
Paying money for freedom: Effects of monetary compensation on sentencing for criminal traffic accident offenses in China

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ABSTRACT

Objectives: The current study seeks to understand the role that monetary compensation plays in the joint occurrence of imprisonment and probation for criminal traffic accident offenses in China. Drawing from three possible approaches to a lenient sentencing in the Chinese judicial system, we argue that monetary compensation influences sentencing outcomes primarily via probation. Specifically, compensation increases the chances of a defendant being granted probation as opposed to more severe penalties, thus leading to the heaping of sentence lengths to thirty-six months, the maximum length of term eligible for probation.

Methods: All sentence documents for the first trial between 2014 and 2016 were retrieved. The final dataset contains 108,691 observations. Following a joint model approach with both the sentence length and probation as outcomes, we utilized a Zero-Truncated-Generalized-Inflated-Poisson (ZTGIP) model to address the distributional characteristics of sentence length, e.g., discrete integers, non-zero values, and heaping on certain points. To avoid detecting the effects of little scientific importance due to our large sample size, all results were evaluated using Bootstrapping techniques.

Results: We found that the likelihood of probation increased when monetary compensation was provided; however, the monetary compensation did not make a significant difference in the sentence length for those defendants receiving less than 36 months imprisonment. When heaping was taken into consideration, monetary compensation was only positively associated with the chance of inflation at the value of 36 months, and the probation ceased to be significant in predicting sentence length.

Conclusions: The significant positive relationship between monetary compensation and lenient sentencing outcomes suggests that monetary compensation plays a crucial role in the Chinese judicial process. Our study will not only help researchers to better understand the legal process in China, but it will also benefit the larger community as an example of utilizing new sources of data.

Keywords: monetary compensation, sentencing outcomes, inflation, criminal traffic accident offenses, China

1. INTRODUCTION

A common criticism against the U.S. legal system is that wealth influences legal outcomes; in essence, a person's socioeconomic disadvantage translates to worse sentencing outcomes (Lott, 1987). It is widely believed that wealthier clients possess clear advantages when it comes to navigating each step of the justice system, such as paying bail (Lu & Kelly, 2008), selecting legal services (Hartley, Miller, & Spohn, 2010; Rattner, Turjeman, & Fishman, 2008), and receiving lenient sentencing (Bagaric, 2014). Although criminal sentencing has inspired extensive research in the United States (Ulmer, 2012) and European countries (Wermnk et al, 2015; Wingerden et al., 2016), little is known about how a defendant's wealth or other socioeconomic factors contribute to the sentencing outcomes, which is largely due to the lack of data and appropriate measurements (Kutateladze, Andiloro, & Johnson, 2016; Reitler, Sullivan, & Frank, 2013; Ulmer, 2012).

The primary focus of the sentencing literature is the effects of legal and extra-legal factors, such as demographic characteristics, on judges' sentencing decisions. For instance, offender's age (Little & Karp, 2012; Steffensmeier et al., 1998), gender (Gelb, 2010; Jeffries and Bond, 2010; Van Wingerden et al., 2014), and race/ethnicity (Fishman et al., 2006; Johnson and Betsinger, 2009; Mitchell, 2005), have all been studied extensively regarding criminal sentencing outcomes. Beyond the simple claim that age, gender, or race/ethnicity have an impact on sentencing outcomes, there has been a growing consensus that the influences of those variables are mutually dependent in affecting the ultimate juridical decision (Spohn, 2000; Ulmer, 2012). In particular, it has been well documented in the scholarship that disparities in economic resources are a contributing factor to the higher conviction rates and longer sentence duration of defendants in the racial minority, as minorities are more likely to rely on an inadequate defense system (Anderson & Heaton, 2012; Roach, 2014).

There have been calls for studies to disentangle the influence of race/ethnicity and socioeconomic factors on sentencing decisions (Doerner & Demuth, 2010). However, information on offenders' socioeconomic status has been very limited; and even with such information, typical measures that researchers could utilize as a proxy for wealth are arguably restricted to the type of attorney used during a

trial, e.g., public defender or assigned counsel (Kutateladze, Andiloro, Johnson, & Spohn, 2014), and employment status, e.g., whether the defendant is unemployed (Wooldredge, 2010). Although both the type of attorney and employment status could be considered indirect measures of a defendant's socioeconomic status, they do not address the question of whether and to what extent wealth affects sentencing outcomes. In contrast with Western jurisdictions such as the U.S. and Britain, where monetary compensation given to victims is a common part of the sentencing outcome (Ng & He, 2014), countries such as China allow the judge to consider compensation given directly from the defendant to the victim before the completion of the trial process as a discretionary circumstance (Supreme People's Court [SPC], 2014). While the monetary compensation is not necessarily equivalent to the measure of one's wealth, it does offer an additional perspective into a person's socioeconomic status that is different from traditional measures and provides a great opportunity to investigate the effect of wealth on sentencing outcomes.

Although it has been discussed extensively by law and policy makers, with the exception of a few case studies, to the best of our knowledge, the systematic investigation of the effect of monetary compensation on sentencing outcomes is sparse. To fill this gap, the current study aims to explore the effect of monetary compensation provided by defendants on the sentencing outcomes for criminal traffic offenses in China.

The definition of a criminal traffic offense in China is similar to that of vehicular homicide or unintentional vehicular manslaughter in the United States. According to Article 133 of the Chinese Criminal Law, those in violation of traffic or transportation laws and regulations that lead to major accidents involving severe injuries, deaths, or great losses of public and private properties shall be sentenced to not more than three years of fixed-term imprisonment. Aggravating factors such as fleeing the scene ("Hit and Run") would escalate the punishment to three to seven years of fixed-term imprisonment; the penalty increases to not less than seven years if fleeing an accident contributes to casualties.

Per the Chinese Criminal Law, the following three outcomes can all be considered forms of reduced punishment: a downgrade of the category of punishment, a shorter length of sentence, and a

granted probation. Accordingly, we focus on which of the above form(s) of punishment would be affected by monetary compensation, and to what extent. In addition, building on previous studies, we implement a Zero-Truncated Generalized Inflated Poisson model (ZTGIP) to address the unique characteristics of the sentence length distribution, for example, the truncation of zero, and the inflation of certain values (Cai, Xia, & Zhou, 2018).

The rest of this article is organized as follows: We begin by introducing the discretionary circumstances of sentencing in the Chinese judicial system and summarizing previous findings. Next, we present a description of the data and methods used, followed by our results with discussion. We conclude with a summary and suggestions for future studies. Technical details and auxiliary tables are appended in the Appendixes.

2. BACKGROUND

Monetary compensation and sentencing in China

In the Chinese judicial system, monetary compensation refers to the real assets offered by the defendant to the victim before or during the trial process, which is a unique practice compared to that in the U.S. and European countries (Ng & He, 2014). For example, in the U.S. criminal justice system, compensation, especially for traffic offenses, is often paid by insurance companies instead of offenders. Therefore, offenders do not have the obligation to compensate victims. However, due to the absence of a well-developed insurance system in China, the victims usually do not receive a suitable amount of compensation from the insurance companies (Ng & He, 2017). Moreover, it is not uncommon that the offenders of traffic offenses are not covered by any insurance (Ng & He, 2017). Thus, seeking compensation directly from the offenders becomes a practical option for the victims of traffic offenses.

The relationship between the monetary compensation from the offender to the victim and sentencing outcomes has received much attention in Chinese criminal studies focusing on the legitimacy and practical issues of utilizing monetary compensation as a discretionary circumstance in the sentencing process (Bai, 2011; Li, 2015; Liu & Palermo, 2009; Jiang, 2010; Ng & He, 2017; Trevaskes, 2013;

Xiang, 2013). Arguably, the monetary compensation represents an apology from the offender that effectively establishes an agreement between the defendant and victim (Ng & He, 2017; Xiang, 2013). The agreement with noted compensation is usually considered a product of criminal reconciliation, under the paradigm of restorative justice of the harmonious society promoted by political policy (Li, 2015; Ng & He, 2017; Trevaskes, 2013; Xiang, 2013). Recently, a high profile traffic offense case sparked public outcry when the death penalty was suspended after a substantial amount of compensation was paid by the offender, demonstrating that monetary compensation does play a crucial role in obtaining a lenient punishment in the current Chinese judicial system (Miao, 2016; Trevaskes, 2013).

Several judicial interpretations released by the SPC require that the monetary compensation shall be considered a discretionary circumstance. For instance, in Chinese Criminal Law, although the monetary compensation was not officially documented as a discretionary circumstance until the year of 2008, it was interpreted and acknowledged by the court as a mitigating factor that allows for a more lenient punishment. In 2008, the monetary compensation for the damage caused by traffic offenses was officially recognized as a discretionary circumstance in the sentencing guidelines published by the SPC (2008). Furthermore, in the updated version of the interpretation (SPC, 2010), the acts of voluntarily compensating victims, confessing his/her criminal conduct, or showing remorse, are all listed as discretionary circumstances that are associated with a reduced punishment. Thereafter, officials in the judicial system intentionally promote the offering of monetary compensation in criminal cases (Pei, 2014).

Many scholars interpreted the role of monetary compensation from the perspective of restorative justice, which emphasizes “repairing the harm caused or revealed by criminal behavior” (Braithwaite, 1999; Menkel-Meadow, 2007). Prior studies have suggested that the offering of compensation is considered an acknowledgement of guilt and remorse (Rachlinski, Guthrie & Wistrich, 2013), which are generally accepted as mitigating factors in sentencing decisions (Seghetti & Smith, 2007). For example, in light of “healing” victims through reparations, the U.S. federal courts have acknowledged voluntary payment of restitution prior to adjudication of guilt as a symbol of acceptance of responsibility, which is

considered a mitigating factor under § 3E1.1(a) of the Sentencing Guidelines (United States Sentencing Commission, 2016). On the other hand, showing remorse without offering compensation might not be recognized by the court, as it is deemed insincere in some legal systems (Stark & Frenkel, 2013). Offering both compensation and showing remorse are discretionary circumstances acknowledged in the juristic interpretations of the SPC, and offering compensation is not necessarily or officially considered a sign of showing remorse (SPC, 2014).

Although the concept of restorative justice was introduced by scholars in the West, traces of such principles can be found in Confucian thinking, which has a significant impact on the practice of criminal justice in China (Braithwaite, 1999; Johnstone & Van Ness, 2007; Zhe, 2013). For instance, the policy of “balancing leniency and rigidity” (Kuan Yan Xiang Ji), requires judges to balance mercy with severity, but allows for “being lenient when [one] needs to be” during the trial (Zhao, Yuan & Wang, 2013). In addition, the recent revision of the Chinese Criminal Procedure Law has incorporated the system of criminal reconciliation into the official criminal proceedings (Shen, 2016; Xiang, 2013) which allows a judge to close a case with a lenient punishment or an acquittal when the offender and victim make an agreement on the compensational issues (Li, 2015; Pei, 2014).

Unfortunately, studies from the restorative justice perspective rarely investigate the influence of compensation on the sentencing outcomes and the mechanisms behind them (Jiang, 2010; Ng & He, 2017; Trevaskes, 2013; Xiang, 2013). Most of the existing studies on the effects of monetary compensation focus on death penalty cases, for instance, the role of compensation in transforming an immediate death penalty to a suspended one (Lu & Zhang, 2005; Trevaskes, 2013). Although scholars argue that the effect of monetary compensation and the implementation of judicial discretion might be different in less serious or general crimes (Ng & He, 2014), very few studies have examined the effect of compensation on less serious crimes, such as traffic offenses. One exception is Bai’s study (2011), which suggested that there is no relationship between the requested amount of monetary compensation and sentencing outcomes after controlling for potential legal and extra-legal factors in traffic accident cases. However, it is well known that there is a large discrepancy between the requested compensation amount

and what is actually received (Ng & He, 2017), and only the received compensation is acknowledged as a discretionary circumstance in the legal interpretations (SPC, 2014). Thus, the tenuous relationship between the requested amount of compensation and the sentencing outcomes is somehow anticipated.

Three approaches to a lenient punishment

According to the Chinese Criminal Law, there are three major approaches with specific requirements to reduce the level of a punishment: (1) downgrading the category of the punishment; (2) trimming the length of the sentence; and (3) granting a probation.

In the Chinese criminal justice system, there are five categories of principle punishments: public surveillance, detention, fixed-term imprisonment, life imprisonment, and the death penalty (Article 33 of the Chinese Criminal Law). Each of the punishments corresponds to a specific level of severity of the offenses. For example, public surveillance and detention are mostly applied to the less culpable offenders and certain types of crimes with minor damage to both society and the victims. In China, the majority of cases are given fixed-term imprisonment, with terms varying from six months to fifteen years. Life imprisonment and the death penalty are only applied to those who commit extremely serious crimes, such as murder. Because the criteria for assigning specific types of punishment are clearly delineated in the Chinese Criminal Law, judges have little discretion in changing the category of the punishment without statutory circumstances and adequate justification.

Another method used to mitigate the level of a punishment is reducing the sentence length, especially for fixed-term imprisonment. Given the severity of the criminal conduct, a judge may choose a shorter length of imprisonment as a mitigated punishment within the level that is delineated by the law, taking statutory and discretionary circumstances into consideration. For instance, there are three levels of fixed-term imprisonment for criminal traffic offenses in China based on the severity of the crime: six months to three years; three to seven years; and seven to fifteen years (Article 133 of the Chinese Criminal Law). For traffic offenses, the first level is applied to an offender who “violates traffic and transportation laws and regulations, giving rise to major accidents involving severe injuries, deaths, or great losses of public and private properties” (Article 133). If the offender flees from the scene of the

accident, the punishment moves to the next level, three to seven years. If the escape results in the death of victim(s), the third level of punishment shall be applied (Article 133). However, for cases with no aggravating factors such as fleeing the scene, the level of eligible punishment is usually unknown to the public or not listed in the sentencing document. As previously noted, judges are not given *carte blanche* in sentencing and are not afforded the personal freedom to change the punishment to a lower level; they are, however, at liberty to decrease the length of imprisonment within each level after considering statutory and discretionary circumstances.

The last option in offering leniency is to grant probation. Although the probationer is required to follow similar regulations of public surveillance within the probation period (Tursun, 2010), the original sentence will no longer be executed if the probationer does not violate any of the regulations within this period. Hence, probation can be considered one way of downgrading the sentence type from detention or fixed-term imprisonment to public surveillance. In theory, probation is only allowed to be announced to an offender who is sentenced to detention or imprisonment for no more than three years (Article 72 of the Chinese Criminal Law). In practice, probation has been granted to a substantial number of offenders who committed less serious crimes, such as negligent homicide, corruption, and traffic accident offenses (Lu, Li, & Liang, 2017; Zhao, 2017). The actual punishment that an offender who had been granted probation received was much less than that of an offender without probation for the same or even shorter length of imprisonment (Tursun, 2010). Except for serious crimes, the Chinese Criminal Law offers judges greater discretion in applying probation compared with changing the category of the punishment. For instance, for criminal traffic offense cases, if the offenders satisfy the requirements of the second punishment level (three to seven years of imprisonment), it is much more difficult for a judge to sentence a defendant to less than three years imprisonment without probation than it is to give a punishment of three years plus probation, in which the *de facto* punishment is dramatically reduced. Unfortunately, the role that probation plays in reducing punishments has been largely ignored in the literature.

Among the three leniency approaches, shortening the length of term and announcing a probation are the most practical options for reducing punishment. It is necessary to take the joint occurrence of

imprisonment and probation into consideration when exploring the influences of legal or extralegal factors on the sentencing outcomes. The existing literature provides a possible explanation for why monetary compensation might influence sentencing outcomes, e.g., restorative justice; however, the literature also exposes a lack of empirical evidence, as well as poor generalizability of the current findings from death penalty cases. Furthermore, the previous studies fail to explore thoroughly over which one(s) of the three possible approaches to leniency monetary compensation has the most influence. In addition, the picture would be incomplete if one was to examine the effect of monetary compensation on sentencing outcomes while ignoring the role of probation.

To bridge this gap, the current study seeks to understand the role of monetary compensation in the joint occurrence of imprisonment and probation. Theoretically, the chance of probation is independent of the length of imprisonment as long as the length of imprisonment is within the applicable range of probation, i.e., six to thirty-six months. However, in practice, these two decisions are always made interdependently; if a judge plans to announce a probation, then the length of imprisonment has been limited to thirty-six months. Assuming that the length of sentence is truly independent of a probation decision, we would expect no difference in the distribution of the length of sentence for the first level of imprisonment between those who received probation and those who did not. If the decision of probation is related to the length of sentence within thirty-six months, then a squeezed distribution within thirty-six months is expected.

We hypothesize that instead of directly reducing the length of a fixed-term imprisonment, the major role of monetary compensation is to increase the likelihood of being granted probation for a criminal traffic offense. To make the probation possible, the monetary compensation is positively associated with the chance that the length of sentence is within the range of thirty-six months. Since it is not possible to measure the counterfactual outcome of sentencing assuming that monetary compensation is not given, we argue that the effect of monetary compensation on squeezing the sentence length could be partially proxied by its contribution to the heaping of thirty-six months of imprisonment. Specifically, for defendants receiving less than thirty-six months imprisonment, the monetary compensation contributes to

the chance that the length of sentence is exact at the value of thirty-six months, thus leading to the “heaping” or “inflation” phenomenon, while the probation itself might not correlate to a shorter sentence length.

3. DATA AND METHODS

Data

To evaluate the above hypotheses, we analyzed all available sentencing documents for criminal traffic offenses from 2014 to 2016 that were uploaded on the website China Judgments Online (CJO), which is the official platform for archiving judicial documents. In an effort to improve the transparency and efficiency of the judicial system, starting in 2013, the SPC required all levels of the People’s Court to upload their sentencing documents to the CJO, with the exception of those involving state secrets, personal privacy, juveniles, disputes concluded through mediation, or other documents deemed “inappropriate” to publicize (SPC, 2013).

To retrieve all the cases involving traffic accident offenses, we utilized web-scraping techniques that have gained much attention in the past ten years (Glez-Peña, et al., 2014). Retrieving sentencing documents can be accomplished in two steps: First, a list of the sentencing documents filed under criminal traffic offenses needs to be generated; the documents are then individually downloaded via the hyperlinks. After a search request is submitted on the CJO website, (e.g., “any documents under the traffic accident crime”), a list of documents is returned on the search results page, and hyperlinks of the sentencing documents are subtracted from the list. We automated the tedious click-and-download process via Hyper Text Transfer Protocol (HTTP) communications using the GET and POST methods (Fielding et al., 1999). The first HTTP request (GET method) submitted the search query to the server that hosts the CJO search engine, which then parsed and subtracted the URLs from the source code of the search results

page. The second HTTP request (POST method) sent a loop of requests for each of the URLs, then extracted the sentencing documents from the source code on the returned webpage.¹

Due to the large number of search requests submitted each day, the CJO website has been updating its anti-scraping strategies by requesting authorization, adding cross-certification, or requiring a verification code to avoid crashing the server due to request overload. Most of those strategies can be circumvented by analyzing the source code of the CJO webpage and developing the corresponding bypass, such as controlling the number of requests or adding header information for the HTTP request to obtain authorization. However, sometimes the cost of bypassing the anti-scraping measures is too high, e.g., deciphering the verification code. Therefore, collecting data from the CJO website might require highly customized programming skills.

Each sentencing document contains three parts: caption, main body, and conclusion. The caption lists the parties, the court, and the case number. The main body consists of a description of facts: offender information (e.g., last name or alias), offense characteristics (e.g., time and location), and process (e.g., legal representation and appeal). The conclusion includes the dispositional decisions, such as articles cited and sentences. For each of the documents, we extracted and tokenized corpus of the main body using R package *wordseg* (Li, 2013) and *tm* (Feinerer & Hornik, 2017). Next, we coded all the information regarding the legal circumstances of the offense, the monetary compensation, and the sentencing outcomes of the defendant(s) using keyword extraction. To assess the reliability of coding, we randomly selected a sample of 100 sentencing documents that were independently coded by three individual coders. The results are indicative of the variables with the highest degree of coding agreement. For example, all three coders showed over 99% agreement on the 17 variables coded in the study, which was likely due to the high number of dummy variables included. When comparing the coding results between ours and those obtained from the three independent coders, only two variables, “*the number of lightly injured*” and “*driving under influence*,” were reported to have a low percentage of agreement, 90% and 91%,

¹ The python code for HTTP requests is available upon request.

respectively. The detailed comparisons for each of the variables used in the analysis are given in Appendix A.

We limited our analysis to the first trial and fixed-term imprisonment because nearly 97% of the defendants involved in the criminal traffic accident cases were sentenced to a fixed-term imprisonment during our evaluation period of 2014 to 2016. The final dataset has 108,691 observations with 96.14% of them receiving less than a 36-month imprisonment term.

Measurements

The sentence length for traffic accident offenses was coded as the length of imprisonment in months, which varies from 6 to 144 months. *Probation* was measured as a dummy variable, with 1 indicating receiving probation, and 0 otherwise. Similarly, the *compensation* status was coded as 1 if the defendant compensated the victim before the end of the trial process, and 0 if no compensation was offered.

All related legal factors for the traffic accident offenses were considered, such as: *the number of deaths*, *the number of seriously injured*, *the number of lightly injured*, whether the defendant had taken *full responsibility*, whether the defendant *escaped*, and whether the defendant had *insurance* coverage. Additionally, those documented in the judicial interpretation of the SPC (2000), including whether the defendant was driving under the influence of alcohol or drugs (*DUI*), driving without a valid license (*no license*), and whether the vehicle was *overloaded* were also coded. Besides the legal factors, a group of dummy variables measuring regular discretionary circumstances such as *turn-self-in*, obtaining *forgiveness*, *confessed*, showing *remorse*, and having a *lawyer* were also included. Since criminal traffic offenses belong to the non-premeditated category of offenses, defendants with a prior criminal history or those with previous traffic violations are not counted as recidivists, this legal factor was excluded from the current analysis. To address potential regional variations within China, a group of region dummies—*North*, *West*, *Middle* and *East* (National Bureau of Statistics of China, 2011), as well as *Urban* (*Rural* as the reference) were controlled.

Analytic strategy

The main purpose of this study is to investigate how monetary compensation influences the interdependent sentencing outcomes of probation and the length of sentence. We argue that instead of directly reducing the length of a fixed-term imprisonment, the major role of monetary compensation is to increase the likelihood of being granted probation for a criminal traffic offense. To make probation possible, the judge has to shorten the length of a sentence by a substantial margin to thirty-six months, which nullifies the effect of money on the length of a sentence. In other words, for defendants receiving no more than thirty-six months imprisonment, the monetary compensation contributes to the chance that the length of sentence is exact at the value of thirty-six months, while the probation itself might not correlate to a shorter sentence length.

To probe the interdependent outcomes, we employed a joint model framework (Guo and Carlin, 2004), which allows us to estimate the effect of compensation for the two interdependent outcomes simultaneously. Previous studies have applied linear regression, loglinear models, or quantile regression to study the sentence length, with the assumption of normal or restricted normal distributions (Britt, 2009; Grundies & Zhao, 2016; Hauser & Peck, 2017; Hester & Hartman, 2017). However, recent research has highlighted the discrete nature of sentence length (in months), and the need to address non-zero values (Rydberg, Cassidy, & Socia, 2017; Zhang & Li, 2014; Zhe, 2013).

Let dichotomy random variable Z indicate the outcome of probation (1 as probation granted, and 0 otherwise), the probability mass function could be written as,

$$p(Z = z_i) = q_i^{z_i} \times (1 - q_i)^{1-z_i}$$

where $q_i = \frac{1}{1 + \exp(-\mathbf{m}_i \boldsymbol{\beta})}$ is the probability of granting a probation with covariates \mathbf{m}_i , and the corresponding parameter vector $\boldsymbol{\beta}$. Similarly, we define random variable Y as the length of sentence, which follows a Zero-Truncated Poisson (ZTP) distribution with discrete integer outcome k ($k > 0$) because the length of sentence is discrete and contains no zero values. The probability mass function is,

$$p(Y_i = k | \lambda_i) = \frac{\lambda_i^k}{(1 - e^{-\lambda_i}) k!}$$

where $\lambda_i = \exp(\mathbf{x}_i\boldsymbol{\gamma})$ with covariates \mathbf{x}_i , and the corresponding parameter vector $\boldsymbol{\gamma}$. The variable *Probation* serves as the dependent variable in the Logistic part; while it enters to the ZTP part as the independent variable in \mathbf{x}_i . The joint probability for the i th individual for the interdependent outcomes is the product of $p(Z = z_i)$ and $p(Y_i = k|\lambda_i)$.

In addition, one of the distributional characteristics of sentence length is the heaping on certain values, for example, twelve and twenty-four months (Abrams, 2010; Rydberg, Cassidy, & Socia, 2017). Similar to procedures in other countries, inflations on the sentence length have been reported in various types of offenses in China (Cai, 2015; Wang, 2016). As shown in Figure 1, for both of the compensated and non-compensated cases, there is an unusually high percentage of sentence lengths concentrated on the values 12 (28.99% vs. 26.55%), 24 (5.19% vs. 5.49%), and 36 (14.97% vs. 9.53%), which exceeds the predicted probabilities from regularly assumed distributions such as Normal and Poisson (Poston & McKibben, 2003). Without appropriate measures to handle data inflations, standard models for discrete values such as Poisson and Negative Binomial lead to biased estimates and incorrect inferences (Lambert, 1992).

[Figure 1 is about here.]

In this study, we utilized a Zero- Truncated Generalized Inflated Poisson (ZTGIP) model to address the distributional characteristics of sentence length, such as non-zero values, discrete integers, and inflations at certain points (Cai et al., 2018). Developed from the generalized inflated Poisson model (Begum, Mallick, & Pa, 2014), the ZTGIP model is a mixture of two distributions: the logistic/probit part for probability of inflation, and the zero-truncated-count part for the non-zero discrete counts. To simplify our notation, we dropped the subscript for individuals and used the subscript to differentiate the inflated values. For example, suppose a discrete random variable Y has inflated probabilities at values $k_1, \dots, k_m \in \{0,1,2,\dots\}$, the probability mass function can be written as:

$$p(Y = k|\lambda, \pi_i, 1 \leq i \leq m) = \begin{cases} \pi_i + (1 - \sum_{i=1}^m \pi_i) \times p(k|\lambda), & \text{if } k = k_1, \dots, k_m \\ (1 - \sum_{i=1}^m \pi_i) \times p(k|\lambda), & \text{if } k \neq k_i, 1 \leq i \leq m \end{cases}$$

where π_i is the probability of inflation at the value k_i with $1 \leq i \leq m$, and $\sum_{i=1}^m \pi_i \in (0,1)$; $p(Y = k|\lambda)$ is a ZTP distribution with the parameter λ for $k = 1, 2, \dots$ defined as

$$p(Y = k|\lambda) = \frac{\lambda^k}{(1-e^{-\lambda})k!}.$$

Compared to the joint model, the ZTGIP model implements additional logistic components to account for inflations. It also allows predictors to be included in both the length of sentence (modeling λ in the ZTP part) and the probabilities of inflations (modeling each π_i with a logit or probit link function).

Although a large sample size is always desirable because it reduces the type II error, it also amplifies the detection of trivial differences that are not substantially significant. Since the overall sample contained approximately the entire population (literally all of the cases filed under traffic accident offenses) for the years 2014-2016, the exploratory analysis showed that almost all variables included in the study were highly significant with a p-value of less than .001. With the exception of the descriptive statistics, to avoid such problems, we reported the coefficients estimated from the whole sample but with 95% of Bootstrapping Confidence Intervals (BCIs) from 1,000 Bootstrapping replicates with a size of 3,000 each along with the original model-based p-values. Similar to a simulation, the bootstrapping procedure drew a sample of 3,000 with replacement out of the original sample, and then the models were estimated. The procedure was repeated over 1,000 times. For each of the parameters, all the estimates were then grouped to calculate the BCIs. In general, BCIs are asymptotically more accurate than the standard intervals obtained using sample variance and assumptions of normality (Davison & Hinkley, 1997; Efron & Tibshirani, 1994).

In addition, the BCIs are much more appropriate than the standard confidence intervals to validate the model specification and evaluate the uncertainties of estimated parameters (Davison and Hinkley, 1997; Harrell, 2015). Establishing a causal relationship by non-experimental data is challenging (Rosenbaum, 1999). Even with experimental design, omitted variables or unobserved heterogeneity can

always create a bias on the estimated effects and pose a threat to the validity of casual inference (Gormley & Matsa, 2014). Using a collection of sentencing documents to posit the causal relationship between monetary compensation and sentencing outcomes and rule out alternative explanations would be extremely difficult, if not entirely impossible. Although it is hard to know the true confidence intervals for our key variable *compensation*, the empirical BCIs obtained from the randomized resampling procedure provide a more robust statistical inference than regular model-based confidence intervals (Fox, 2002).

4. RESULTS

Descriptive analyses

Table 1 provides descriptive statistics for the variables included in the study. In the full data, the length of fixed-term imprisonment for criminal traffic offenses ranges from 6 months to 144 months (12 years), with a mean of 18 months. As high as 81% of defendants received probation, which is consistent with findings reported in other studies, e.g., 91.7% among 139 cases (Cai, 2015), 83% in aggregated national data from 2014 to 2015 (Bai, 2016), and 78% on average for certain offenses (Zhao, 2017). In most of the cases (85%), the defendants compensated the victims, even those who were not eligible for probation (64%). Compared to the defendants who were not eligible for probation (i.e., those with a sentence length greater than 36 months), the consequences of the crimes conducted by those receiving less than 36 months imprisonment were less serious, for example, they had a lower average number of deaths (.794 vs. 1.075), seriously injured (.050 vs. .064), and lightly injured (.351 vs. .372). Similar patterns can be found in other related traffic accident legal factors: lower rate of escaped (.158 vs. .652), DUI (.051 vs. .116), driving without a valid license (.103 vs. .217) and taking full responsibility (.594 vs. .751). While for the measures of regular discretionary circumstances, the defendants who were eligible for probation reported a higher rate of turn-self-in (.449 vs. .440), obtaining forgiveness (.781 vs. .121), and showing remorse (.173 vs. .084), but lower rates of insured (.279 vs. .365), and having a lawyer (.277 vs. .510).

[Table 1 is inserted about here]

Effect of monetary compensation on sentencing outcomes

To investigate the effect of compensation on the sentencing outcomes, we followed a joint model approach with both the length of sentence and probation as outcomes (Guo & Carlin, 2004; Cai et al., 2018). Reported in Table 2, the coefficients were estimated from the whole sample, whereas the confidence intervals were obtained from the empirical distribution of Bootstrapping replicates. For all defendants, the monetary compensation was slightly negatively associated with the sentence length, but not by a significant amount if evaluated by BCIs. For example, the logs of the expected month of sentence was anticipated to be -0.025 units lower for those who compensated victims compared to those who did not while holding the other variables constant in the model. In other words, the ratio of the expected months of sentence for defendants who compensated victims versus those who did not was .98 ($\exp(-.025)$) adjusted for other covariates in the model. The *numbers of deaths* and *lightly injured, escaped, DUI, no license*, and taking *full responsibility* were associated with a longer length of sentence; while *turn-self-in* and obtaining *forgiveness* were negatively correlated to the length of sentence. Having a *lawyer* was also positively correlated to the length of sentence, probably due to the fact that defendants involved in severe cases are more likely to hire a lawyer. Likewise, *compensation, remorse* and *forgiveness* strongly increased the chances of receiving a probation. For instance, providing compensation increased the odds of being granted probation by 45% ($\exp(.369)-1$) holding other covariates in the model as constant. All other legal factors, such as the *number of deaths, seriously or lightly injured, DUI or no license*, and having a *lawyer* were negatively associated with the chance of probation.

To further elaborate the mechanism of compensation, we broke down the whole sample by the eligibility of probation. For those receiving no more than 36 months imprisonment, consistent with the previous findings and the regulations outlined in the judicial interpretations, the effects of *numbers of deaths* and *lightly injured, escaped, DUI or no license*, and taking *full responsibility* were positive in

predicting the length of a sentence. At the same time, *turn-self-in*, and obtaining *forgiveness* were negatively correlated to the sentence length. Similarly, the *number of seriously injured*, *DUI* or *no license* reduced the likelihood of receiving a probation, while obtaining *forgiveness*, and showing *remorse* increased the likelihood.

As we expected, the chance of probation increased when monetary compensation was provided; the direct effect of monetary compensation on the sentence length was not significant if evaluated by BCIs. Interestingly, probation was associated with a longer length of imprisonment. One possible reason is that since the actual imprisonment is not executed if a probated defendant does not violate any of the regulations during the probation period, the sentence length only has symbolic meaning for both the defendant and the judge, and it simply must be within 36 months. Another interpretation could be that for the judges who want to grant a probation, the length must be squeezed into the eligible range, which results in a disproportionately large number of cases being given a 36-month sentence. In other words, the judge has to cut a sentence to 36 months in order to offer a probation. Therefore, the length of sentence for those cases that would have received more than 36 months if probation was not offered, are now clustered at exactly 36-months, which causes the “heaping” or “inflation” phenomenon.

For those receiving more than 36 months imprisonment, legal factors such as the *number of deaths*, *DUI*, taking *full responsibility*, and obtaining *forgiveness* were associated with the sentence length in the expected ways; however, none of these were robust when evaluated by BCIs.

[Table 2 is inserted about here]

Effect of monetary compensation on inflations

To further evaluate the effect of monetary compensation on squeezing the sentence length, we employed the ZTGIP model to examine the heaping at points 12, 24, and 36 months. Shown in Table 3, the first model included a logistic component for whether the sentence length inflated at 12 months besides the ZIP part for the sentence length and the logistic part for probation. The significant intercept

indicated a possible inflation on the value of 12 months, however, the effect of monetary compensation was not significant, and the probation was still positively associated with the sentence length (e.g., .113 in log scale). The second model with the inflation part for 24 months yielded similar results. When the inflation part on the value of 36 months was included, the monetary compensation positively contributed to the chance of inflation (e.g., the odds of inflation increased 55%). Meanwhile, the effect of probation lost its significance on the sentence length. The final model added all three inflations, and the effect of monetary compensation was only significant for the inflation of 36 months. Results from the four models all suggested that monetary compensation only contributes to the inflation at 36 months, and that the heaping at the value of 36 months is a possible reason why the probated defendant receives a longer sentence, even when controlling for other relevant legal factors. Comparing fit indices across the four models, the models with the inflation at 36 months also were superior to the others with better fitting.

Built on the results from Table 3, we argue that the effect of compensation is two-fold: compensation does not only make a probation-eligible case more likely to be granted probation (e.g., 0.344 in logit scale reported in Model 4) with little influence on the length of sentence (e.g., -.034 in log scale reported in Model 4), but more importantly, compensation makes a potentially ineligible case that would have resulted in more than 36 months of imprisonment eligible for probation by limiting the length to exactly 36 months (e.g., 0.443 in logit scale reported in Model 4).

[Table 3 is inserted about here]

5. DISCUSSION AND CONCLUSION

The main purpose of this study was to investigate the effect of monetary compensation on sentencing outcomes, including the probation and the sentence length for fixed-term imprisonment. Built on the restorative justice perspective, the previous literature suggested that monetary compensation paid by the defendants would reduce the sentence length (Liebman, 2014); however, the effect of monetary compensation on probation was largely ignored. Drawing from the three approaches to being granted a

more lenient punishment in the Chinese judicial system, we argued that the major role monetary compensation played in the process towards securing a lenient punishment was through probation. Specifically, we posited that it would directly boost the chance of being granted a probation, while the effect on the sentence length might not be perceptible. Furthermore, due to little discretion on the part of an individual judge and strict criteria for applicable punishment, to mitigate a punishment by granting a probation, the judge must limit the length of a sentence to a maximum of 36 months, which is the upper-bound of the eligible range. Therefore, the indirect outcome of monetary compensation is the heaping of value at 36 months. Our results showed that the likelihood of probation increases when monetary compensation is provided, and that monetary compensation does not make a significant difference in the length of sentence for those defendants receiving less than 36 months imprisonment. When the heaping is taken into consideration, the monetary compensation is only positively associated with the chance of inflation at the value of 36 months, and the probation itself ceases to be significant in predicting sentence length.

Our study contributes to the current literature in several ways. First, based on prior studies, we postulated how monetary compensation influences the interdependent sentencing outcomes, and provided empirical evidence to support it. To the best of our knowledge, this is the first study that scrutinizes the effect of monetary compensation on the joint outcomes of sentencing. Judging by the results obtained from simple models alone in Table 2, monetary compensation contributed little to the length of the sentence, and probation was slightly negatively correlated to the length of the sentence. However, what is not shown is that some of these cases would not have been included in the “36 months or less” category if monetary compensation were absent. This possible underlying cross-category movement constitutes the “heaping” or “inflation” phenomenon. Although it is not possible to observe the counterfactual sentencing outcomes in the absence of monetary compensation, by investigating the heaping points of sentence length, we demonstrated that as a piece of indirect evidence, the presence of monetary compensation serves as an important influential factor for the irregular distribution of sentence length at 36 months, which happens to be the upper-bound of eligible length for probation.

Secondly, one of the difficulties of studying legal processes in China is the lack of data. As a step in improving judicial transparency, more than 39 million sentencing documents are available on the CJO website. Using web crawling techniques, we showed that those publicly accessible documents could be new sources of data. As a general methodology, our study could be beneficial not only for researchers who are interested in studying legal processes in China, but for a broader scientific community in response to the “crisis of reproducibility” (Maniadis & Tufano, 2017), because data retrieved from publicly accessible documents are traceable, verifiable, and reproducible.

In addition, to avoid the problem of detecting the effect of little scientific importance due to a large sample size and reduce biases due to unobserved heterogeneities and the inevitable spuriousness resulting from using non-experimental data, we were extra-careful to evaluate our results using randomized Bootstrapping techniques, which provide asymptotically more accurate and robust results than the standard model-based inference using sample variance and assumptions of normality. We found that the effects of monetary compensation on the joint outcomes are robust, even for a relatively small-to-moderate dataset size such as our 3,000 observations.

Nevertheless, the current study has several limitations: First, the sample in the current study does not cover all criminal traffic offense cases, as only cases with the first trial were included. More importantly, selective uploading or purposeful deleting of cases on the CJO can also challenge our findings. Although the SPC of China required all levels of courts to upload sentence documents starting on January 1, 2014, several types of cases were exempted from the uploading request, such as cases involving state secrets, personal privacy, juveniles, disputes concluded through mediation, or other documents deemed “inappropriate” to publicize. Yet, the Supreme Court did not require enforcement decisions or official notification of withdrawals to be posted online. We have searched all available sources including official gazettes, news reports, and research articles, but failed to find any information on the pattern of uploading or deleting cases on the CJO. In 2016, the SPC issued a judicial interpretation to further regulate what courts should post. According to the interpretation, enforcement decisions and withdrawals are required to be uploaded (SPC, 2016). However, a rough indicator of the percent of

documents placed online is still not available for evaluating the issue of selective uploading or purposeful deleting.

Secondly, information on legal and extra-legal factors are limited by the content of judicial documents. We were not able to explore or control some common extra-legal factors such as gender, age, and social economic status, as well as the possible selection processes that might be involved, such as selection into crime, selection into court. The sentencing documents also did not include any information about which level of punishment was eligible for cases with certain legal factors except those with aggravating factors. For example, if a defendant fled from the scene, consequently resulting in a victim's death, one could postulate that the minimum length of imprisonment would be seven years without any mitigating factors. Other than in those situations, if other legal circumstances existed in a case, such as the number of deaths or injured, the available documents did not give any clues about the "initial charge" or which level of punishment was eligible. Regardless, we still implemented two strategies to reduce the inevitable spuriousness: for the observable selection processes, we controlled for as many legal factors as possible; for non-observable characteristics or heterogeneities, we conducted randomized resampling (bootstrapping) experiments with a relatively small-to-moderate dataset size (3,000 observations) and used empirical bootstrapping percentiles to evaluate the estimated effects.

In addition, we acknowledge that when using secondary data, such as sentencing documents, it is not possible to access the actual process of negotiation among the defendant, victim, and judge regarding what the sentence length would be with and without monetary compensation. Moreover, heaping of 36 months might constitute judges giving the maximum possible sentence length, or a mixture of squeezed and extended (e.g., to punish odious offenses) penalties. However, empirically separating those two is not feasible using limited information from sentencing documents. More experimental studies are required to further explore the role of monetary compensation in the decision-making process. Therefore, our conclusions are built on incomplete information and might not be generalizable to a broader population.

Albeit the limitations, we hope this study will not only help researchers to better understand the legal process in China, but that it will also benefit the larger community as an example of utilizing new sources of data.

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Table 1. Descriptive statistics for the variables included in the study

Variable	All	Sentence length ≤36m	Sentence length >36m
	Mean(s.d.)	Mean(s.d.)	Mean(s.d.)
Sentence length	17.950(11.557)	16.625(9.429)	50.924(10.687)
Probation	0.806(0.395)	0.839(0.368)	
Compensation	0.849(0.358)	0.858(0.349)	0.641(0.480)
# of deaths	0.805(0.499)	0.794(0.471)	1.075(0.923)
# of seriously injured	0.051(0.227)	0.050(0.224)	0.064(0.301)
# of lightly injured	0.352(0.647)	0.351(0.637)	0.372(0.872)
Escaped	0.177(0.382)	0.158(0.365)	0.652(0.476)
DUI	0.054(0.225)	0.051(0.220)	0.116(0.320)
Overloaded	0.030(0.172)	0.030(0.170)	0.044(0.205)
No license	0.107(0.310)	0.103(0.304)	0.217(0.412)
Full responsibility	0.600(0.490)	0.594(0.491)	0.751(0.433)
Turn-self-in	0.449(0.497)	0.449(0.497)	0.440(0.496)
Forgiveness	0.755(0.430)	0.781(0.414)	0.121(0.326)
Confessed	0.217(0.412)	0.215(0.411)	0.258(0.437)
Insurance	0.283(0.450)	0.279(0.449)	0.365(0.481)
Remorse	0.169(0.375)	0.173(0.378)	0.084(0.278)
Lawyer	0.286(0.452)	0.277(0.447)	0.510(0.500)
Year 2014	0.327(0.469)	0.328(0.469)	0.311(0.463)
2015	0.316(0.465)	0.317(0.465)	0.311(0.463)
2016	0.356(0.479)	0.355(0.479)	0.378(0.485)
N	109025	104814	4211

Table 2. Results of the joint model for the sentencing outcomes by eligibility of probation

Parameter	All		Sentence length ≤36m		Sentence length >36m
	Sentence length	Probation	Sentence length	Probation	Sentence length
	Beta[2.5 th BCI, 97.5 th BCI]	Beta[2.5 th BCI, 97.5 th BCI]	Beta[2.5 th BCI, 97.5 th BCI]	Beta[2.5 th BCI, 97.5 th BCI]	Beta[2.5 th BCI, 97.5 th BCI]
Intercept	2.627[2.509,2.718]***#	0.491[-0.005,0.974]***	2.424[2.316,2.509]***#	0.470[-0.068,1.005]***	3.810[3.619,3.975]***#
Probation	-0.114[-0.169,-0.061]***#		0.072[0.021,0.129]***#		
Compensation	-0.025[-0.076,0.027]***	0.369[0.088,0.640]***#	-0.017[-0.064,0.029]***	0.347[0.051,0.639]***#	0.002[-0.087,0.091]
# of deaths	0.183[0.136,0.261]***#	-0.235[-0.474,-0.025]***#	0.156[0.112,0.228]***#	-0.052[-0.288,0.213]*	0.042[-0.013,0.105]***
# of seriously injured	-0.059[-0.157,0.064]***	-0.527[-1.049,-0.081]***#	-0.064[-0.152,0.038]***	-0.534[-1.065,-0.071]***#	0.012[-0.188,0.210]+
# of lightly injured	0.034[0.002,0.077]***#	-0.225[-0.427,-0.032]***#	0.032[0.004,0.069]***#	-0.186[-0.401,0.018]***	0.009[-0.062,0.080]***
Escaped	0.759[0.723,0.798]***#	-0.580[-0.854,-0.266]***#	0.737[0.704,0.772]***#	-0.132[-0.456,0.256]***	0.012[-0.073,0.109]*
DUI	0.090[0.006,0.160]***#	-1.037[-1.490,-0.635]***#	0.085[0.010,0.151]***#	-1.016[-1.486,-0.591]***#	0.058[-0.085,0.210]***
Overloaded	0.059[-0.070,0.186]***	-0.593[-1.188,0.126]***	0.023[-0.082,0.134]***	-0.503[-1.077,0.256]***	0.038[-0.185,0.243]***
No license	0.072[0.014,0.130]***#	-0.657[-0.963,-0.294]***#	0.069[0.015,0.116]***#	-0.600[-0.907,-0.217]***#	0.001[-0.093,0.095]
Full responsibility	0.166[0.130,0.203]***#	-0.207[-0.463,0.029]***	0.161[0.131,0.196]***#	-0.161[-0.418,0.083]***	0.053[-0.044,0.145]***
Turn-self-in	-0.079[-0.118,-0.041]***#	-0.127[-0.386,0.129]***	-0.072[-0.107,-0.037]***#	-0.197[-0.473,0.099]***	-0.024[-0.109,0.061]***
Forgiveness	-0.155[-0.204,-0.110]***#	2.714[2.507,3.011]***#	-0.092[-0.139,-0.049]***#	2.510[2.302,2.812]***#	-0.095[-0.221,0.057]***
Confessed	0.032[-0.013,0.073]***	-0.121[-0.402,0.151]***	0.028[-0.012,0.066]***	-0.100[-0.398,0.188]***	0.020[-0.081,0.127]***
Insurance	-0.009[-0.045,0.032]***	-0.235[-0.508,0.023]***	-0.014[-0.051,0.021]***	-0.219[-0.498,0.053]***	0.007[-0.078,0.105]
Remorse	-0.012[-0.058,0.035]***	1.155[0.812,1.604]***#	-0.013[-0.057,0.032]***	1.162[0.794,1.648]***#	-0.020[-0.173,0.165]*
Lawyer	0.081[0.040,0.122]***#	-0.973[-1.242,-0.748]***#	0.080[0.043,0.118]***#	-0.942[-1.220,-0.716]***#	-0.002[-0.087,0.078]
Year 2014	0.052[0.002,0.102]***#	0.379[0.068,0.711]***#	0.042[-0.002,0.088]***	0.403[0.074,0.771]***#	0.028[-0.079,0.151]***
2015	0.040[-0.009,0.091]***	0.287[-0.019,0.613]***	0.027[-0.019,0.074]***	0.324[0.001,0.685]***#	0.027[-0.076,0.139]***
2016	--	--	--		--
Urban	-0.016[-0.053,0.018]***	-0.372[-0.622,-0.157]***#	-0.015[-0.049,0.014]***	-0.376[-0.632,-0.142]***#	-0.004[-0.085,0.084]
Region North	0.032[-0.039,0.095]***	0.687[0.236,1.260]***#	0.018[-0.049,0.080]***	0.737[0.256,1.348]***#	0.064[-0.105,0.235]***
West	0.018[-0.030,0.065]***	0.271[-0.016,0.593]***	0.018[-0.027,0.060]***	0.286[-0.005,0.623]***	-0.005[-0.110,0.107]
Middle	-0.014[-0.055,0.029]***	-0.136[-0.422,0.157]***	-0.022[-0.062,0.019]***	-0.146[-0.459,0.133]***	0.037[-0.060,0.141]***

East	--	--	--	--	--
-2LL		935449		829093	32006
AIC		935539		829183	32050
BIC		935970		829613	32189
N		108691		104499	4192

Note: Coefficients were estimated from the whole sample, while BCIs were obtained from 1,000 Bootstrapping replicates with size of 3,000; # indicates the 95% BCIs do not include zero; and Model-based p values were indicated by : + p<.1, * p<.05, ** p<.01, *** p<.001.

Table 3. Results of the ZTGIP model for defendants receiving less than 36 months imprisonment

Parameter	Model 1: Inflation at 12m	Model 2: Inflation at 24m	Model 3: Inflation at 36m	Model 4: All Inflations
	Beta[2.5th BCI, 97.5th BCI]	Beta[2.5th BCI, 97.5th BCI]	Beta[2.5th BCI, 97.5th BCI]	Beta[2.5th BCI, 97.5th BCI]
Probation				
Intercept	0.470[-0.065,1.004]***	0.468[-0.064,1.061]***	0.470[-0.070,1.004]***	0.477[-0.058,1.023]***
Compensation	0.347[0.048,0.640]***#	0.346[0.044,0.643]***#	0.347[0.048,0.643]***#	0.344[0.045,0.642]***#
Inflation				
Intercept	-1.103[-1.429,-0.825]***#			-1.114[-1.436,-0.836]***#
Compensation	0.002[-0.286,0.312]			0.037[-0.243,0.353]
Intercept		-3.127[-3.849,-2.503]***#		-3.069[-3.740,-2.537]***#
Compensation		-0.217[-0.702,0.415]***		-0.147[-0.620,0.431]***
Intercept			-2.027[-2.445,-1.708]***#	-2.034[-2.472,-1.721]***#
Compensation			0.436[0.133,0.838]***#	0.443[0.137,0.846]***#
Sentence length				
Intercept	2.429[2.306,2.521]***#	2.385[2.268,2.479]***#	2.505[2.418,2.582]***#	2.466[2.351,2.567]***#
Probation	0.113[0.052,0.177]***#	0.085[0.029,0.146]***#	-0.014[-0.063,0.038]***	0.021[-0.042,0.088]***
Compensation	-0.024[-0.080,0.036]***	-0.015[-0.066,0.033]***	-0.025[-0.069,0.017]***	-0.034[-0.092,0.020]***
-2LL	776721	817363	681787	616952
AIC	776825	817467	681891	617084
BIC	777322	817964	682388	617715
N	104499	104499	104499	104499

Note:

1. The model parts—probation (logistic), and sentence length (ZIP) controlled intercept, # of deaths, # of heavily injured, # of light injured, Escaped, DUI, Overloaded, No license, Full responsibility, Turn-self-in, Forgiveness, Confessed, Insurance, Remorse, Lawyer, Year 2014, & 2015, Urban, and Region.
2. The inflation parts also controlled Remorse, Urban and Region.
3. Coefficients were estimated from the whole sample, while BCIs were obtained from 1,000 Bootstrapping replicates with size of 3,000; # indicates the 95% BCIs do not include zero; and Model-based p values were indicated by : + p<.1, * p<.05, ** p<.01, *** p<.001.

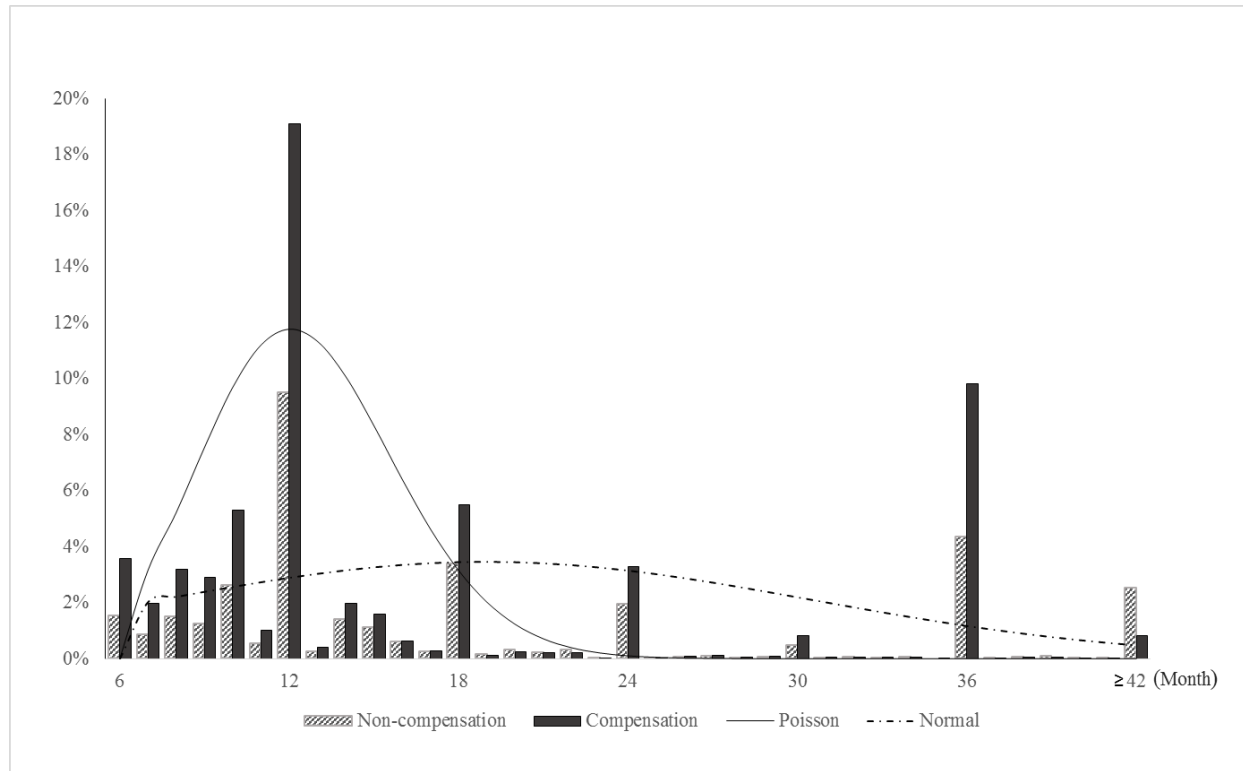


Figure 1. Percentage distribution of sentence length by compensation status with Normal and Poisson curves