



An Examination of the Impact of a Criminal Case's Jurisdiction on the Prison Term in South Africa

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Abstract: Requests for the review of criminal cases have been prompted globally due to inconsistencies and human errors. Nevertheless, reopening court cases that have been closed can deplete an organization's resources and erode the credibility of a nation's legal system. Academics have proposed an empirical methodology to address the difficulty of formulating a plan for revisiting cases. To substantiate the formulation of such a plan, we have performed a statistical examination of the fluctuation in and determinants of the duration of imprisonment terms from a regional perspective in South Africa. An analysis of variance (ANOVA) test was conducted to examine the differences and similarities among three distinct categories of imprisonment periods in South Africa. Our findings indicate that the geographical location in which a sentence is administered significantly affects the duration of imprisonment, with a confidence interval of 5%. The obtained F-value is 2.347, indicating a significant effect. The corresponding p-value of 0.138 suggests a 13.8% chance and a critical F-value of 3.885. Additionally, we examined the role of the type of offense in influencing sentence length. The second hypothesis considered the potential impact of the duration of a case, precisely the time taken to reach a verdict, on the duration of the prison sentence. It has been observed that the length of a prison sentence remains constant regardless of the course of the case. We offered insights on the potential utility of these findings for contemporary legal practitioners.

Keywords: ANOVA, Criminal Cases, Jurisdiction, Prison Term, South Africa

1. Introduction

In recent years, there has been a notable surge in the attention dedicated to addressing human rights violations within the multifaceted contexts of the African continent. The current state of affairs has led to a heightened level of interest in the domain of law, prompting a concentrated examination of legal processes, the implementation of standardized procedures, and the pursuit of consistency in judicial rulings (Ife, 2008; Cooper and Kleinschmidt, 1995; Johnson, 2019). Nevertheless, in this endeavor, a noteworthy observation has come to light. It has become evident that these factors, which are crucial for establishing Justice, exhibit a significant degree of variability contingent upon the distinct circumstances of each case and the jurisdiction in which the court functions (Ulmer, 2019).

To effectively navigate the intricate landscape of legal system reforms and offer informed counsel to policymakers, it is imperative to thoroughly examine the fundamental elements that influence court rulings (Pavone and Stiansen, 2022). Within the complex socio-legal framework in which legal systems operate, this study explores the intricate network of factors that shape judicial rulings, potentially facilitating a connection between the pursuit of Justice and its pragmatic implementation. The escalating prevalence of criminal incidents throughout Africa has become a focal point of scholarly and practical interest (Mazorodze, 2020). The escalation under consideration is subject to additional complications due to the indisputable increase in poverty rates, as observed by Osawe and Ojeifo (2019), elucidating a multifaceted

interaction between socioeconomic variables and criminal conduct. A dominant conceptual framework in scholarly discourse has surfaced, positing that individuals frequently turn to illicit behaviors as a final recourse to furnish economic sustenance for their familial units (Agnew and Robert Agnew, 2020). As mentioned above, the acknowledgment emphasizes the significant influence exerted by the socioeconomic milieu on the fundamental nature of criminal behavior within various communities (Van Deuren et al., 2022).

In response to the complex and intricate nature of the African legal framework, many initiatives have been proposed to augment the functionality of the diverse legal systems. One salient facet warranting consideration pertains to impediments that impede the expeditious achievement of definitive legal resolutions (Moonsamy, 2018). The obstacles mentioned above frequently materialize as impediments within legal procedures, influenced by multifaceted elements, including the spatial dispersion of courts and intricate political intricacies (Schnetler and Lancaster, 2018). An enlightening revelation arises, wherein it becomes apparent that these impediments transcend their superficial nature as mere procedural obstacles. Instead, they exhibit a significant correlation with occurrences of infringements upon human rights, as elucidated by Pinto (2020) and further substantiated by the scholarly contributions of Rabkin and Lerner (2022). Furthermore, it has been extensively documented by Azeem et al. (2020) that legal professionals in diverse judicial settings are currently burdened with an escalated caseload. This threatens the expeditiousness of court proceedings and presents a formidable obstacle to the efficient dispensation of Justice.

In light of this lacuna, scholars have directed their focus toward court records, endeavoring to devise methodologies that can augment the efficiency of criminal court trials, expedite the progression of proceedings, and guarantee impartial and consistent adjudications. As mentioned above, the acknowledgment emphasizes the imperative nature of comprehending the various factors that influence judicial processes and subsequently shape their outcomes (Agnew and Robert Agnew, 2020). In this context, the primary objective of our investigation becomes apparent by examining extensive data about geographical locations, offenses' attributes, and imprisonment length.

2. Literature Review

Efforts to address human rights violations across diverse African contexts have been observed, with a particular focus on law (Ife, 2008). The present undertaking has prioritized the thorough analysis of legal proceedings, the formulation of standardized procedures, and the uniformity of judicial decisions (Cooper and Kleinschmidt, 1995; Johnson, 2019). It is worth noting that Ulmer (2019) observes that these factors exhibit a significant level of variability depending on the particular circumstances of the case and the jurisdiction in which the court functions. To offer informed guidance to policymakers involved in legal system reforms, it is crucial to thoroughly examine the critical factors that influence court rulings (Pavone and Stiansen, 2022). Mazorodze (2020) has brought attention to a notable increase in criminal cases causing unease. The increasing prevalence of poverty in Africa, as highlighted by Osawe and Ojeifo (2019), further intensifies the upward trajectory. The prevailing notion in academic literature posits that individuals frequently engage in criminal activities as a last resort to provide financial support for their families (Agnew and Robert Agnew, 2020). Therefore, the socioeconomic context can shape the characteristics and occurrence of criminal behavior within a given community (Van Deuren et al., 2022).

Several initiatives have been implemented to improve the diverse legal systems functioning across the African continent. In this field, it is essential to recognize the efforts to address barriers that impede the timely achievement of conclusive solutions (Moonsamy, 2018). The presence of certain factors, such as the geographical distribution of courts and complex political dynamics, as highlighted by Schnetler and Lancaster (2018), often give rise to bottlenecks in legal processes. These bottlenecks are associated with human rights violations, as Pinto (2020) noted and further supported by Rabkin and Lerner (2022). Moreover, Azeem et al. (2020) have documented an increase in the workload of lawyers across various courts, which may delay court proceedings and compromise the effective administration of Justice. A study conducted by Odhiambo and Nairobi (2016) extensively examined the technical efficiency of Magistrates in the Judiciary of Kenya. Utilizing case observation as the principal approach for data collection over two years, the research outcomes indicate a decrease in the Judiciary's efficacy, primarily ascribed to the systemic delays encountered within the court system.

The legal system, which consists of complex elements, is vulnerable to inefficiencies and biases that can hinder the effectiveness of judicial personnel (Re and Solow-Niederman, 2019). Ayacko et al. (2017) conducted a study employing a descriptive correlational research design to examine the job performance of judicial staff. The researchers utilized

ANOVA tests to assess the variability of the collected data. The results of their study emphasize the importance of individualized attention provided by judicial officers in impacting the effectiveness of judicial personnel. This highlights the importance for judicial officers to improve their workplace efficiency, acknowledge the uniqueness of their staff members, and ensure fair distribution of workloads to maximize performance. The research highlights that technical and non-technical factors influence courts' performance. Technical factors pertain to legal matters, while non-technical factors encompass various elements that shape interactions and may affect the efficiency of the court. The balance of these factors is the pivotal point on which the concept of Justice in criminal proceedings rests. There is a need for more literature examining the effects of these variables on legal proceedings.

Numerous academics have directed their attention toward examining court records to suggest strategies that may augment the efficacy of criminal court trials, accelerate proceedings, and guarantee unbiased and consistent judgments. This statement highlights the current constraints in comprehending the factors that influence the formation and results of judicial procedures. The focal point of this study involves an in-depth analysis of comprehensive data about geographic locations, characteristics of offenses, and the length of time spent in incarceration. This study aims to investigate potential correlations and causal relationships among the variables. This initial inquiry aims to develop a predictive model that can anticipate the outcomes of legal proceedings through the analysis of relevant data about final verdicts. Therefore, it is imperative to fully understand the complex details of cases promoting fair and uniform judicial rulings. The primary aim is to address human rights violations by examining potential sources of bias that may be deeply ingrained within the judicial system.

3. Methodology

The data set was obtained from a legal entity functioning under the authority of a governmental organization in South Africa. The organization utilizes an electronic Legal Aid Administration (eLAA) system to document and oversee its legal cases (Makokoane et al., 2021). A dataset encompassing the historical timeframe of 2015 to 2020 was obtained from a database extract. To ensure the confidentiality of the subjects, any identifying details such as names, gender, race, demographics, and identification numbers were removed. Overall, this dataset offers substantial information about the legal directives a law firm receives. The source indicates that crucial factors, such as the geographical placement of the court, the precise allegations brought against the defendant, and the results of legal actions, are encompassed within the data. The dataset furnishes comprehensive particulars regarding the legal professionals engaged in each case, containing their admission date and practitioner category. The demographic data about the accused is also documented, although not employed directly to infer the results. The dataset possesses potential utility for diverse research objectives, including but not limited to examining patterns in legal proceedings and identifying variables that impact legal outcomes.

The null hypotheses were tested in this study by utilizing the dataset of convicted criminal cases in South Africa across all provinces, as depicted in Figure 1 (Makokoane et al., 2021).



Figure 1: Partition of provinces in South Africa (SAClimb.co.za, 2021)

The research will center on legal proceedings that resulted in incarceration. The data has been categorized based on the fiscal year from April 1st to March 31st. Due to the data structure, some criminal cases originating from a particular

province were occasionally assimilated into the data of another province, leading to the formation of six provinces through this amalgamation. This paper examines the results derived from a secondary data source. Figures 2 to 6 summarize criminal cases spanning five years, from 2015 to 2020. Considering the confidentiality of the information, the graphs presented do not explicitly disclose the names of the provinces. Instead, they are denoted as P_i , where i ranges from 1 to 6.

This study will solely present an initial statistical synopsis of two factors: firstly, the influence of the geographical location (i.e., jurisdiction) of a court on the verdict of criminal cases in South Africa, and secondly, the correlation between the duration of a case's resolution in court and the length of a prison sentence for criminal cases in South Africa. We will implement subsequent measures to furnish significant perspectives on this matter to attain these objectives.

1. The initial step involves conducting a comprehensive examination of multiple legal cases to classify them into either criminal or non-criminal categories.
2. In Step 2 of this study, the cases were categorized into various provinces according to the detected criminal cases. The current process needs to prioritize the court type in which a court case was prosecuted. This means that court cases from all seats of courts were included in the data set, as this feature was not deemed influential.
3. In Step 3, the cases are categorized into three groups depending on the imprisonment term's duration: 1) below one year, 2) between one to five years, and 3) five years or more. The criminal justice system exhibits a range of sentence lengths, yet we have opted to concentrate solely on these classifications due to the magnitude of the dataset. The present study does not account for the possibility that the year spans may pertain to a specific category of criminal activities. However, this aspect will be the subject of forthcoming inquiries.
4. In Step 4, data was gathered over five years utilizing the groupings established in Step 3. The data is employed to analyze the variances among and within groups.

The study employs quantitative data analysis techniques, specifically descriptive analysis and analysis of variance (ANOVA), using IBM SPSS Statistics 24 software. The study further employed the analysis of variance (one-way ANOVA) for hypothesis testing. This statistical method enables the examination of the distribution of three or more groups in independent data. The objective of this study was to ascertain two hypotheses subject to empirical testing.

Hypothesis 1: Jurisdiction vs. Prison Sentence Length: In this instance, we considered the relationship between a case's jurisdiction and the length of the prison sentence. The hypotheses for this assumption are:

Null hypothesis: The jurisdiction in which a criminal is prosecuted influences the time spent in prison.

Alternative hypothesis: The jurisdiction where a criminal is prosecuted does not influence the time spent in prison.

Hypothesis 2: Duration of Case vs. Prison Sentence Length: In this instance, we considered the relationship between the duration of the case (i.e., time taken to reach a verdict) and the length of the prison sentence. The hypotheses for this assumption are:

Null hypothesis: The length of a prison sentence is unaffected by the duration of the case (i.e., time taken to reach a verdict).

Alternative hypothesis: The length of a prison sentence is affected by the duration of the case (i.e., time taken to reach a verdict).

4. Results

This section will present findings regarding the relationship between Jurisdiction and Prison Sentence Length and the correlation between the Duration of Case and Prison Sentence Length for data between 2015 and 2020.

4.1. Jurisdiction vs Prison Sentence Length

This subsection examines the initial hypothesis, analyzing each period to determine the influence of jurisdiction on the duration of imprisonment. During Period 1 of the 2015/16 year, there were 24459 criminal cases resulting in convictions. Among the cases under consideration, 22% culminated in a sentence of less than one year, while 39% were associated with a sentence ranging from one to five years. The remaining 39% of the cases involved a prison sentence exceeding

five years. Upon further examination of the data, it has been determined that Province 4 exhibits the highest number of convicted cases (5357), while Province 5 displays the lowest number of convicted cases (3453).

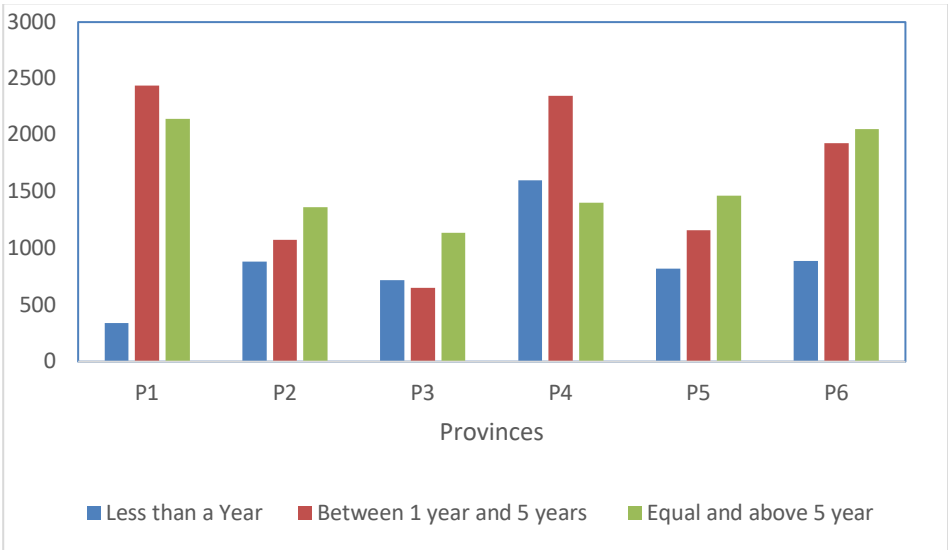


Figure 2: Distributions of outcomes in Period 1

An ANOVA test was utilized to analyze the variability among the convicted instances depicted in Figure 2. The ANOVA results are presented in Table 1, which provides an overview of the statistical analysis. It should be noted that the abbreviations SS, df, and MS in all ANOVA tables correspond to the Sum of Squares, Degrees of Freedom, and Mean Squares, respectively. The analysis reveals that the computed F value (3.5599) is lower than the critical F value (3.6823). Therefore, it can be inferred that the geographical area where criminal cases are tried influences the duration of incarceration.

Table 1: ANOVA Results for Period 1

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	492986.10	2	246493.10	3.55987	0.054304	3.68232
Within Groups	1038632	15	69242.14			
Total	1531618	17				

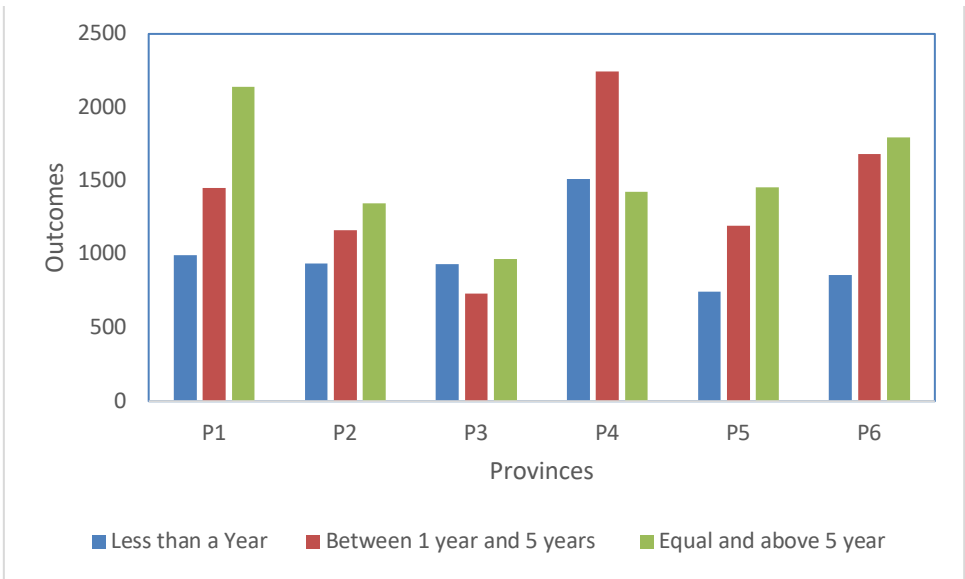


Figure 3: Distributions of outcomes in Period 2

The second period of the 2016/17 year saw 2358 criminal cases resulting in convictions, a slight decrease from the previous period. The findings indicate that a quarter of the cases were subjected to a sentence of less than a year, while 36% received a sentence ranging from one to five years of imprisonment. The remaining 39% of the cases were incarcerated for over five years. Province 4 exhibits the highest incidence of culpable cases, with a count of 5181, whereas Province 3 records the lowest number of culpable cases, amounting to 2638. Based on the presented data, a disparity of 2543 cases exists between the maximum and minimum counts of convictions.

Table 2 presents the ANOVA results of the data depicted in Figure 3. The analysis suggests that the geographical location of criminal trials influences the duration of imprisonment, as the F value (2.7649) is lower than the F-Critical value (3.6823).

Table 2: ANOVA Results for Period 2

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	920323.4	2	460161.7	2.764941	0.095014	3.68232
Within Groups	2496410	15	166427.3			
Total	3416733	17				

The subsequent period under analysis is Period 3 (2017/18), wherein a reduction in the overall count of criminal cases resulting in conviction (presently at 22099) is observed, as depicted in Figure 4. Notably, a significant proportion of convicted cases, precisely 27%, received a sentence of less than one year. In comparison, 34% of convicted cases were sentenced to a term ranging from one to five years. Approximately 39% of the aggregate value pertains to cases resulting in a conviction and a sentence of five years or greater. Province 4 consistently has the highest number of convicted cases, totaling 4878, whereas Province 3 demonstrates the lowest number of convicted cases, amounting to 2520. Table 3 in this study presents the ANOVA outcome for the utilized data, which was employed to examine the variability of the convicted cases. The analysis reveals that the computed F value (2.0201) is lower than the F-Critical value (3.6823). Therefore, it can be inferred that the jurisdiction where criminal cases are tried impacts the duration of imprisonment.

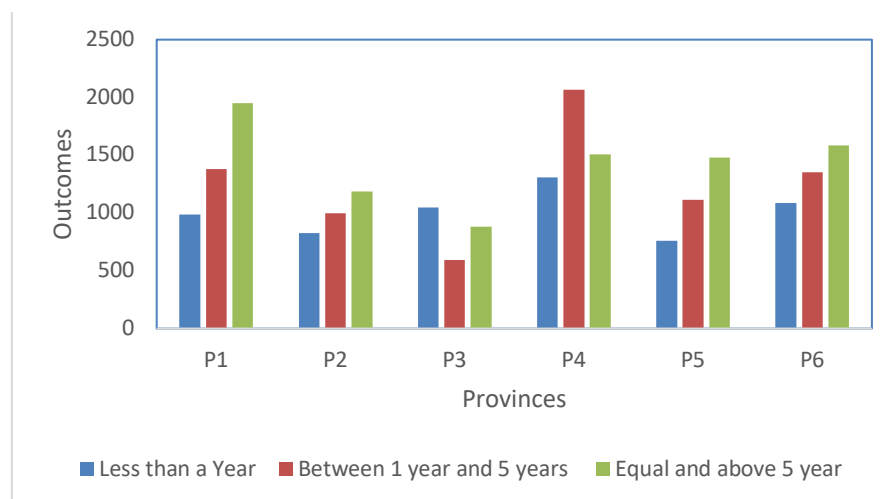


Figure 4: Distributions of outcomes in Period 3

Table 3: ANOVA Results for Period 3

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	555768.8	2	277884.4	2.020166	0.167157	3.68232
Within Groups	2063329	15	137555.3			
Total	2619098	17				

Upon comparing Period 4 (2018/19) with the preceding periods, it is evident that there has been a reduction in the total number of cases handled. Specifically, the total number of convicted criminal cases has been recorded at 16463. The data indicates that 26% of convicted cases received a sentence of less than one year, 34% received a sentence between one year and five years, and 40% received a sentence exceeding five years. It is evident from the data that Province 4 has the highest number of convicted cases (3779), whereas Province 3 has the lowest (1890).

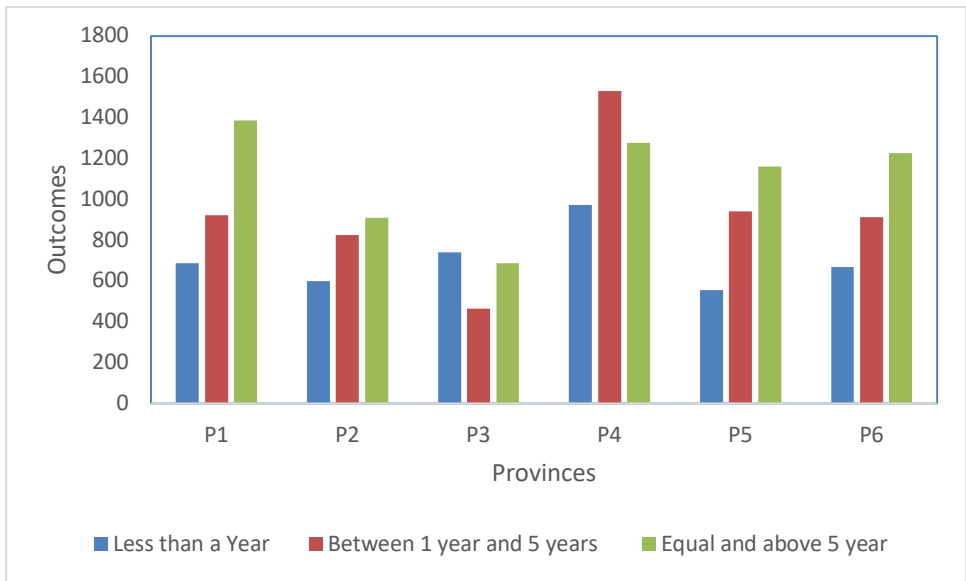


Figure 5: Distributions of outcomes in Period 4

Upon conducting an ANOVA test and comparing the F value to the F-Critical value, it was observed that the F value (3.5598) is lower than the F-Critical value (3.6823). This indicates that the jurisdiction in which criminal cases are prosecuted significantly affects the duration of incarceration.

Table 4: ANOVA Results for Period 4

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	492986.1	2	246493.1	3.55987	0.054304	3.68232
Within Groups	1038632	15	69242.14			
Total	1531618	17				

Finally, the total number of convicted criminal cases in Period 5 (2019/20) is 9303 – see Figure 6. Only 22% of the cases resulted in less than a year of sentences. Convictions with sentences ranging from one to five years accounted for 36 % of the total, and around 42 % of the total value is made up of convictions with a sentence of five years or more. Province 4 has the most convicted cases (2411), while Province 3 has the fewest (930).

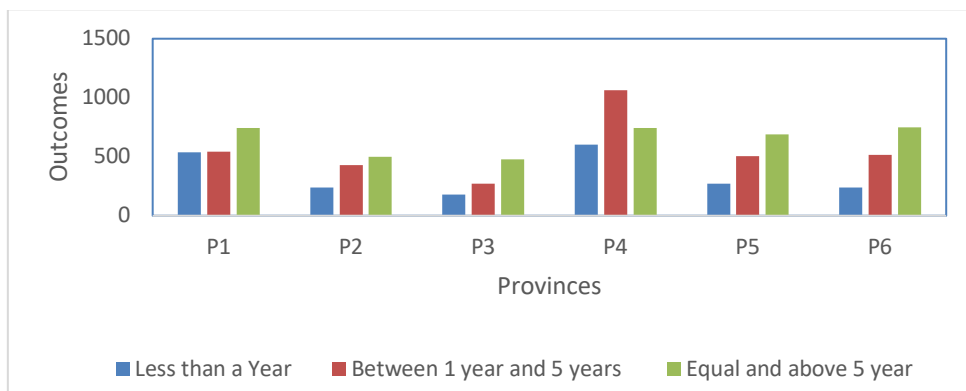


Figure 6: Distributions of outcomes in Period 5

An ANOVA analysis was utilized to examine the variance in the number of convicted cases during Period 5. Table 5 presents a summary of the ANOVA results. In contrast to previous periods under consideration, it is evident that the F value (3.714) surpasses the F-Critical value (3.6823). Therefore, it can be inferred that the geographical location where criminal cases are tried does not impact the duration of incarceration. This study's primary focus does not encompass examining the effects of COVID-19 on the populace's conduct, particularly considering the implementation of confinement measures, curfews, and social distancing protocols. However, this strange outcome could be attributed to the altered social circumstances during the COVID-19 pandemic.

Table 5: ANOVA Results for Period 5

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	295972	2	147986	3.714679	0.048928	3.68232
Within Groups	597572.5	15	39838.17			
Total	893544.5	17				

Finally, an ANOVA test was performed for the entire period, as presented in Table 6. The results indicate that, consistent with Tables 1-4, the jurisdictions where criminal charges are prosecuted significantly impact the duration of prison sentences for convicts. This is evidenced by the F value being lower than the F-Critical value.

Table 6: ANOVA Results for the entire period (2015 – 2020)

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	22408013	2	11204007	2.347382023	0.137913	3.885294
Within Groups	57275756	15	4772980			
Total	79683769	17				

We must consider the potential impact of the type of charge (i.e., its corresponding consequence) on the duration of the imprisonment term. In Province 1, it can be observed from Table 7 that there exists a correlation between the duration of the prison term and the type of offense committed. In instances of murder or attempted murder, the duration of imprisonment exceeds five years in 86% of the cases and ranges between one and five years in 12% of the cases. The incidence of theft or attempted theft is observed to result in a sentence ranging from 1 to 5 years in 52% of the cases, while a sentence of 3 months to 1 year is imposed in 33% of the cases.

Similar outcomes are noted for the remaining provinces. The findings indicate that in all tables (Tables 7-12), there is a positive correlation between the commission of murder or attempted murder and a lengthier prison sentence. In comparison, the perpetration of theft or attempted theft is linked to a shorter sentence across all provinces. This suggests that the duration of a penal term is closely linked to the pertinent characteristics of the offense, as anticipated. The variations in the overall incidence of a particular offense across different jurisdictions are of greater significance. In Province 1 and Province 4, the aggregate count of murder or attempted murder incidents is roughly equivalent to the count of theft or attempted theft incidents. Regarding the remaining provinces, a notable increase in the frequency of murder or attempted murder cases is observed, particularly in Provinces 5 and 6 (refer to Tables 11 and 12). These two provinces account for 76% and 69% of the overall number of cases, respectively, that pertain to murder or attempted murder. The observed variation in the primary type of crime across different jurisdictions is noteworthy. It may suggest the presence of fundamental socioeconomic factors that influence individuals to engage in specific criminal activities.

Table 7: Outcome vs. Length of Prison Sentence (Province 1)

Outcome vs. Prison Sentence	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year
Murder/attempted murder	449	65	10
Theft/attempted theft	86	302	190
Grand Total	535	367	200

Table 8: Outcome vs. Length of Prison Sentence (Province 2)

Row Labels	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year	Grand Total
Murder/attempted murder	350	82	16	448
Theft/attempted theft	23	92	101	216
Grand Total	373	174	117	664

Table 9: Outcome vs. Length of Prison Sentence (Province 3)

Outcome vs. Prison Sentence	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year	Grand Total
Murder/attempted murder	204	47	6	257
Theft/attempted theft	17	79	90	186
Grand Total	221	126	96	443

Table 10: Outcome vs. Length of Prison Sentence (Province 4)

Outcome vs. Prison Sentence	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year	Grand Total
Murder/attempted murder	409	168	36	613
Theft/attempted theft	44	290	266	600
Grand Total	453	458	277	1213

Table 11: Outcome vs. Length of Prison Sentence (Province 5)

Outcome vs. Prison Sentence	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year	Grand Total
Murder/attempted murder	465	102	26	593
Theft/attempted theft	10	76	97	183
Grand Total	475	178	123	776

Table 12: Outcome vs. Length of Prison Sentence (Province 6)

Outcome vs. Prison Sentence	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year	Grand Total
Murder/attempted murder	504	183	17	704
Theft/attempted theft	29	148	135	312
Grand Total	533	331	152	1016

The findings suggest a correlation exists between the frequency of a particular type of crime and the corresponding number of prison sentences issued in each respective region. It appears reasonable to infer that this factor contributed to the influence of jurisdiction on the duration of a prison term. Another factor to be considered is the gravity of the penal sanction imposed for a particular offense, such as homicide/attempted murder or robbery/attempted robbery. It has been observed that certain regions tend to impose prison sentences of 1-5 years (particularly P1, P4, and P6) more frequently in cases of theft or attempted theft, while other regions typically impose sentences of 3 months to 1 year (such as P2, P3, and P5).

The rationale behind this phenomenon remains ambiguous, prompting us to inquire whether 1) specific factors contribute to an increase in the prevalence of violent thefts or attempted thefts in certain localities, thereby resulting in elevated prison sentences, or 2) this may signify disparities in the sentencing of identical crimes. An instance was observed in the data wherein an armed robbery case in Province 2 resulted in a prison term of 0-1 year, while in Province 4, the same offense led to a prison sentence exceeding five years. Various factors may have contributed to the augmented prison term, such as supplementary particulars elucidating the character of the offense or the possibility that certain jurisdictions exhibit a more stringent approach to penalizing wrongdoers.

4.2. Duration of Case vs. Prison Sentence Length

This section delves into the second hypothesis posited in the research. The decision was made to focus solely on a single period within the sample, the 2018/19 period. This approach is adopted because this time frame exhibits the highest incidence of cases, thereby enabling a comprehensive analysis to be carried out across all provinces. The outcomes are demonstrated in Tables 13-14.

Table 13: Period 2018/2019: Duration of the case vs Prison sentence

Duration of the Case vs. Prison Sentence	Imprisonment > 5 Years	Imprisonment 1 - 5 Years	Imprisonment 3 m - 1 Year	Grand Total
0-6 month	5648	6172	4908	16728
7- 12 month	297	840	1851	2988
13-18 month	50	258	864	1172
18-24 month	14	124	530	668
25 - 48 month	12	126	425	563
49 - 72 month	1	22	87	110
73 - 96 month	0	1	14	15
96 - 120 month	0	0	1	1
Total	6022	7543	8680	22245

Table 13 presents an overview of criminal cases across all provinces in South Africa during 2018/19. It has been observed that approximately 99% of criminal cases in South Africa are resolved within four years. It is worth mentioning that a considerable number of cases are expected to result in a prison term of five years or more within four years. This observation holds even when examining cases brought to court within the initial two-year timeframe. Table 14 presents the ANOVA findings for criminal cases resulting in imprisonment for a duration ranging from 0 to 24 months.

Table 14: ANOVA Results for Prison Sentences 0 – 24 months

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	590920,2	2	295460,1	0,044244	0,956927	4,256495
Within Groups	60101313	9	6677924			
Total	60692233	11				

Upon conducting an ANOVA analysis and comparing the F value to the F-Critical value, it was observed that the former (0.044244) is lower than the latter (4.256495). This indicates that the duration of a case does not significantly impact the length of a prison sentence.

5. Discussion

The paper presents a statistical analysis of court outcomes about criminal cases that have resulted in convictions in South Africa. The study encompassed instances from nine provinces in South Africa, spanning five years. The outcomes were categorized into three groups based on the duration of the prison term imposed: those with a sentence of less than one year, those with a sentence ranging from one to five years, and those with a sentence of five years or more. An ANOVA test was employed to examine the variances among and within cases at a significance level of 5% using the partitions.

The analysis of variance (ANOVA) findings indicates that the geographical jurisdiction in which a legal case is prosecuted significantly impacts the duration of incarceration. An anomaly was noted during Period 5, wherein an inverse relationship was observed. The potential cause for this deviation could be attributed to the influence of COVID-19 on social conduct at that time. It was also noted that specific criminal activities exhibit a higher incidence rate in particular jurisdictions, potentially catalyzing the correlation between jurisdiction and the duration of imprisonment imposed in that corresponding area. Finally, it was determined that the length of a prison term remains unaltered by the length of the legal proceedings. The outcomes of our study have prompted an inquiry into whether jurisdictions impose more severe penalties for a particular offense based on its violent characteristics or as a routine practice. The disparity in prison sentences for armed robbery between provinces, where one province may impose a sentence of 0-1 year while another may impose a sentence of more than five years, raises the question of whether this discrepancy is due to the greater degree of violence associated with such crimes in the latter region or the more stringent approach taken by the justice system in administering punishments.

Based on our findings, including this line of inquiry, we propose the following recommendations to enhance and improve the existing system:

1. Stakeholders can utilize the study's findings to analyze the status of criminal cases from a broader provincial viewpoint.
2. The results obtained through the ANOVA method have revealed a significant correlation between the jurisdiction of the case and the magnitude of the prison sentence being imposed.
3. The subsequent inquiry has revealed that this phenomenon is likely attributable to the higher likelihood of particular crimes occurring in specific regions. The underlying factors contributing to this trend, whether socioeconomic or otherwise, warrant further examination.

It is recommended that the following actions be taken:

- Conducting periodic reviews of all criminal case outcomes in South Africa is imperative.
- The expeditious handling of appealed cases is imperative.
- Encouraging legal professionals to compare verdicts on a province-by-province basis would be beneficial.

6. Conclusion

The study explored the potential correlation between the jurisdiction where a case is tried and the duration of the prison sentence. The reason why a jurisdiction may be indicative of the length of a sentence is related to the fact that the crime statistics in different provinces are not always comparable. Notably, in Province 5 and 6 regions, the majority of reported cases, precisely 76% and 69%, respectively, pertained to murder or attempted murder. Exploring the intricacies of these criminal activities and analyzing the underlying factors contributing to these trends would present a compelling research direction. Our analysis also highlighted the importance of further investigating why different jurisdictions could be imposing penalties of different severities for crimes of the exact nature.

Based on the findings of this research, we have concluded that a machine learning algorithm could be a valuable means of forecasting the results of criminal prosecutions, specifically in terms of predicting prison sentences. The present study facilitated the identification of the significance of the type of offense and the legal authority as variables that impact the result of a legal proceeding. The influence of jurisdiction on sentencing outcomes has been noted, as there are cases where identical criminal offenses may result in disparate sentences based on the jurisdiction in which they are prosecuted. This study recommends that aspects such as these be expanded upon and investigated in future research.

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