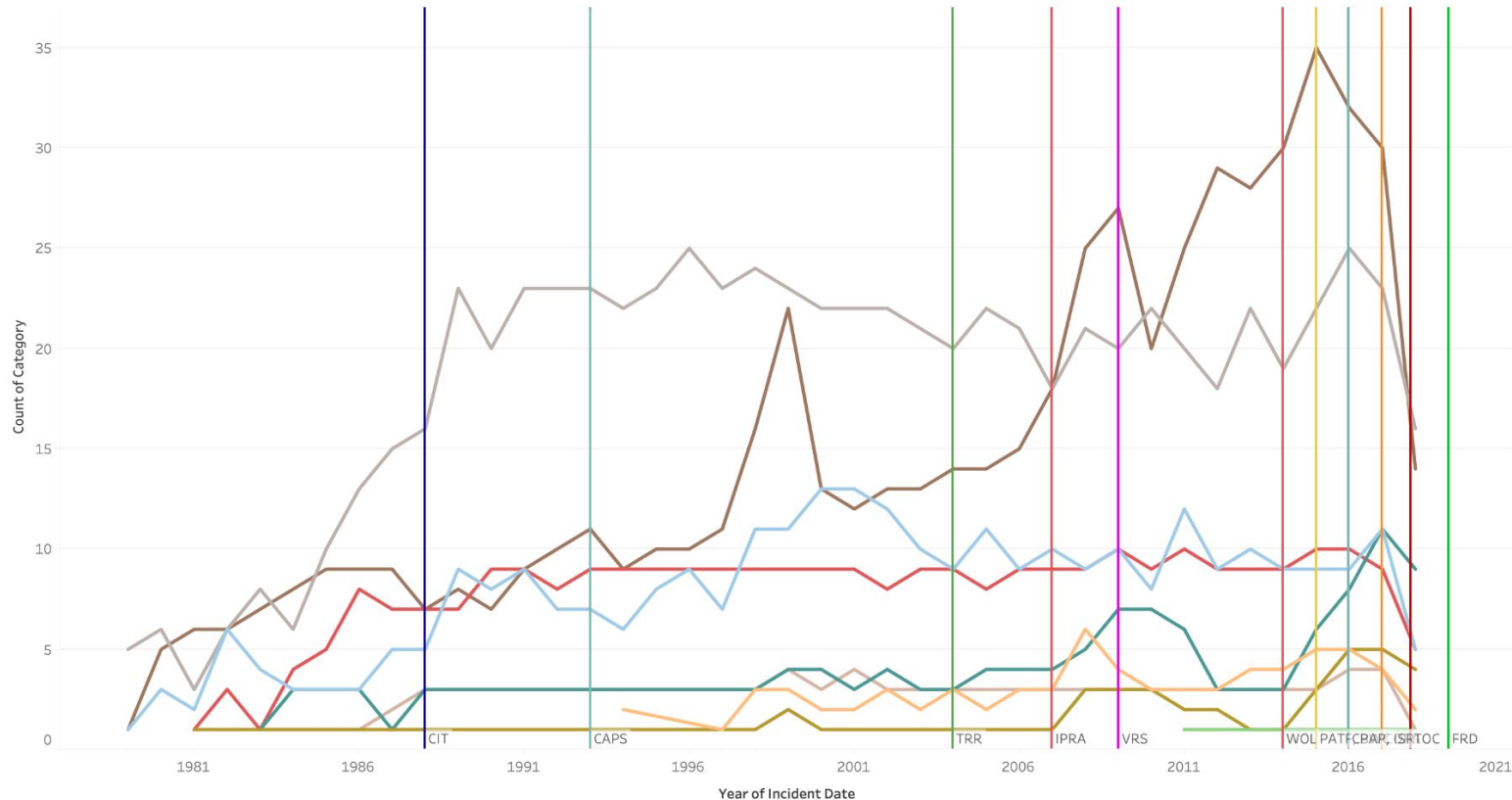
### ***Choice of graph:***

The line graph was chosen as the incident date attribute on the x-axis and the count of category attributes on the y - axis were continuous variables. Line graph suits this visualization as it simultaneously provides information on trends of various categories of complaints and this can consequently be used to infer targeted reform performance.

## Legend



## Complaint Category Trends





## **Conclusion:**

Extending from the first visualization we now inspect the complaint count trends per category. At first glance, we can see that Operation/Personnel Violence and Use of Force are the two misconducts that have the steepest curve. The previous conclusion that VRS, IPRA, and TRR had a positive effect on the complaint counts is now disproved with this visualization.

We can also see that the Watch Operations Lieutenant department responsible for reviewing body cam footage has not had the desired effect in complaint counts in any category showing that the department is not as stringent as it is supposed to be.

In this visualization we can observe that the complaint curves take a downward trend after the introduction of COPA, supporting our analysis in Checkpoint 1. More data collection post-2017 can provide clear insight on the success of COPA and FRD in the future.

### **Visualization 3: Use of Force Trends**

To visualize this trend, we used data from data\_allegation and data\_allegationcategory tables. The attributes chosen were the incident date and category, filtered to only include the category Use of Force. The count aggregate function is applied to the Use of Force category attribute to get the number of complaints in the Use of Force category per year. This data is also visualized using a line graph. As with visualization 2, we draw reference lines on this graph based on the dates of enforcement of reformative policies.

#### ***Choice of graph:***

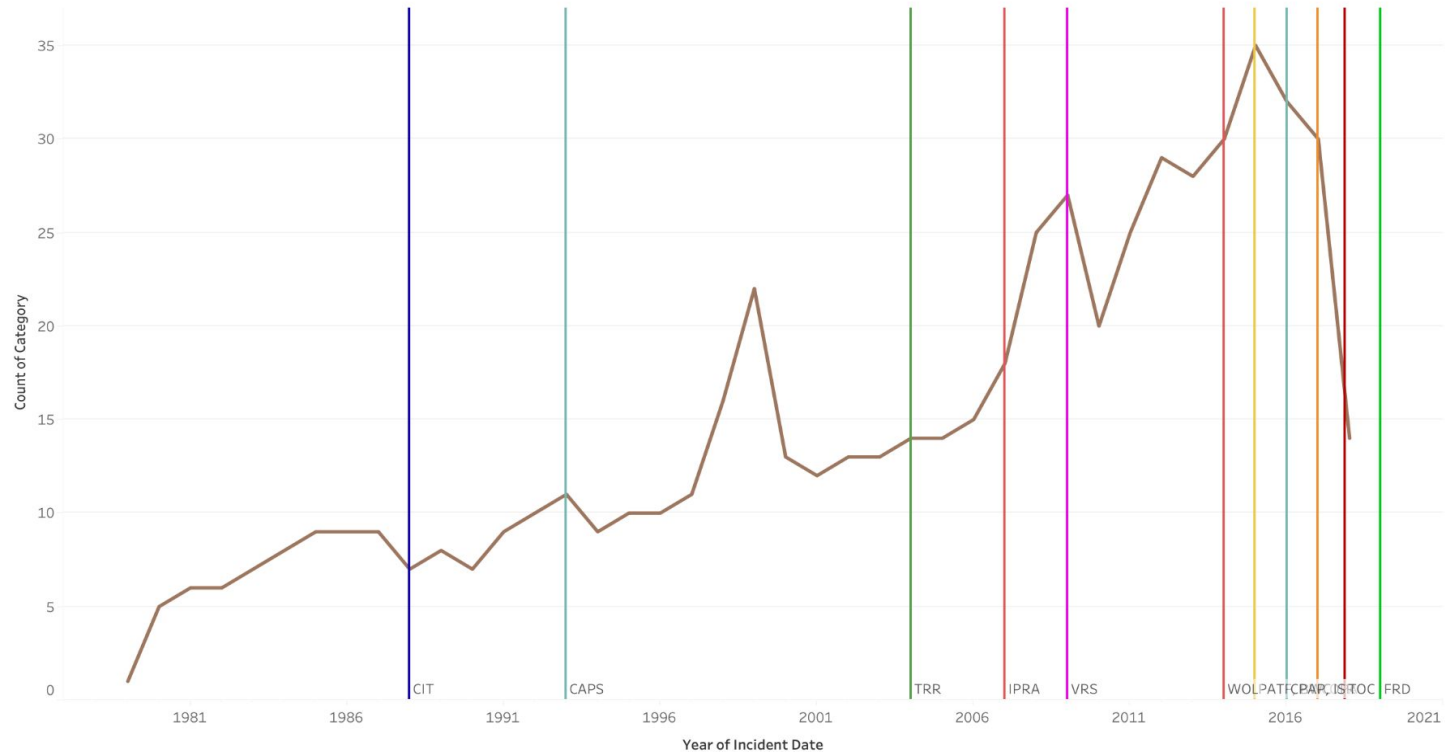
The graph visualization for the Use of Force trend is a modification of the second visualization. We do this to retain information on reforms and to focus on one of the most troubling misconduct.

## Legend



Category  
Use Of Force

## Use of Force Trends



## **Conclusion:**

Extending the second visualization we check the curve of Use of Force to visualize the performance of targeted reforms.

All the reformatations starting from CAPS up until IPRA have not had a positive effect on the use of force allegations. The VRS program affected a slight downward trend in use of force allegations but the trend was not sustained indicating the unsustainable nature of this reform.

The PATF (Police Accountability Task Force) and the introduction of Body Worn Cameras set off a sustained downward trend in Use of Force allegations suggesting the success of these programs.

This provides insight into the reforms that require improvement and reforms that have succeeded and need to be enforced uniformly across all of Chicago.

#### **Visualization 4: Officer/Personnel Violations**

To visualize this trend, we used data from data\_allegation and data\_allegationcategory tables as well. The attributes chosen were the incident date and category, filtered to only include the category Officer/Personnel Violations. The count aggregate function is applied to the Officer/Personnel Violations category attribute to get the number of complaints in the Use of Force category per year. This data is also visualized using a line graph. As with visualization 2 and 3, we draw reference lines on this graph based on the dates of enforcement of reformative policies.

#### ***Choice of graph:***

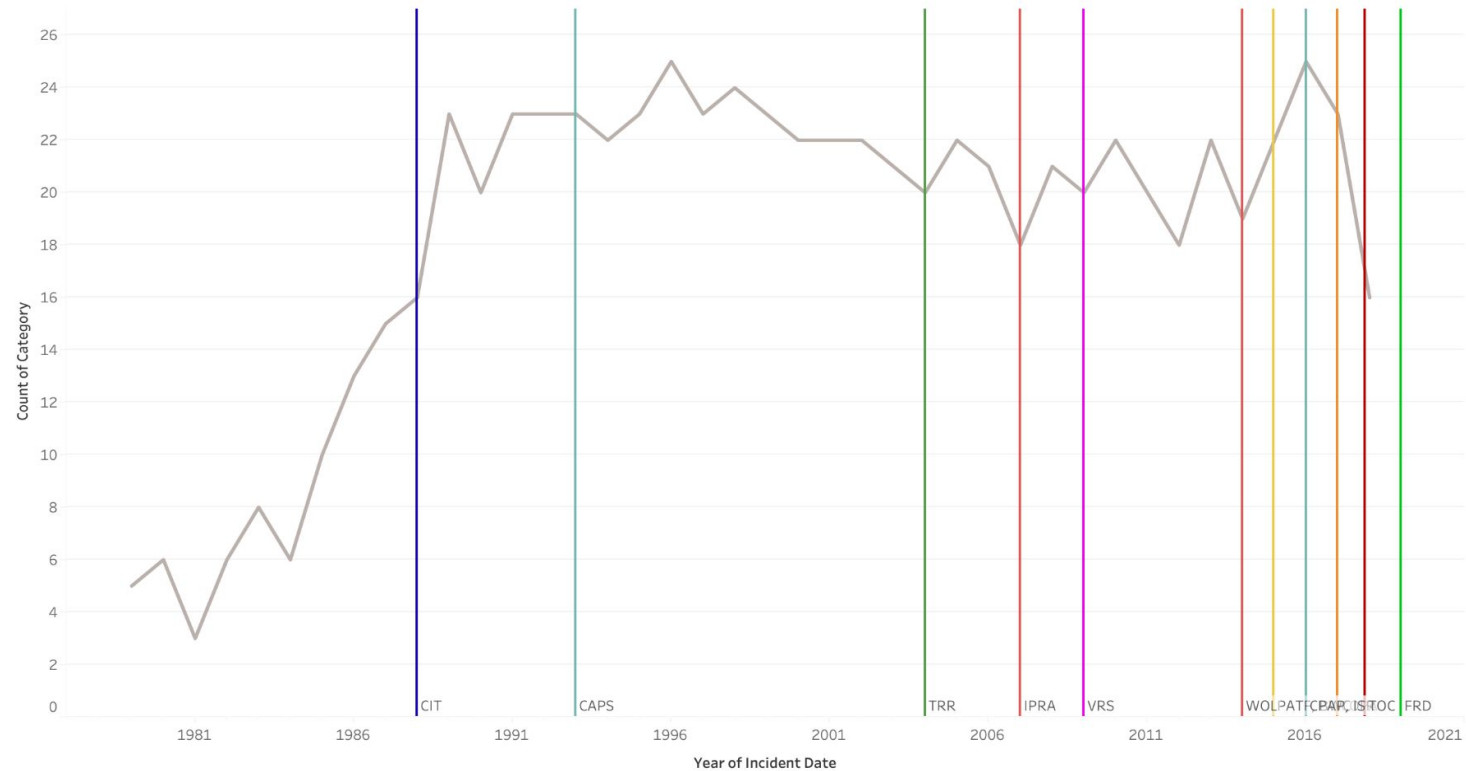
The graph visualization for the Officer/Personnel Violations trend is a modification of the second visualization. We do this to retain information on reforms and to focus on one of the most troubling misconduct.

## Legend



Category  
 Operation/Personnel ..

## O/P V Trends



## **Conclusion:**

Operations/Personnel Violations vary from neglect of duty and insubordination to drinking on duty. The curve's constant presence in the higher thousands indicates that none of the reforms have affected positive change. This indicates the necessity for departmental restructuring and reform and improved officer training. Stricter disciplinary actions can further deteriorate these violations.

## Question 2:

**What is the percentage of Total Count of Complaints for each Category of final\_findings ( "SU", "NA", "NS" etc.) broken down by Disciplinary action?**

### Analysis:

All allegations noted by the CPD against its officers, undergo investigations involving different departments like the IPRA, COPA, BIA etc. All allegations that are founded to be true are to be met with a disciplinary action.

**This question characterises the accountability and transparency of the CPD.**

We describe the distribution of complaint counts across various complaint categories/types filed, along with information on whether definitive disciplinary action was taken. We scrutinise this data to infer the question that arose from question 1. ***Are the officers held accountable for their actions and are these disciplinary actions deterring the officers from future misconduct?***

We can further identify categories/types of complaints that require more vigilance and support in terms of reform implementation, improvement and restructuring.



## Discussion:

To answer this question we have created visualizations using data from tables `data_allegation`, `data_officer` and `data_allegationcategory`.

Some of the abbreviations you'll find and their meanings:

1. SU - Sustained - the complaint was supported by sufficient evidence to justify disciplinary action
2. NS - Not sustained - the evidence was insufficient to either prove or disprove the complaint
3. NA - No affidavit - the facts revealed by the investigation did not support the complaint
4. NC - No cooperation - no cooperation from the complainant
5. UN - Unfounded - the facts revealed by the investigation did not support the complaint
6. EX - Exonerated - the accused officer's actions were proper under the circumstances
7. DS - Discharged - no punishment is imposed on a sustained claim
8. ZZ - Unknown

To make our visualization cleaner we have introduced abbreviations of some complaint categories:

1. B/OC - Bribery/Official Corruption
2. CU (Off Duty)- Conduct Unbecoming (Off-Duty)
3. O/PV- Operation/Personnel Violation
4. SR- Supervisory responsibilities

**Note:** We have only used Non NULL or non empty entries to plot this visualization.

**Choice of graph 1:** We have plotted a stacked bar graph with a dual x-axis. The x-axis includes the columns Disciplined (top x-axis) and Category (bottom x-axis) giving information about a false outcome suggesting disciplinary action was not against the police officer and various complaint categories/complaint types filed against the officer respectively. The y-axis points to the CRID column that has been aggregated using the count function to give us the count of complaints. The color feature has been used on the stacked bar graph to showcase the final findings.

The stacked bar graph suits this visualization to scrutinize each category against final findings.

**Choice of graph 2:** We have plotted a stacked bar graph with a dual x-axis. The x-axis includes the columns Disciplined (top x-axis) and Category (bottom x-axis) giving information about a true outcome of whether disciplinary action was taken against the police officer and various complaint categories/complaint types filed against the officer respectively. The y-axis points to the CRID column that has been aggregated using the count function to give us the count of complaints. The color feature has been used on the stacked bar graph to showcase the final findings.

The stacked bar graph suits this visualization to scrutinize each category against final findings.

Complaint count distribution for various categories based on final findings and when no disciplinary action taken.



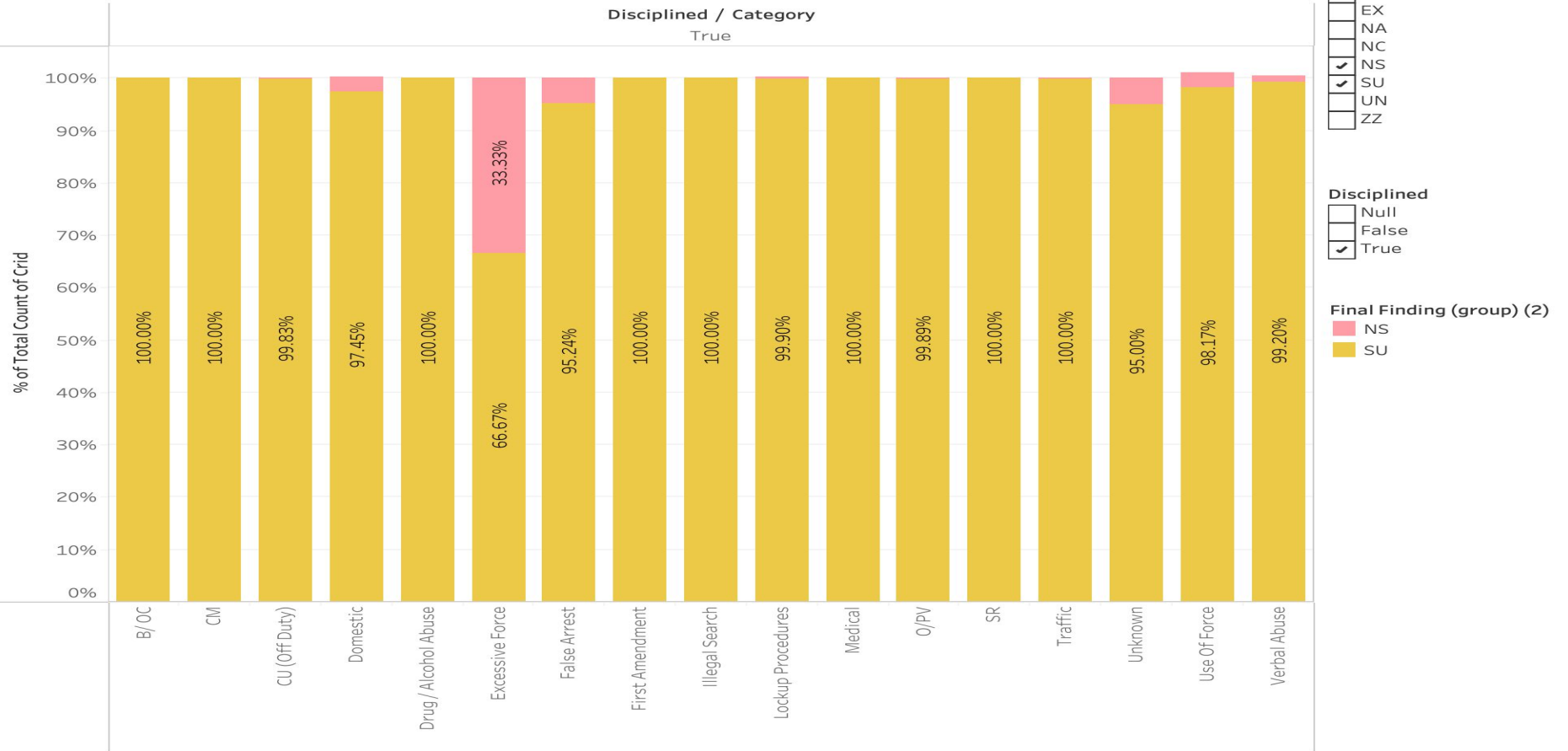
**Note: Unchecked fields don't change the graph visualization as the values are less than 0.005%**

## Conclusion:

At first glance, we can see that very few sustained claims have no disciplinary action taken which is a good indicator. But, on further scrutiny, we can see that Drug/Alcohol Abuse(12.83%), Conduct Unbecoming (Off - Duty ) (4.35%) and Operation/Personnel Violations (3.90%) have a lot of sustained claims that have not been disciplined.

This is concerning because drug/alcohol abuse and conduct unbecoming (off-duty) are indicators of untrusty police officers which further fosters distrust in civilians. It is quite suspicious to find no affidavits in allegations of false arrest which could indicate coercion of complainants. The high percentage of sustained claims in officer/personnel violations where disciplinary actions weren't taken supports our observation from visualization 4 indicating that more stringent disciplinary actions need to be exercised to change this misconduct trend.

Complaint count distribution for various categories based on final findings and disciplinary action was taken.



**Note: Unchecked fields don't change the graph visualization as the values are less than 0.005%**

## **Conclusion:**

At first glance, we can see that most of the sustained claims have disciplinary actions were taken against them which is a good indicator, but on further scrutiny, we can see that 33.33% of non-sustained excessive force allegations have led to disciplining, which raises the question: why was the allegation not sustained? Was there a discrepancy with evidence collection? It is further important to note that the 33.33% of non-sustained claims imply the victims of the allegation have not received justice in the form of reparations/monetary compensation but the police officer has been disciplined within the department. We can see that 2.96% of the use of force claims that led to disciplinary action were not sustained, indicating the same trend as excessive force.

## Final Conclusion:

Answers to questions we asked:

1. What misconducts were targeted by a certain reform?
  - a. We can see that most of the reforms target excessive force, use of force, violations and very few that target operations/personnel violations. This indicates that department restructuring, disciplining/policies are required in every police department to deter operation/personnel violations.
2. Did it incite a positive change?
  - a. Most of the reforms barring VRS, COPA have not affected the complaint counts indicating the need for restructuring, iterative improvements of the other reformative policies or actions.
3. Are these reformation efforts being enforced?
  - a. CIT, CAPS, TRR, IPRA, WOL, despite being introduced, don't indicate that they have been enforced due to the unchanged complaint trend.

The third answer raises the question: why are these reforms failing despite being deployed? We can localize this question to neighborhoods, and this in turn can allow for targeted rectification and supervision of reform enforcements. We hope to explore this in the next checkpoint.