

# An AI Sentencing System: Homicide Case Study in Taiwan

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## Abstract

Sentencing is a demonstration of the state's penal authority; however, sentencing decisions by judges in Taiwan frequently face public criticism. With the implementation of the Citizen Judges Act in 2023, Taiwan's Judicial Yuan has proactively developed an AI-based sentencing information system to reduce discrepancies among professional judges' verdicts and to assist citizen judges in determining sentences. This study examines 198 homicide verdicts from district courts between 2016 and 2023, focusing on sentencing factors based on Article 57 of Taiwan's Criminal Code. It analyzes the most frequently considered factors by judges and the variations in sentencing severity that result from these considerations. In conclusion, this paper addresses potential challenges that may arise in the practical implementation of the sentencing information system and considers how judges might use it as a supplementary tool in sentencing, or whether it could fully guide sentencing decisions.

*Keywords:* Homicide case study, AI Sentencing System, sentencing factors, Homicide

## 1. Introduction

According to Article 271 of the Criminal Code of the Republic of China: "A person who takes the life of another shall be sentenced to death or life imprisonment or imprisonment for not less than ten years. An attempt to commit an offense specified in the preceding paragraph is punishable. A person who prepares to commit an offense specified in paragraph 1 shall be sentenced to imprisonment for not more than two years." Sentencing represents the exercise of a nation's penal authority, involving both the selection of punishment types and the determination of their severity. The outcome of sentencing dictates the extent to which the state intervenes in a defendant's personal freedom, thus requiring judges to act with utmost caution. However, sentencing decisions by judges in Taiwan are often subject to public criticism, with the media even using the term "dinosaur judges" to describe certain judges. This reflects a significant gap in perceptions between the judiciary and the public regarding sentencing. On January 1, 2023, Taiwan officially implemented the Citizen Judges Act, introducing a system where citizen judges, together with professional judges, participate in trials to determine both the guilt of the defendant and the severity of the sentence. The law aims to enhance judicial transparency, reflect the public's sense of justice, and foster greater trust in the judiciary. However, sentencing is already a challenging task for professional judges, let alone for citizen judges without legal expertise. Additionally, each citizen judge brings unique life experiences and values, which could lead to

differing standards in sentencing. Although Article 57 of the Criminal Code of Taiwan provides factors to be considered in sentencing, these factors are abstract in nature. How citizen judges can appropriately apply these abstract legal standards in individual cases to determine the severity of a sentence poses a significant challenge. Considering this, Taiwan is developing tools to assist both citizen and professional judges during trials. These tools aim to ensure appropriateness and fairness in sentencing, while also minimizing disagreements between citizen and professional judges regarding the proper sentence. [1]

In response to the implementation of the Citizen Judges Act and to provide citizen judges with more reference materials to overcome the challenges they may face due to their lack of legal expertise in sentencing, the Judicial Yuan began exploring the use of technology to assist in sentencing as early as September 2020.

As a first step, the Judicial Yuan enhanced its longstanding sentencing information system. Subsequently, on February 6, 2023, AI technology was integrated into the sentencing process. Leveraging natural language processing (NLP) techniques, the AI system is being trained to learn sentencing patterns, with the goal of developing a sentencing information system tailored specifically to Taiwan's legal framework. [2] The AI-based sentencing information system is divided into two models: the fact-based model and the evaluation-based model.

### 1.1 Fact-based Model

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This model uses factual content as sentencing factors. It tags relevant facts within the sentencing system, and when users input aggravating or mitigating statutes along with specific sentencing factors, the system automatically retrieves all relevant past rulings. It then provides a sentencing range based on prior cases that match the query criteria, allowing judges and citizen judges to reference similar sentencing outcomes. This assists both professional and citizen judges in determining the appropriate sentence for the case at hand.

Currently, the fact-based model focuses on the following types of crimes: Unsafe driving, Fraud, Theft, Assault and Hit-and-run incidents

## 1.2 Evaluation-based Model

This model is built upon the sentencing factors outlined in Article 57 of the Criminal Code. Users tag textual descriptions relevant to these sentencing factors and categorize them under the specific factors listed in Article 57. They then evaluate whether each factor is favorable, unfavorable, or neutral toward the defendant.

The evaluation-based model currently focuses on the following crime types: Firearms-related offenses, Drug offenses and Crimes against sexual autonomy.

These two models aim to streamline sentencing by providing data-driven support, improving consistency and fairness in judicial decisions, and helping both professional and citizen judges make well-informed sentencing choices.[3]

This paper focuses on the use of AI-based sentencing for defendants charged with homicide, specifically employing the fact-based model of the AI sentencing information system. To train the system effectively, we must first tag relevant factual content corresponding to sentencing factors within the original text of court rulings. These annotated judgments are then used to train the machine learning model for sentencing.

The sentencing factors are stipulated in Article 57 of the Criminal Code of the Republic of China (Taiwan) and consist of the following ten criteria: a: the motive and purpose of the offense; b: the stimulation perceived at the moment of committing the offense; c: the means used for the commission of the offense; d: the offender's living condition; e: the disposition of the offender; f: the education and intelligence of the offender; g: relationship between the offender and the victim; h: the seriousness of the offender's obligation violation; i: the danger or damage caused by the offense; j: the offender's attitude after committing the offense.

This study seeks to explore how these ten statutory sentencing factors influence sentencing decisions in homicide cases. Accordingly, we collected 198 homicide judgments from local courts, spanning the years 2016 to 2023. These cases involve both completed and attempted homicides, with each judgment focusing on a single defendant charged with homicide.

By analyzing these sentencing decisions, this paper aims to understand the impact of various sentencing factors on the judges' decisions. Insights derived from this

research could improve the AI model's ability to assess sentencing factors, thereby helping both professional and citizen judges determine appropriate sentencing outcomes for homicide cases.

## 2. Research Findings

In the 198 homicide judgments analyzed in this study, the sentencing outcomes were distributed as follows:

a. 73 cases resulted in fixed-term imprisonment of 5 to 10 years, b. 63 cases resulted in imprisonment of less than 5 years, c. 52 cases resulted in imprisonment of more than 10 years, d. 10 cases resulted in life imprisonment. (see Fig.1)

Our analysis revealed that the most frequently cited sentencing factors influencing the severity of sentences were post-offense attitude, intellectual capacity and living conditions of the offender.

Generally, when defendants had a criminal record or displayed a negative attitude after the offense, judges tended to impose harsher sentences.

Conversely, if the defendant came from a dysfunctional family or suffered from physical or mental health issues, judges were more likely to impose lighter sentences.

The findings highlight the significant role these specific sentencing factors play in judicial decisions. Understanding how these factors are weighed provides valuable insights for refining the AI sentencing system and ensuring that it aligns with the sentencing practices observed in homicide cases.

### 2.1 Most Frequently Used Sentencing Factors

#### 2.1.1 Post-offense Attitude

Among the 198 judgments analyzed, 180 cases considered the defendant's post-offense attitude. This factor could have either a positive or negative impact on sentencing, depending on the defendant's behavior and statements.

In cases where the defendant showed remorse and took responsibility for their actions, judges were inclined to reduce the sentence. For example, in a case heard by the Taoyuan District Court (111 Chong-Su Zi No. 8), the defendant admitted to killing his son during police questioning, investigation, and trial. He expressed deep regret, saying, "I feel very sorry for killing my son and wish I could have a second chance." The judge interpreted this behavior as a sincere acknowledgment of guilt and a plea for forgiveness, leading to a mitigated sentence. This is positive impact.

Conversely, a defendant's denial of guilt or attempts to shift blame typically resulted in harsher sentencing. In another case heard by the Taoyuan District Court (106 Su Zi No. 912), the defendant struck the victim with a bat, causing death, out of anger over blocked traffic. After the offense, the defendant denied any wrongdoing, claiming he acted to assist police officers in an emergency. However, the court determined that this claim was unfounded based on other evidence. The judge noted that the defendant not only failed to reflect on his actions but

also sought to evade responsibility by offering false justifications. As a result, the court increased the severity of the sentence. This is negative impact.

Those examples illustrate how judges weigh the defendant's post-offense attitude, with genuine remorse leading to leniency, while evasion and lack of accountability result in stricter punishment.

### 2.1.2 Intellectual Capacity

In the 198 judgments analyzed, 140 cases considered the defendant's intellectual capacity, making it the second most frequently referenced sentencing factor. This factor involves evaluating the offender's mental health and cognitive abilities, which can significantly impact their accountability and the severity of their sentence.

**Example Case 1.** In a case from the Taipei District Court (109 Su Zi No. 514), the defendant had been diagnosed with schizophrenia and held a disability certificate. They exhibited clear symptoms of delusions of persecution and auditory hallucinations in daily life. Although the defendant had undergone mandatory hospitalization, their condition worsened after discharging due to non-compliance with medication. In a mentally deteriorated state, the defendant randomly attacked a motorcyclist stopped at a red light with a folding knife.

The court acknowledged that the defendant's mental health significantly impaired their ability to discern right from wrong. As a result, the judge imposed a sentence of three years of imprisonment, which is far below the statutory minimum of ten years for such crimes. This case illustrates how the offender's psychological and cognitive impairments are essential factors in judicial decision-making, as they may justify mitigated sentences to account for diminished responsibility.

### 2.1.3 Living Conditions of the Offender

In the 198 judgments analyzed, 129 cases considered the living conditions of the offender, indicating that this factor is an important consideration for judges during

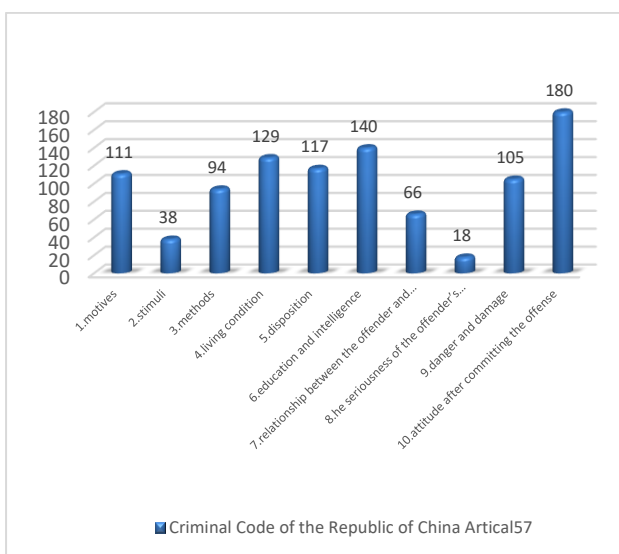


Fig.2. Criminal Code of the Republic of China, Article 57

sentencing.

**Example Case 2.** In one case adjudicated by the Taoyuan District Court (110 Su Zi No. 1116), the judge considered the defendant's impoverished background and the fact that they had a minor child to support. Recognizing the significant personal and familial hardships faced by the defendant, the court opted to impose a sentence of five years of imprisonment, which is notably below the statutory minimum of ten years for homicide offenses.

This example highlights how the defendant's socio-economic circumstances can influence sentencing decisions. Judges may exercise discretion to impose lighter sentences based on the offender's personal situation, particularly when it involves familial responsibilities or significant hardship. Such considerations reflect a more compassionate approach to justice, recognizing the complexities of individual circumstances that can impact criminal behavior.

## 2.2 Factors Influencing Severe Sentences

In this study, there were no death penalty cases; the most severe sentence issued was life imprisonment. Judges typically consider several factors when imposing life sentences, including the defendant's character (such as having a prior criminal record), poor post-offense attitude, or lack of remorse, which can lead to increased sentencing severity. (see Fig.2)

Another significant reason for imposing harsher sentences is the means employed in committing the crime.

**Example Case 3.** In a case from the Taitung District Court (107 Chong-Su Zi No. 1), the defendant had a troubled relationship with his wife, involving financial disputes and previous incidents of domestic violence. Despite a protection order issued by the court, the defendant, suspicious of his wife's alleged infidelity, armed himself with a kitchen knife and a fruit knife. He went to her workplace and inflicted multiple stab wounds to her head, abdomen, back, and legs, resulting in severe and irreparable injuries, including the severing of her vertebral

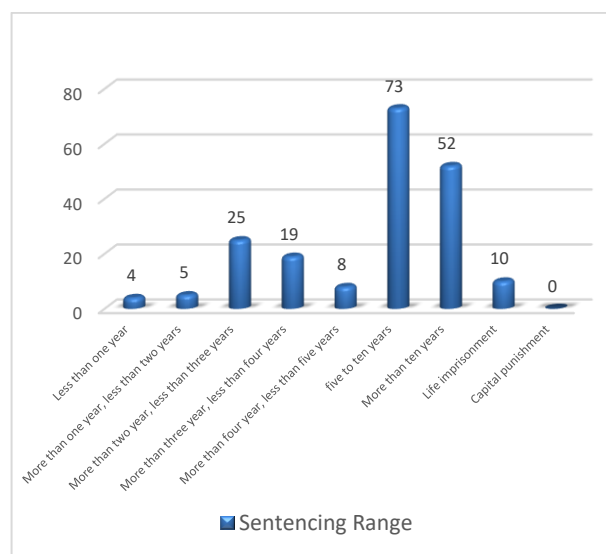


Fig.1. Sentencing Range

artery. The brutality of the defendant's actions was evident. Consequently, the judge determined that the circumstances surrounding the crime were exceptionally violent and deserving of a severe penalty, leading to a life sentence for the defendant.

This case illustrates how judges consider the nature and brutality of the criminal act, alongside the defendant's prior behavior and attitude, when determining the appropriateness of a life sentence. Such factors reflect the judicial system's commitment to ensuring that severe crimes receive equally severe consequences, thereby upholding public safety and justice.

### 2.3 Factors Influencing Lenient Sentences

Under the Criminal Code of the Republic of China, the statutory penalty for homicide is imprisonment for ten years or more. However, judges may sometimes reduce the sentence to below ten years by considering factors such as the defendant's post-offense attitude and their living conditions.

**Example Case 4.** In a case from the Taipei District Court (109 Chong-Su Zi No. 8), the defendant, unable to bear the suffering of their daughter, who had been bedridden due to illness, decided to end her life by suffocation. Afterward, the defendant fully confessed to the crime. The judge took into account the compassionate motive behind the act—stemming from the daughter's prolonged suffering—and the defendant's positive post-offense attitude. The family also expressed understanding and requested leniency from the court. Considering these circumstances, the judge sentenced the defendant to two years and six months in prison.

**Example Case 5.** In another case heard by the Taoyuan District Court (109 Chong-Su Zi No. 35), the defendant, overwhelmed by the stress of caring for her husband, developed severe depression during the caregiving period and contemplated killing her husband before taking her own life. The judge assessed that the defendant's actions were not malicious in intent. Additionally, the defendant's voluntary confession and deteriorating mental state were taken into consideration. The victim's children expressed their desire for the defendant not to be imprisoned during the proceedings. Given these mitigating factors, the judge imposed a sentence of one year and six months in prison, with a three-year probation.

These cases illustrate how judges weigh the humanizing factors surrounding the offense, such as compassion, mental health struggles, and family dynamics, allowing for leniency in sentencing. By considering the context of the crime and the defendant's circumstances, the judicial system seeks to balance justice with compassion, recognizing that not all criminal actions stem from a place of malice.

### 3. Conclusion

The use of an AI sentencing information system to assist judges in sentencing may theoretically face criticism for potentially interfering with judicial independence.

However, this study finds that its practical implementation is feasible. The system's sentencing recommendations can help remind judges of appropriate sentencing boundaries, thereby reducing the likelihood of similar cases resulting in disparate sentences and promoting fairness in the judicial process.

Nevertheless, it is essential to recognize that each criminal case presents unique facts and circumstances. Therefore, the information provided by the AI sentencing system should only serve as one reference point among many when judges determine the appropriate sentence. Judges must still rely on the specific details of each case to make comprehensive and informed sentencing decisions, ensuring that justice is served in a manner that reflects the nuances of individual situations.

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### Authors Introduction

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He is an assistant professor in the Department of Financial Law, Ming Chuan University (MCU), Taiwan, and also a member in Taiwan Information Security Center @ National Cheng Kung University (TWISC@NCKU). He graduated from Cheng Chi University (NCCU), Taiwan, with B.S. in 1999 and Master degree in Criminal Law in 2003. He obtained second Master degree in Procedural Law in 2010 and his PhD in Juvenile Criminal Law in 2017, from the Aix-Marseille University (AMU), France. His research interests focus on the Criminal Justice for Juvenile Offenders, Cybercrime, Cyber-Security and Rights of Children.

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He is a 21-year-old student majoring in Law at Ming Chuan University. He has a strong interest in the field of criminal law and hopes to conduct in-depth research on issues related to this field in the future.

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She is a student in the Department of Law, Ming Chuan University (MCU), Taiwan, and is now 21 years old. She is interested in various criminal legal issues and hope to learn a lot from this seminar. She hopes to have more opportunities to participate in related in the feature.

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She is a senior student in Law at Ming Chuan University. She has a strong interest in criminal law, enjoys reading , and is skilled at gathering information. In the team, she takes on a coordinating role. And hopes to gain new knowledge and experience through this seminar.