

Mini Project 1

South African Crime Rate Statistics

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Is the crime rate in South Africa linked to the number of police stations in each province

- South Africa has some of the highest serious crime rates in the world
- This presentation will concentrate on the link between the number of police stations in the provinces and the crime rate in that province
- There is a belief in South Africa that the more police stations a province has, the higher the crime in that province must be
 - In other words, the more police stations a province has, the more dangerous it is.



Business Question

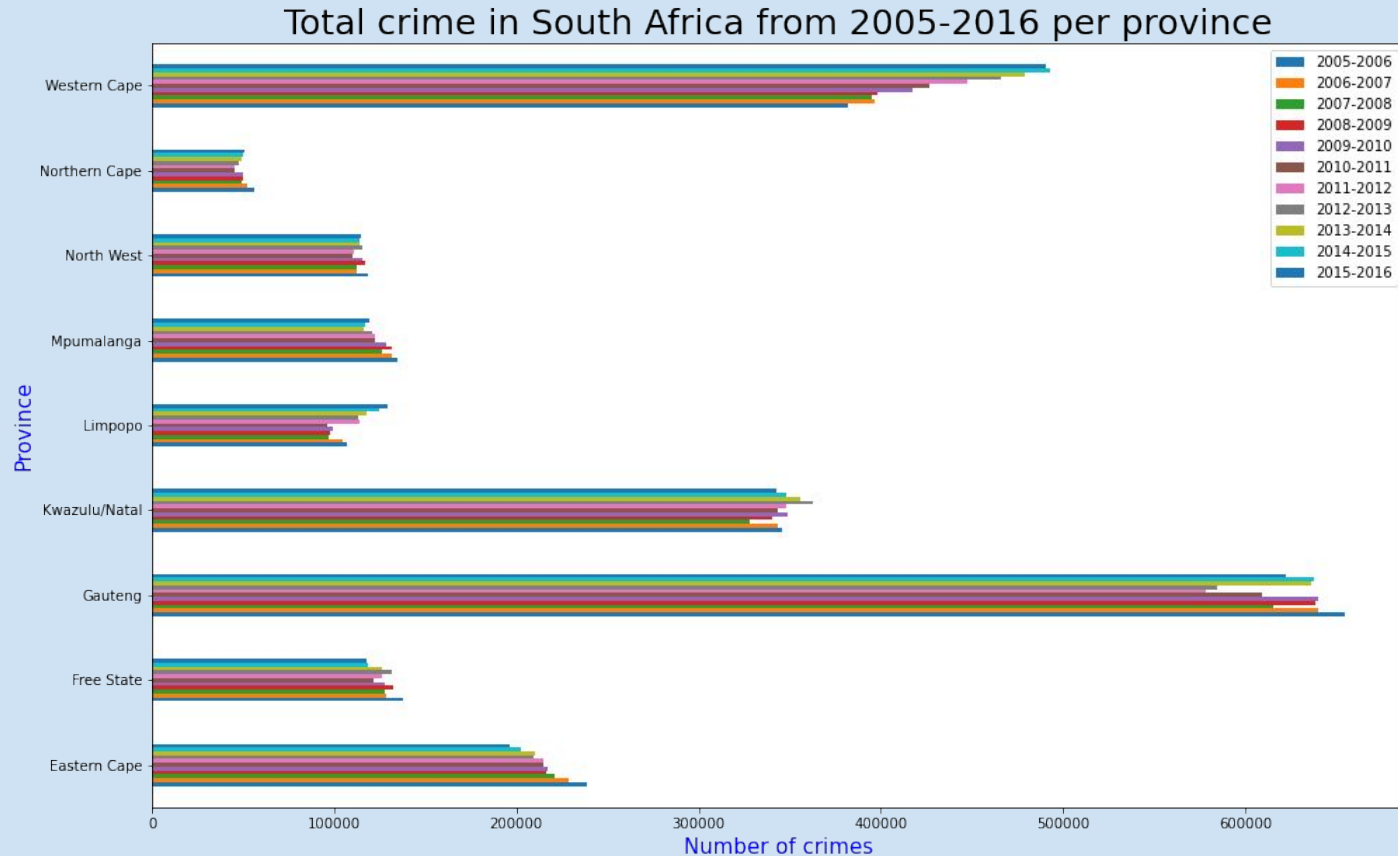
- What is the link between the crime rate in South Africa and the number of police stations?
- Do certain provinces need more police stations to combat high crime?



Crime numbers per province per year

	2005-2006	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016
Province											
Eastern Cape	238977	228884	220813	216658	217230	215012	214462	209124	210248	202582	196089
Free State	137987	128227	127955	132335	127512	121997	126389	131785	126290	118879	117688
Gauteng	654817	639635	615618	638186	640074	609305	577959	584315	636195	637332	622218
Kwazulu/Natal	345784	343798	328368	340095	349103	343767	348411	362677	355729	348394	342772
Limpopo	106983	104857	97166	97565	99610	96475	113630	112952	117638	124986	129323
Mpumalanga	134829	131444	125954	131410	128814	122402	122186	121169	115996	117203	119526
North West	118840	112471	112340	117118	115680	109922	111028	115319	113935	114270	114335
Northern Cape	56515	52689	48954	50277	49746	45618	45257	47697	48947	49897	50665
Western Cape	381825	396712	395281	398240	417619	426850	447238	465994	479022	492963	490383

As can be seen on the chart, crime seems to be on the rise in the Western Cape consistently since 2005 and the Eastern Cape has seen a decrease in that time.





Data Summary

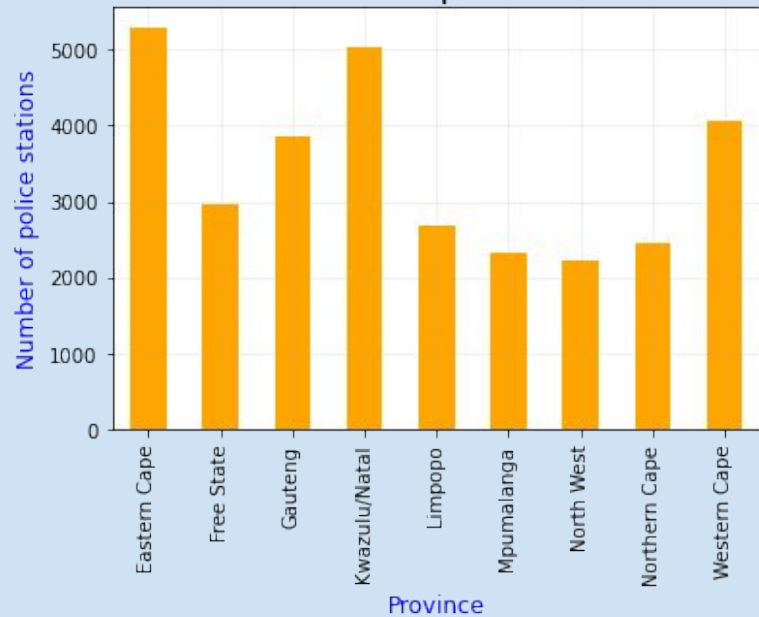
Observations: 30,861 crimes reported in the year 2015-2016

Unique Features: 27 types of crimes

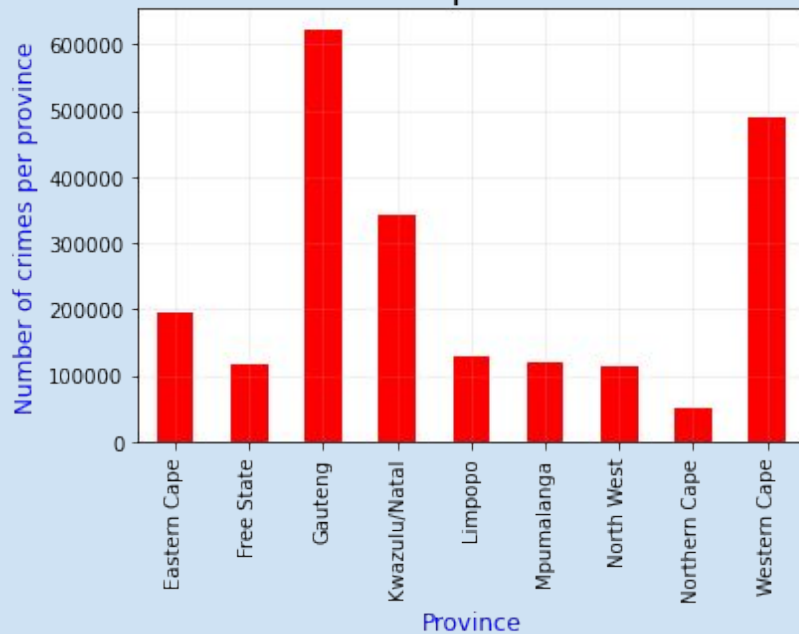
Data Features

Province	Which one of the 9 provinces of South Africa
Station	Which police station in the province
Category	Which type of crime (27 types were specified)
Year crime was committed	Which year did the crime occur in (11 years worth of data)

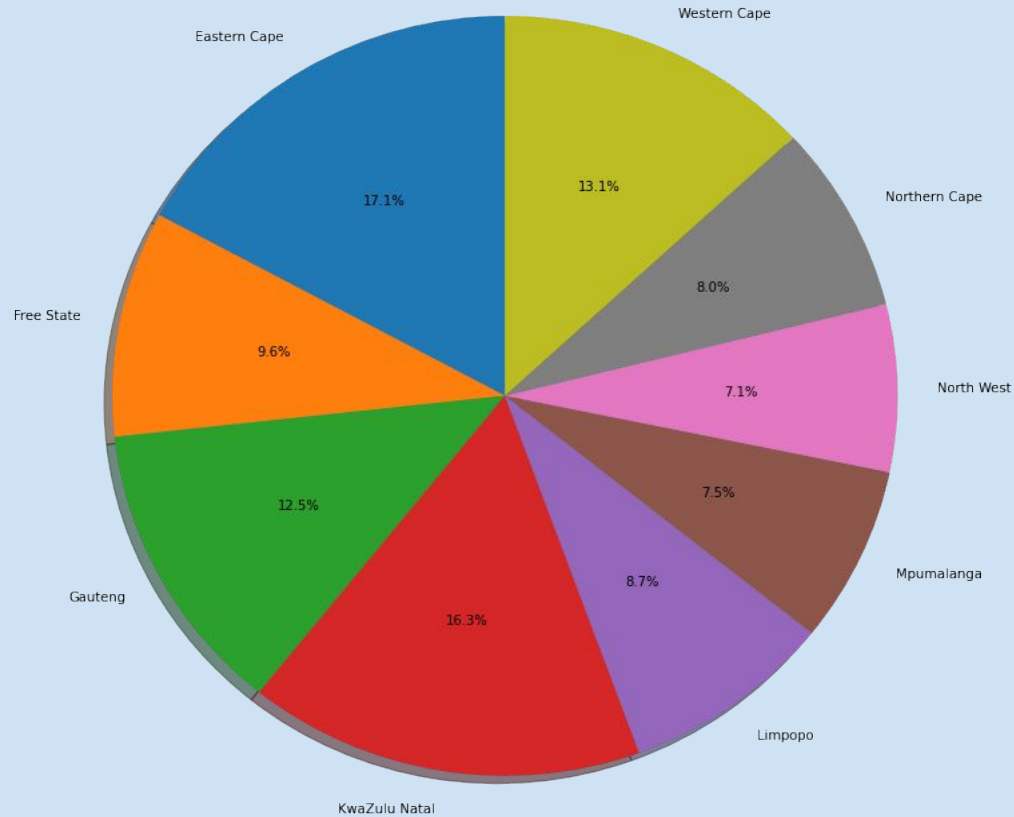
Police stations in each province in 2015-2016



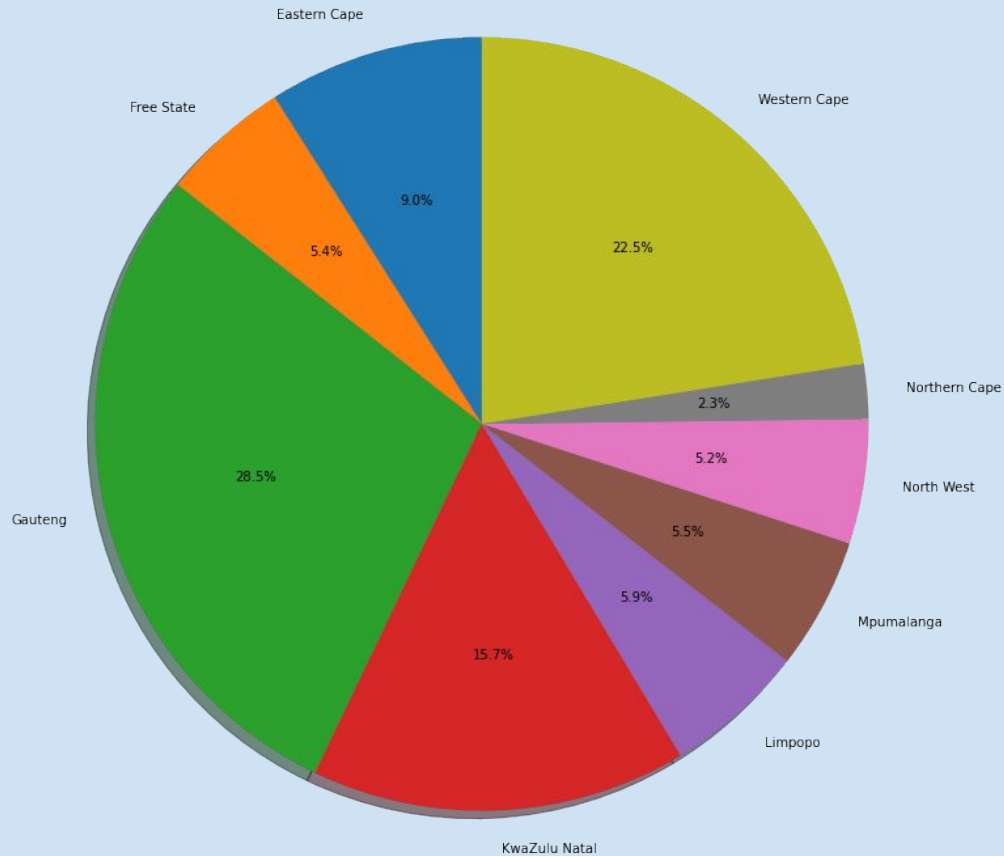
Total crimes in each province in 2015-2016



Percentage of the total number of police stations per province



Percentage of total crime in South Africa per province



Hypothesis Testing: Number of police stations

NULL HYPOTHESIS	More police stations in a province, the higher the crime rate
ALTERNATIVE HYPOTHESIS	More police stations in a province does not mean a higher crime rate
P-VALUE	0.05
OUTCOME	P-Value is 0.0023 therefore we reject the Null Hypothesis
CONCLUSION	More police stations in a province does not mean there is more crime in that province

$$t = 3.6176198367950025$$
$$p = 0.0023115471007856543$$

Additional Notes

- The Eastern Cape has the most police stations in South Africa and yet their crime is comfortably lower than that of Gauteng, the Western Cape and KwaZulu Natal. In fact, as can be seen on slide number 5, the crime rate in the Eastern Cape is dropping.
- Gauteng has the highest crime rate in South Africa and yet there are three other provinces with more police stations
- This serves as additional proof that South Africa does not more police stations in a province simply based on the crime rate

Next steps for further investigation

- Is the crime rate as a whole in South Africa increasing or decreasing
- Is the crime rate in the Western Cape increasing at a faster rate than the national average