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Research Summary  
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## Tracking equal protection and stop and search in Dorset: Applying a risk-adjusted disparity (RAD) Index for balanced policing

by

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### *Research Question*

How does police use of stop and search in Dorset vary between White and non-White residents in relation to serious violent crimes committed against members of both racial groups, across local areas, over a recent five-year period, and how might these data be used to reconsider practices in relation to serious violent crime counts in each local area?

### *Data*

We analyzed Dorset Police records of all

- 33,689 serious violent crimes in the five years from April 2016-2021 by place of occurrence across all
- 452 of Dorset's Lower-layer Super Output Areas (LSOAs), with
- each victim classified by ethnicity (despite 35% missing data on ethnicity), and
- each LSOA resident population count by ethnicity taken from the 2011 Census.
- We then assigned all 12,081 records of Stop and Search encounters, of White and non-White subjects (with only 12% missing data on ethnicity of persons stopped), to the LSOA of occurrence.

## Methods

- 1) We counted violent crimes reported against both Whites and non-Whites for each of the 452 LSOAs over the four-year period.
- 2) We did the same for police stops of Whites and non-White residents in each LSOA.
- 3) We identified all 173 LSOAs that had both serious crimes against, and police stops of, both Whites and Non-whites.
- 4) We then calculated the “*risk-adjusted disparity (RAD) index*” as a ratio of ratios between stops and violent victimizations for non-Whites versus the same ratio for Whites (Sherman & Kumar 2021).
- 5) We then rank-ordered the 173 LSOAs by their respective RAD index scores, ranking all LSOAs from highest to lowest adjusted disparity of non-Whites to Whites.
- 6) We then identified the 76 highest-violence LSOAs that registered 50% of all serious violent crime in Dorset, computing separate RAD index values for those 76 and for the 376 lower-frequency serious violence areas.

## Findings.

### **I. Equal Protection Against Violence**

- Population rates. Population-based rates of reported serious violence for were three times higher for Black victims than for Whites (17.46 to 5.79 per 1,000), using the 2011 Census resident population as a denominator of race.
- The same denominator showed Blacks were twenty times more likely than Whites to be stopped by police (52.18 stops per 1,000 Black residents vs. 2.59 per 1,000 resident Whites).
- Whether the benefits of stop & search in preventing violence against Black residents justify the cost of population-based disparity can only be determined by a field experiment on stop and search in high-violence areas.
- Until such experiments are done, the best analysis of the potential benefit of disparity is the RAD Index approach (Sherman & Kumar 2021)
- Using serious crimes by victim race as the denominator, the county-wide RAD Index ratio of Black to White pedestrian stops per 1,000 serious crimes was 6.6:1 (2.99 per Black victimization vs. 0.45 per White victimization).
- Violent crime was heavily concentrated, with half in just 76 (17%) of the 452 LSOAs, yet most (70%) of the 60 areas of highest RAD Index disparity (4:1 or higher) were found ***outside of those areas of concentration***.
- While the numbers of stops were generally correlated with violent crimes ( $R = .85$ ), the RAD Index scores were not ( $Rho = .07$ ).
- Only 34 of 452 LSOAs (7.5%) had at least one stop per month in 2020.

- There were no homicides committed against Blacks in Dorset during the five-year study time period, making Dorset an exception to the national pattern of higher murder rates for Blacks than whites.

## **II. Low Stop & Search Rates in Dorset by the National Benchmark**

- Stop and Search per serious violent crime of 25 per 100 was two-thirds lower than the 2016 national average of 77 per 100.

## **III. Most stops made where violence is frequent, yet many in low crime areas.**

- The top 50 LSOAs for serious crime in 2019-20 received 50% of the 2,031 stops that year, encompassing areas where 41% of 8,031 serious crimes occurred.
- Half the stops were delivered in LSOAs where there was an average of less than one serious violent crime per month.
- It is possible that there are *too few stops* in high-frequency areas of serious violence, where the frequency of such crimes is up to 400 times higher than in the average low-frequency areas.

## **IV. Targeting Racial Disparity Per 1000 Violent Crime Victimisations**

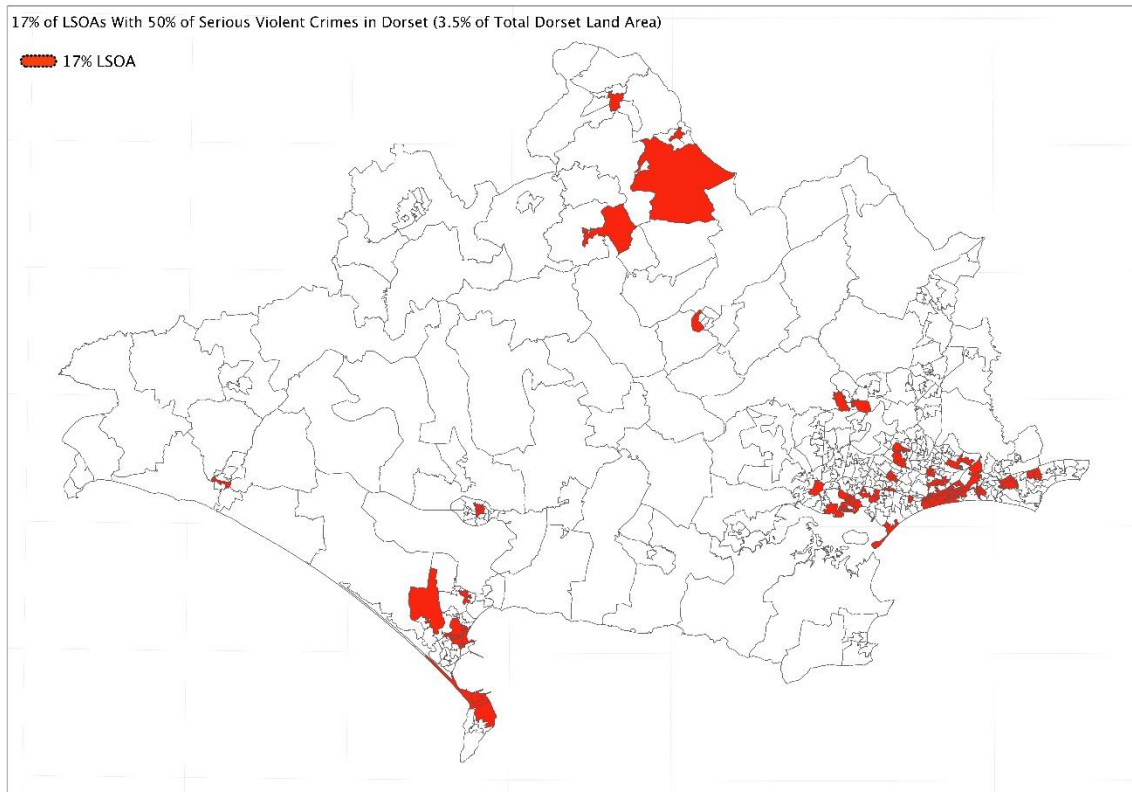
- The stop and search rate per 1000 SVCs is only slightly higher for *all* non-Whites than for whites, but the disparity for Blacks alone is 6 times the rate for Whites.
- Only three LSOAs averaged as many as one search of *any* Non-Whites per month, for which the mean RAD Index was 322% higher for Non-Whites.
- Only 37 of Dorset's 452 LSOAs (8%) had at least one stop per month in 2019-20, and only 165 of the LSOAs had any stops of, and serious crimes against, both non-Whites and Whites.
- Across these 165 minimally diverse LSOAs, the RAD index varied enormously, often due to small numbers for calculating the rates.
- At one end of the scale of LSOAs, Whites were stopped almost 500% more often than non-Whites per 100 violent crimes.
- At the other end, non-Whites were stopped 4700% more often per 100 violent crimes than whites.
- Only 140 of the 452 (31%) had a 50% or greater RAD Index for stops of Non-Whites than whites, of which only 73 (16% of 452) had a mean of 1 or more stops of Non-Whites per year.
- While 131 of the 165 diverse LSOAs had a 4-year RAD Index of 100% or greater frequency of stops of Non-Whites per 100 crimes than of Whites, there is independent evidence that over half of Non-Whites stopped by police were not residents of Dorset (Cutler 2020).

*Conclusions.*

Racial disparity in police use of stop and search in Dorset varies widely by local area, along with disparity in the rates at which serious violent crimes are committed against residents (and visitors) of different races (see map 1 below).

Map 1: 75 LSOAs (17%) for 50% of Serious Violent Crimes in Dorset (in red)

(Murders, Attempted Homicides, GBH, ABH, Rapes, Sexual Assaults, Robberies, Knife Assaults with Injury)



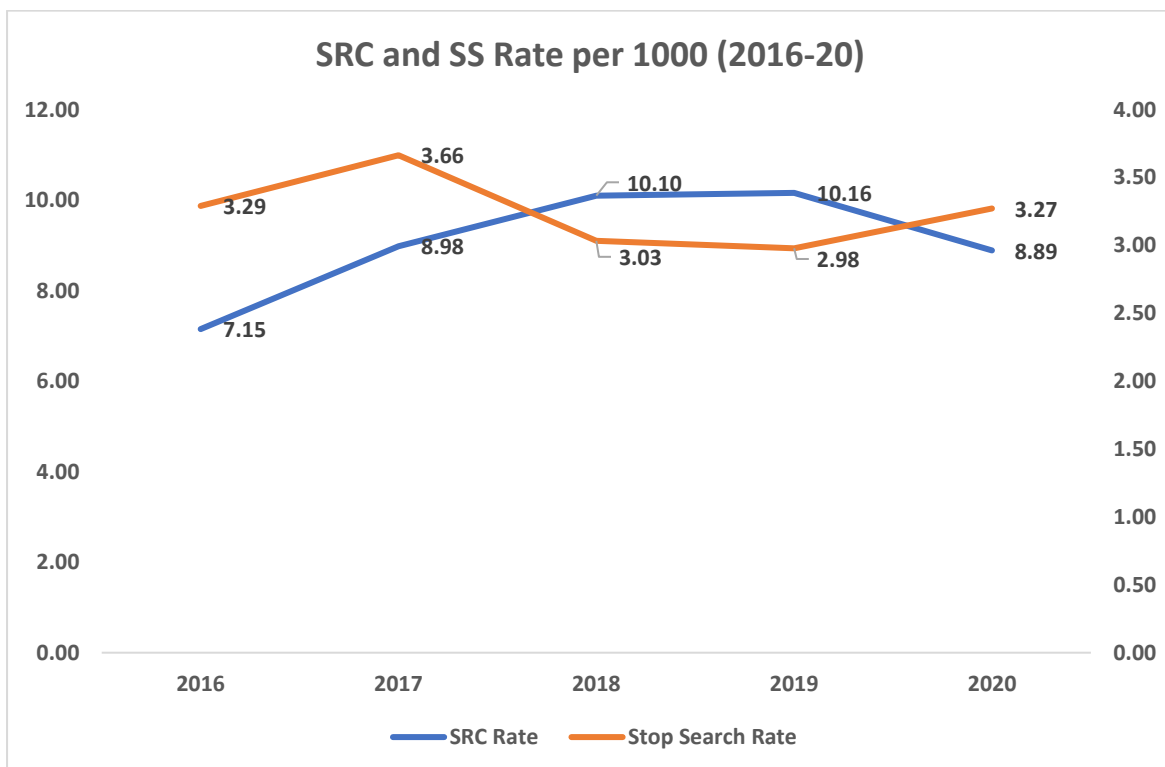
Any effort to reduce racial disparity must begin by targeting where the stops are most frequent, as well as where the violent crimes are most frequent. If Risk-Adjusted Disparity is seen as a collateral challenge for preventing serious crime, then a focus on the few areas that have the most crime may be the most direct route to reducing disparity.

The fundamental question remains whether stop & search prevents serious violent crimes where such crimes are heavily concentrated. Stop & search can only prevent serious violent crime in the tiny fraction of Dorset where it those crimes are concentrated. Yet most of the racial disparity in stops per violent crime is located outside of those areas. Using these findings, Dorset can design a randomized field experiment in using pedestrian and vehicle stops to test whether they reduce violence against both blacks and whites within hot spots of violent crime. All police forces, including Dorset, can apply the RAD Index to track racial disparity in stops by LSOAs, to help decide whether stops should be restricted to areas of high violence in order to reduce racial disparity across the entire police force territory.

**Dorset Analysis Data Displays V 6.0**

Number of Residents (2011 Census)	Number of White Residents (2011 Census)	Number of Non-White Residents (2011 Census)
744,041	714,637 (96.1%)	29,404 (3.9%)

Total Number of Stop Searches (2016-2020)	Average Number of Stop Searches (2016-2020)	Rate of S&S Per 1000 (2016-20)
12,081	2,416.20	3.25

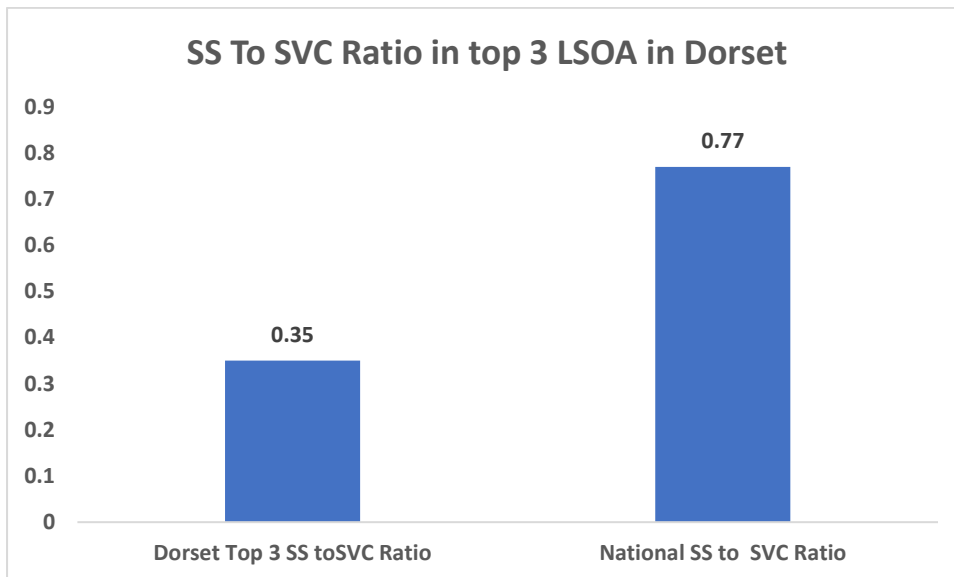


Serious Crime Includes: Homicide, GBH, ABH, Rape, Other sexual offences, Robbery (includes knife crime)

Total Number of SRC (2016-20)	Avg Number of SRC (2016-20)	Avg SRC Rate per 1000 (2016-20)	Avg. Rate of Stops Per 100 SRCs
33,689	6,737.80	9.06	36

Note: National Rate of Stops per 100 SRCs = 77

- Dorset uses stops far less often than national average
- Dorset has only 3 of 452 areas on national hot spot list, i.e more than 217 crimes/year
- This top 3 LSOA accounts for 12% of total SVC and gets 11% of total patrol.
- In the top 3, SS to SVC ratio is 0.35 compared to national average of 0.77 (half of national average)



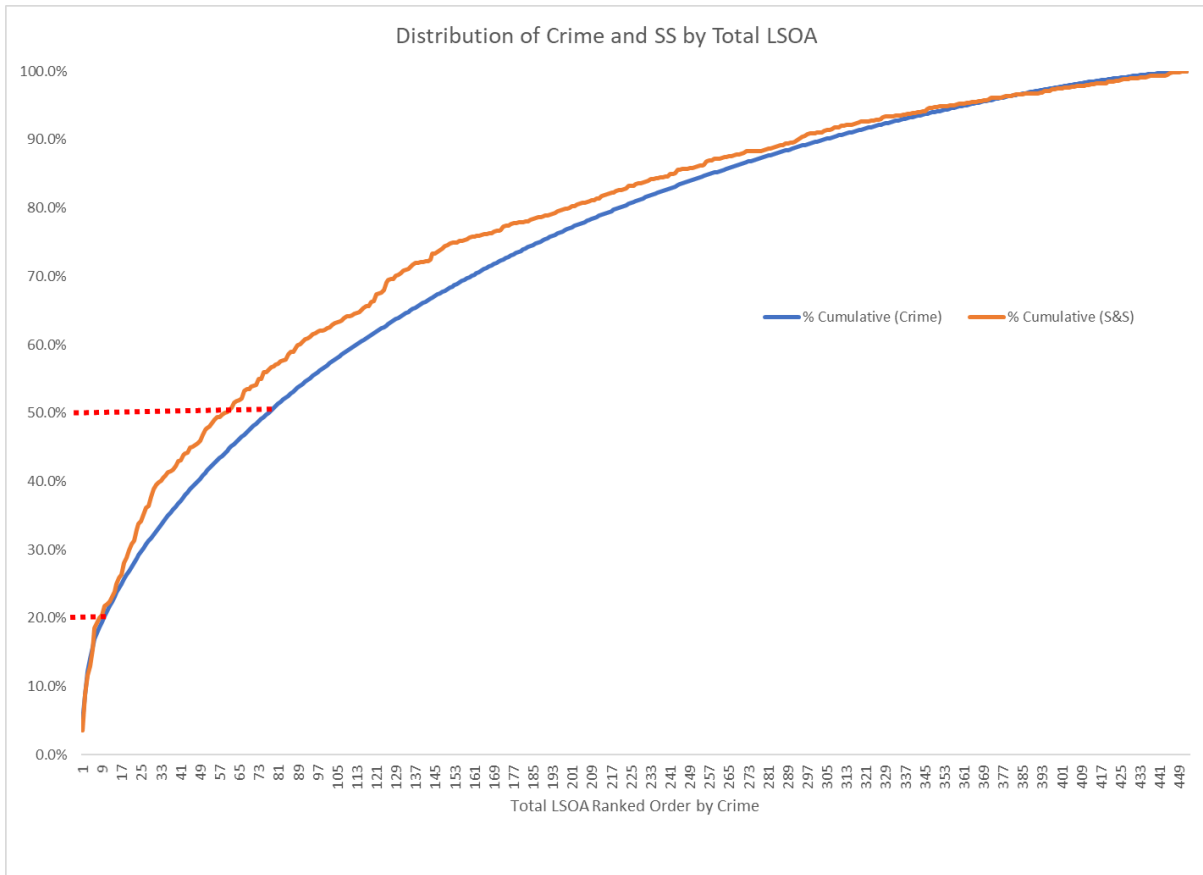
SS to SVC Ratio	LSOA (N)	LSOA (%)
Less than E&W Avg. (0.77)	419	92.70%
Greater than E&W Avg. (0.77)	33	7.30%
Total	452	100.00%

### LSOA and Serious Violent Crime

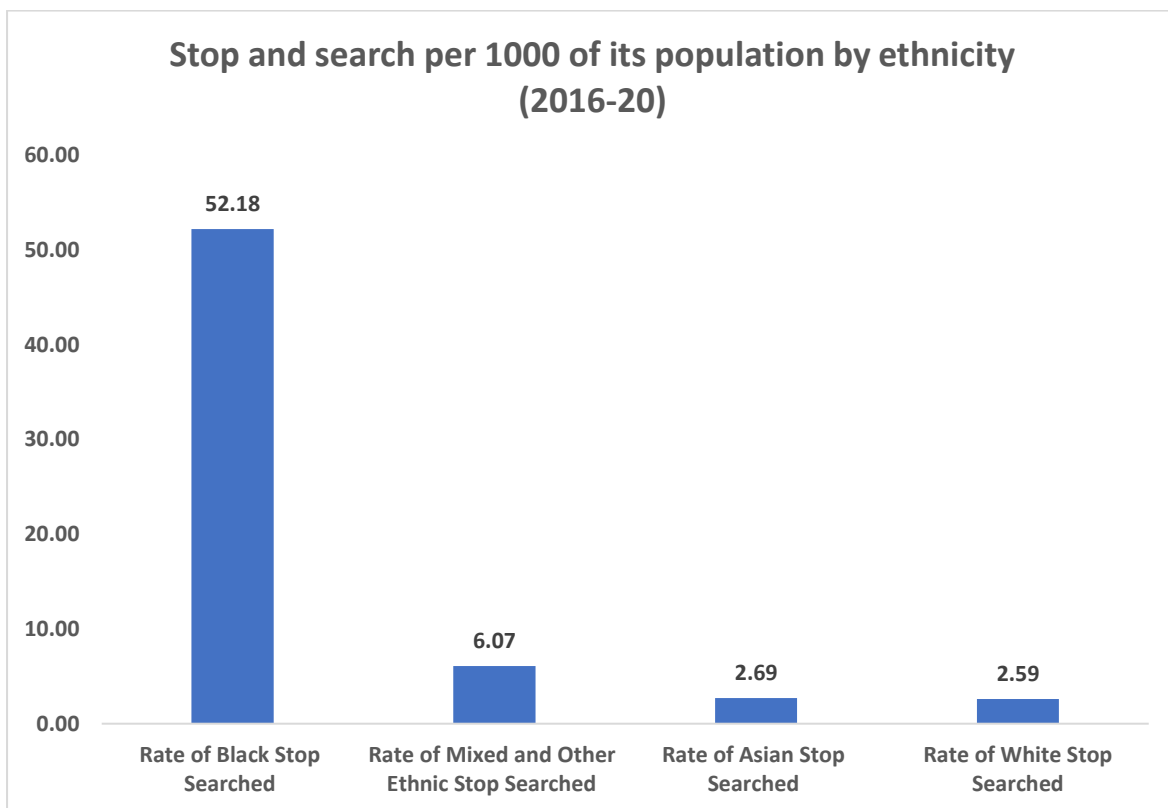
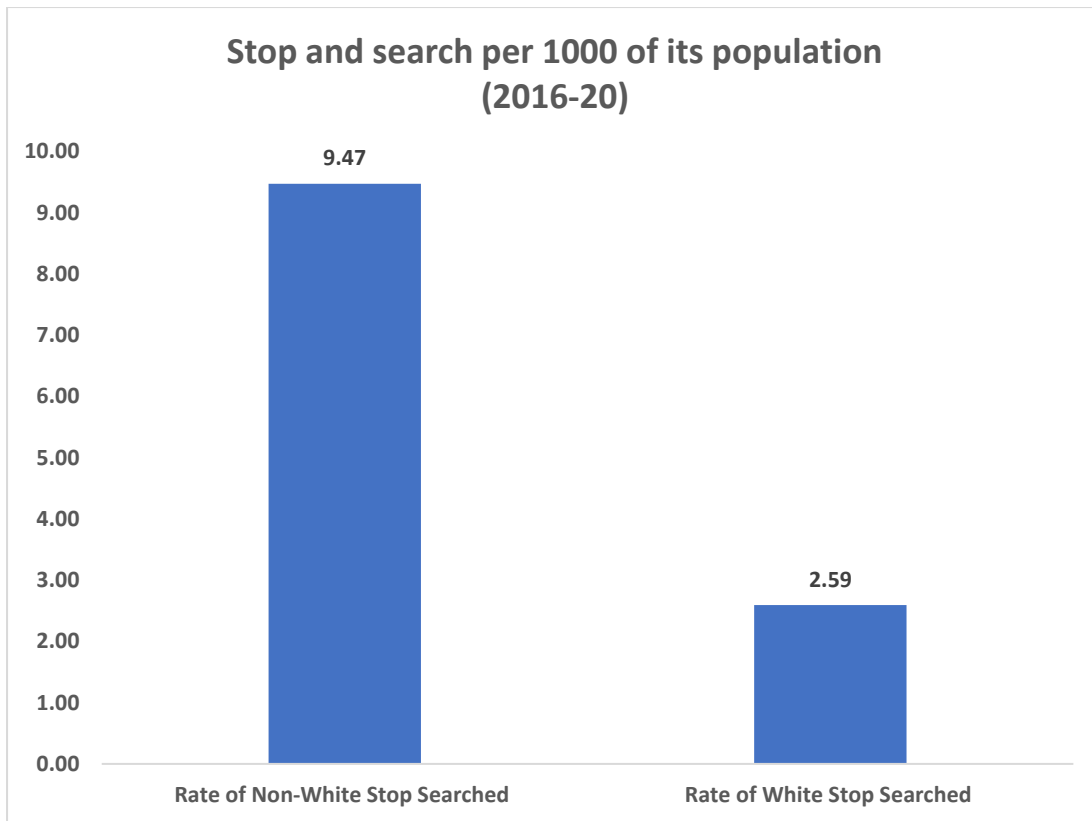
- 76 LSOAs (17% of LSOA) account for 50% of all SVC in Dorset

- Top 10 LSOAs (2.2% of LSOA) account for 20% of all SVC in Dorset
- Bournemouth with 110 LSOAs (24%) account for 47% of all SVCs in Dorset.

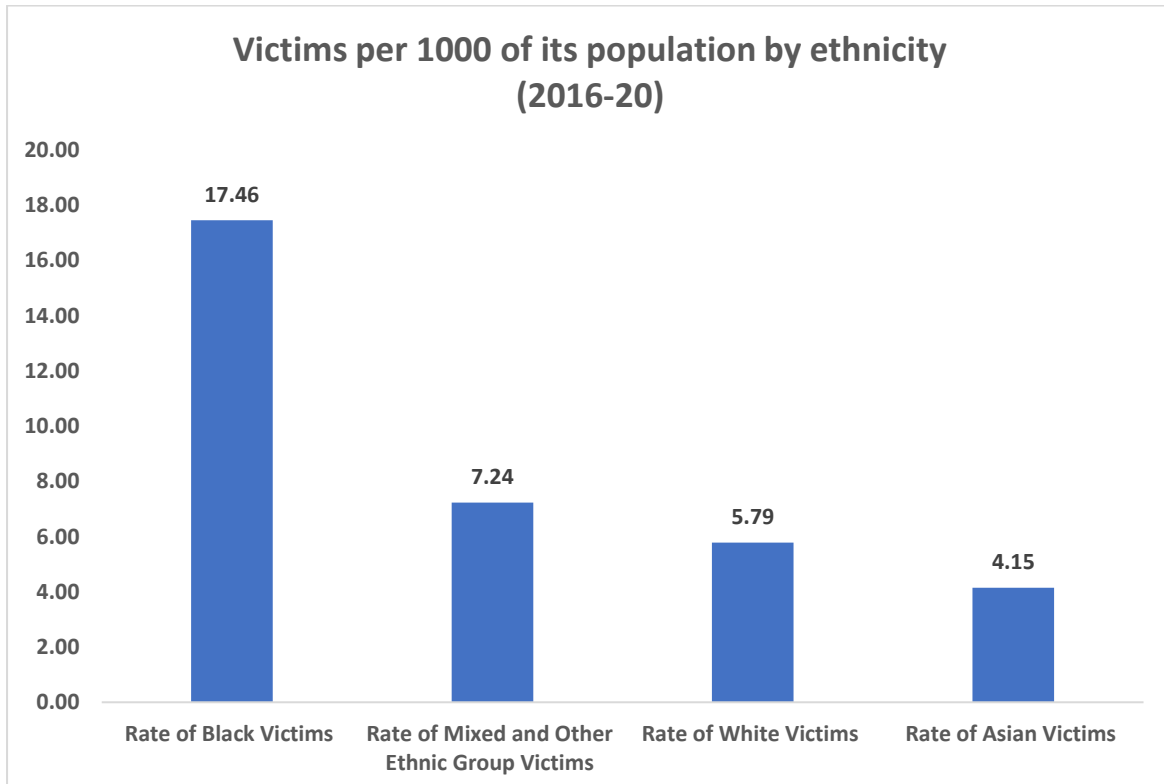
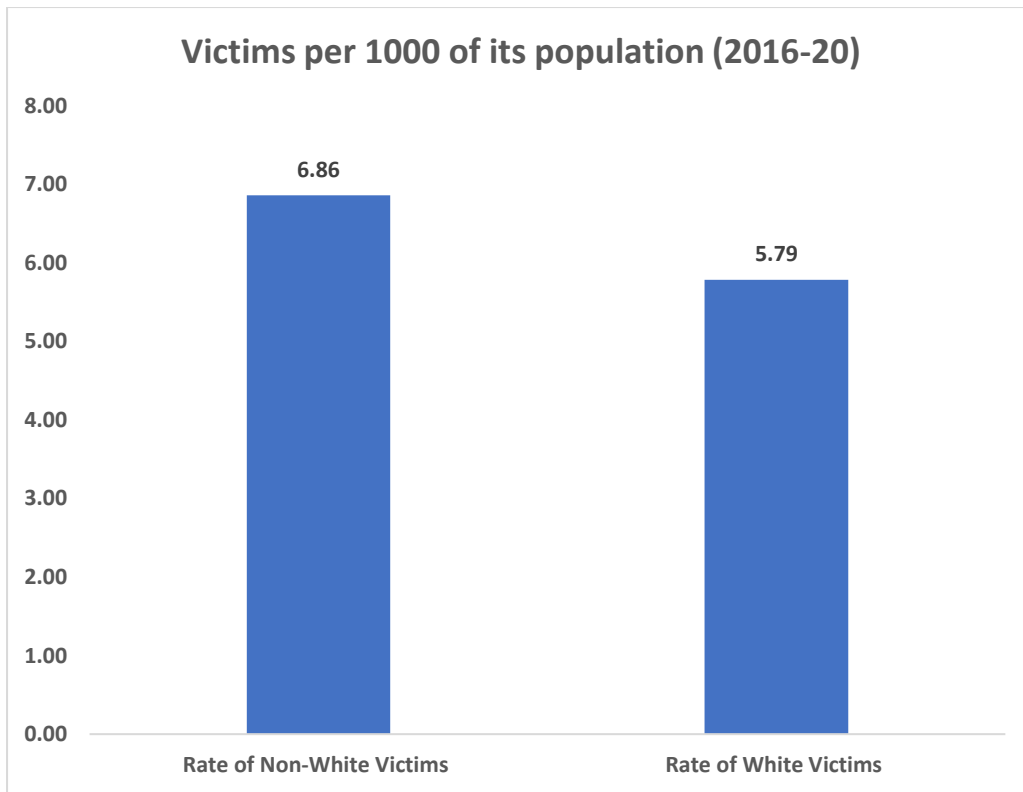
**Spearman rho:** RAD Rank vs. Crime Rank = 0.07

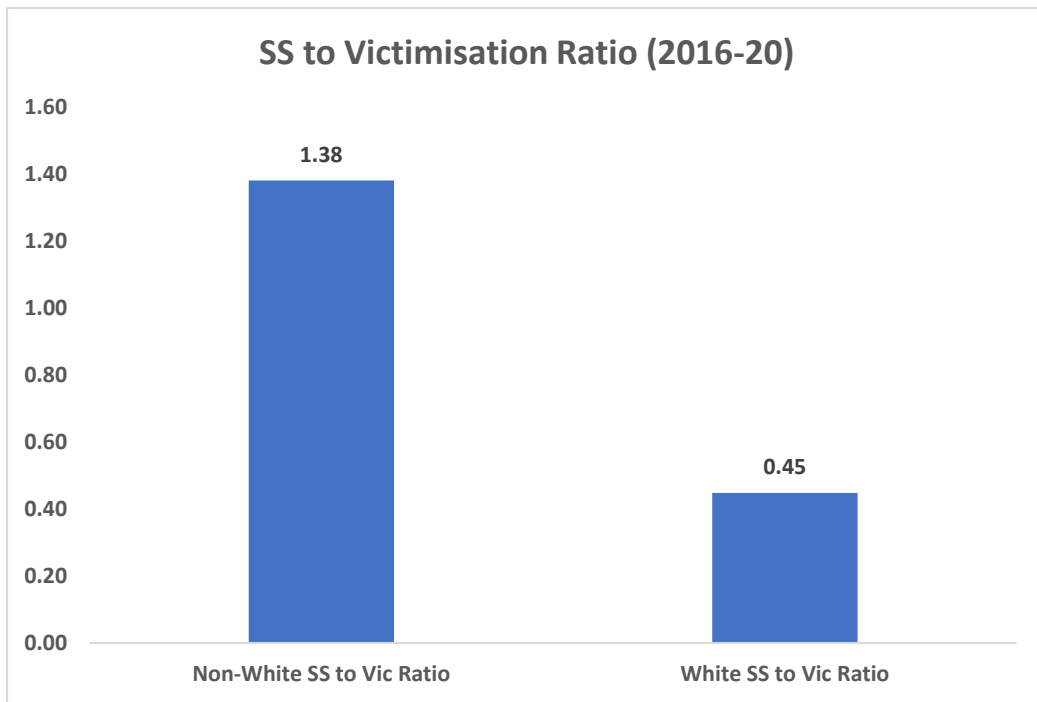


Pearson Correlation	Crime
Stop and Search	<b>0.85</b>

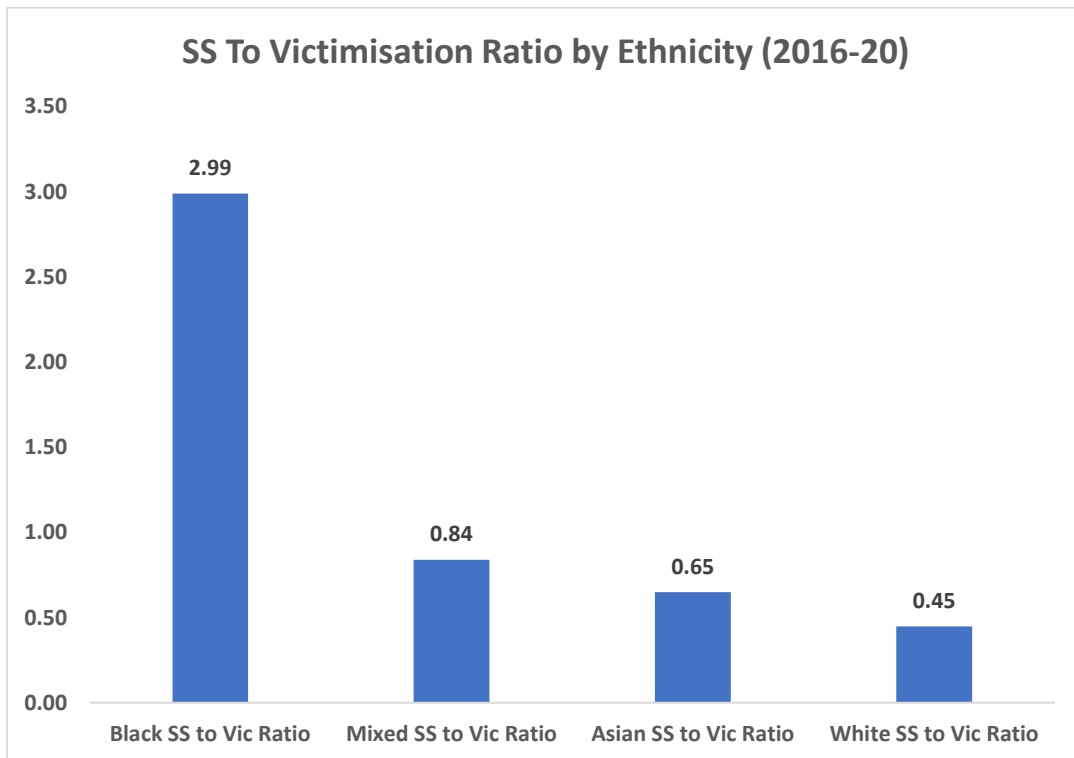








RAD Index Non-White to White = 3.06



RAD Index Black to White = 6.67

