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Research Paper

Smuggling of drugs by body packing: Evidence from Chinese sentencing documents

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ABSTRACT

Background: In China, body packing as a means of transporting drugs was firstly found in Yunnan province in an area that shares a border with the Golden Triangle in late 1970s. Since then, drug trafficking cases that utilize body packing as the primary mode of transportation have increased substantially. Due to a scarcity of data, however, the scope and nature of such criminal activity is not thoroughly understood. This study provides a new approach to the analysis of body packing by digitizing and analyzing court sentencing documents in China from 2006–2016.

Methodology: This study implements network analysis and descriptive statistics to identify the structures of drug trafficking routes involving body packing in China and aims to provide a comprehensive examination of body packing activity, including the pattern of geographic routes and the characteristics of captured body packers. A generalized inflated negative binomial model is also used to investigate the effects of legal and extra-legal factors on the length of sentence for captured body packers.

Results: We identified three types of trafficking routes involving body packing: intra-provincial, inter-provincial, and international. Our results showed that heroin and methamphetamine are the two primary drugs trafficked by captured body packers. Network analysis revealed that among body packing routes, there are three major hubs that serve as the primary origin for the trafficking —Yunnan, Sichuan, and Myanmar— and three potential authorities— Guangdong, Xinjiang, and Sichuan—which serve as the common destinations of the drug routes. Consistent with previous studies, our research also demonstrated that heavier punishments are given in cases that involve a larger quantity of drugs and repeat offenders. Offenders who fall into special groups, such as pregnant/lactating women, the disabled, or minors, receive more lenient sentences. In addition, our analysis further revealed that the logic behind longer sentences for those offenders who confessed as opposed to those who did not, is possibly due to the concentration of imprisonment values at fifteen years, as many of the confessed body packers are sentenced to the maximum fixed term of imprisonment.

Conclusion: By narrowing the gap in knowledge on the topic of body packing, our analysis provides evidence-based strategies for fighting against body packing, specifically by identifying geographical patterns and the profiles of captured body packers.

Introduction

Aided by globalization, international drug trafficking has experienced explosive growth in the last twenty years (United Nations Office on Drugs and Crime [UNODC], 2018). Trafficking usually involves traveling over a long distance, and trafficking groups take every opportunity to transport drugs for profit (Bulstrode, Banks & Shrotria, 2002; Lee *et al.*, 2012). First reported in Toronto in 1973 (Deitel & Syed, 1973), body packing has attracted increasing attention from practitioners and researchers due to its popularity among traffickers (Berger *et al.*, 2015). Authorities reported that nearly 80% of captured drug traffickers in Western Europe concealed drugs inside of their body as opposed to on their body or in luggage (Hergan, Kofler & Oser, 2004; Lutz & Reuhl, 1992).

Being included as part of both the Golden Triangle (tripoint border area of Thailand, Laos, and Myanmar) and the Golden Crescent (a mountainous area that cuts across Afghanistan, Iran, and Pakistan) trafficking networks, China has witnessed a surge of drug trafficking and use (Office of China National Narcotics Control Commission [NNCC], 2017; Sun, Liu & Li, 2003) when it re-emerged as a country that embraced structural reforms and open door policies to promote economic growth (Lu, Fang & Wang, 2008; Zhao, Liu & Zhao, 2004).

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Meanwhile, China has become an exporter of domestically produced drugs, not only playing a vital role in the domestic drug market, but also as a supplier to adjacent countries such as the Philippines, South Korea, and Japan (Hao & Chen, 2013; NNCC, 2004). Body packing as a means of drug transportation was initially introduced to China from the Golden Triangle in the late 1970s (Guan & Zhang, 2001), and spotted in Yunnan province in an area that shares a border with the Golden Triangle (Wang, 2011). However, few studies have investigated this issue, as such, there is a lack of understanding regarding the patterns of body packing and the primary geographic distributions. One of the obstacles hindering progress in this area is the lack of accessible and reliable data. Most of the previous studies have been built on non-systematic evidence, for example, sporadic intercepted cases (Cappelletti, Iaria & Lombardo, 2018), unauthorised police records (Xu & Qiu, 2015), or secondary administrative or news reports (Zhao & Zheng, 2016). Systematic investigations of drug packing are still sparse, especially in China.

To fill this gap, this study aims to provide a comprehensive examination of body packing activity of drugs in China, including the geographic routes and the characteristics of captured body packers. Taking advantage of newly released sentence documents, the current study utilized content analysis techniques to examine all drug trafficking cases involving body packing and geographically visualize the body packing networks. The results of this study may serve as evidence to evaluate the efficiency of current anti-drug policies, and provide some insight for developing and implementing new anti-drug measures in the future.

The rest of this paper is organized as follows: First, we provide a general background and a brief overview of previous studies on drug trafficking and body packing in China. Then, a description of data and our method is presented, followed by the results and discussion. We conclude with a summary of our findings and suggestions for future studies.

Background

Drug trafficking flows into China

Previous studies have identified three major origins of imported drugs in China (NNCC, 2017). The first major importer is the Golden Triangle, which provides most of the heroin and methamphetamine tablets seized in China (Yu, 2017). Those drugs are transported into China through Yunnan and Guangxi provinces (Sun *et al.*, 2003). Specifically, the border areas in Yunnan province are the first stop before the drugs are smuggled into the big cities and further distributed to other areas in China (NNCC, 2005). The second major drug importer is the Golden Crescent, which is the largest hub of heroin and opium manufacturing in the world (Li & Zhang, 2009; NNCC, 2017). Due to its geographic proximity, Xinjiang province usually serves as the gateway for drugs that are produced in the Golden Crescent and smuggled into China (Liang, 2014; Zhao & Zheng, 2016). Drug traffickers also smuggle cocaine into China from South America (Sun *et al.*, 2003; Yu, 2017), landing in Guangdong province or in Hong Kong, the drugs are then redistributed to local markets in Guangdong province, such as Guangzhou and Shenzhen, as well as other big cities (NNCC, 2017).

Besides the imported drugs, domestically produced drugs—mainly methamphetamine and ketamine—also play a vital role in the drug market (Xu & Qiu, 2015). Drug manufactures initially appeared in the early 1990s in Guangdong and Fujian provinces (Qin, 2011), and quickly expanded to other areas, such as Shandong and Liaoning provinces (Hao & Chen, 2013). So far, twenty-six out of thirty-three provinces in China have reported drug manufacturing cases (Xu & Qiu, 2015); according to a recent police report, there were 438 drug labs destroyed and 583 drug manufacturing cases uncovered in 2016 (NNCC, 2017). In fact, the domestically produced methamphetamine and ketamine do not only hold dominant positions in the drug market in China, but are also supplied to adjacent countries such as the Philippines, South Korea, and Japan (Hao & Chen, 2013; NNCC, 2004).

Characteristics of body packing

Specifically, body packing refers to a method of intracorporeal drug transportation where the packed drugs are swallowed or inserted rectally or vaginally by body packers (Lee *et al.*, 2012), also known as "swallowers," "internal carriers," or "(drug) mules" (Stewart, Heaton & Hogbin, 1990; Traub, Hoffman & Nelson, 2003). In some contexts, the terminology is limited to the concealment of drugs by swallowing; inserting drugs into the rectum or vagina is described as "body pushing," and an individual who employs that particular method is referred to as a "body pusher" (June, Aks, Keys & Wahl, 2000). Another term, "body stuffing," is most often used to describe situations when an individual swallows a small amount of loosely wrapped drugs to avoid being caught by authorities (June *et al.*, 2000; Traub *et al.*, 2003).

The existing literature has explored two issues associated with body packing: the types of drugs involved, and body packers' demographic and behavioral characteristics. Driven by profit, as long as a drug can be packed in the form of a powder or a dissolved liquid, then it can be carried by body packers. For example, various types of drugs were found being transported in body packers, including: cannabis, cocaine, heroin, synthetic drugs (Hergan *et al.*, 2004), amphetamine (Watson, Thomson & Johnston, 1991), ecstasy (Krishnan & Brown, 1999), and even mescaline, which is an hallucinogen produced from a cactus that is hard to find outside of Mexico (Hergan *et al.*, 2004).

A typical packet used for body packing is made with several layers of different materials. From the inner layer of the packet to outermost, the densely packed drug is first wrapped with a latex sheath, such as a condom or balloon, and then covered with additional layers of latex, and finally coated with hard wax (Traub *et al.*, 2003). Other materials, such as carbon paper and aluminum foil, which may change the radiodensity and in turn affect detection, are also frequently used (Aldrighetti, Paganelli & Giacomelli, 1996; Bakker, Nanayakkara & Geeraedts, 2012; Pidoto *et al.*, 2002; Pinto, Reginelli & Pinto, 2014).

Sizes and shapes of packets differ by ways of concealment. For example, packets for swallowing are usually shaped into about 2 cm spheroidal objects; while those meant for vaginal or rectal insertion are relatively larger and oval shaped, measuring 4–6 cm long and 2–3 cm wide (Hergan *et al.*, 2004). Depending on the size, each packet contains 3–12 gs of drugs with diverse purity (Traub *et al.*, 2003). The mechanically produced drug packets have a uniform size and weight, while the handmade packets vary (Bakker *et al.*, 2012).

Social, economic, and behavioral factors such as unemployment and substance use, as well as community-level poverty have all been linked to the odds of one becoming a body packer (Heerden & Minnaar, 2016). Regarding body packers' demographic characteristics, previous studies reported that young men used to be the dominate group of body packers (Flach, Ross & Thali,); however, an emerging trend is that more children (Traub *et al.*, 2003) and pregnant women (Greenberg & Shrethra, 2000) have been recruited as body packers.

Typically, the new recruits are trained to swallow a large quantity of objects, such as grapes, plums, and condoms filled with powders (Flach *et al.*,) before they begin smuggling missions. A body packer may conceal packets of more than one type of drug or the same drug in multiple forms, such as powder and liquid cocaine (Berger *et al.*, 2015). They can carry 1 kg (and sometimes up to about 2 kg) of drugs on average (Bakker *et al.*, 2012), which are usually separated into 50 - 100 packets, with a maximum of around 200 packets (Traub *et al.*, 2003). After ingesting the drug packets, some physical symptoms may appear, such as red eyes, acidic and unpleasant breath, and dry lips (Wang, 2011); if the packets leak, severe health consequences may appear, including death due to fatal intoxication (Bakker *et al.*, 2012; Patel, 1996).

Sentencing of drug-related offenses

The painful history of China as it relates to the Opium Wars (1839–1842 and 1856–1860), as well as the problems associated with the large-scale opium consumption during the 19th and the early 20th centuries, has had a critical impact on the country's laws and policies against drug use. For example, shortly after the communists assumed power in 1949, the new government enacted harsh measures to eradicate drug use and trade. Drug trafficking and use of opium were severely penalized. Drug traffickers were executed or imprisoned, and "drug addicts" were sent to labor camps (Lowinger, 1977). Through massive social campaigns, China was reportedly a drug-free country until the economic reform and open-door policy in the 1980s (Ma & Bao, 1993; Zhang and Chin, 2015). For many years, despite the use of severe punishment as the principal way to prevent or curtail drug use and trade, the problem continued to worsen through the 1990s, as evidenced by the increase in the number of registered people who use drugs and seized drugs (Fang, Wang & Shi, 2006; Liu, Liang, Zhao & Zhou, 2010).

To fight the exacerbating HIV/AIDS epidemic among people who use drugs, the government gradually shifted the burden of drug use from the legal to the medical sphere, and implemented harm reduction strategies, such as methadone maintenance therapy and needle-exchange programs (Lu, Zhao, Bao & Shi, 2008). Acknowledging drug addiction as a disease that requires treatment by law, the newly published Narcotics Control Law (Supreme People's Court [SPC], 2007) allows first-time confirmed patients with substance use disorders to recover in their local residential communities. Additionally, isolated compulsory detoxification authorized by the government is only given to the confirmed relapsed patients who are convicted for violating regulations of the community-based treatment (Jiang, 2017). In contrast, the old regulations (SPC, 1994) imposed a maximum of 15 days detention or a fine for first-time confirmed "drug addicts", while repeated offenders were sent to compulsory detoxification centers run by the Ministry of Public Security for 3 to 6 months; those with multiple confirmed relapses were detained in rehabilitation centers run by the Ministry of Justice for 1 to 3 years (Li & Huang, 2005; Sullivan & Wu, 2007; Tang, Zhao, Zhao & Cubells, 2006). Since the Chinese government has not released detailed information on registered people who use drugs, scholars have been relying on survey interviews of people who use drugs in rehabilitation centers as their primary sources of information. Previous studies have shown the typical profile of a drug user in rehabilitation centers to include the following characteristics: male (e.g., nearly 90% are male); relatively young (e.g., younger than 40 years old); unemployed with a low level of education (e.g., less than high school); and used heroin or methamphetamine as their first drug (Cai & Xia, 2018; Cai, Gao & Wang, 2017; Chen, Chen & Guliniyazi, 2019; Deng & Weng, 2017; Fang, Zhang & Wang, 2019; Shi, Wu & Han, 2012; Sun, Liu & Li, 2016).

Meanwhile, the criminal justice system in China, historically characterized by harsh punishment, has been experiencing a penal shift towards leniency that has substantially mitigated the degree of punitiveness since the early 2000s (Li, 2015). Arguably, the penal shift represents the rise of a modernized penal policy called "Balancing Leniency and Severity" that draws from China's new "harmonious society" disclosure (Trevaskes, 2013). Listed as a serious crime that may lead to the death penalty, China has been taking tough measures on drug trafficking. For example, according to Article 347 of the Criminal Law of the People's Republic of China, regardless of specific circumstances, smuggling, trafficking, transporting or manufacturing of heroin or methamphetamine of more than 50 g shall be sentenced to a fixed-term imprisonment of 15 years, life imprisonment, or death. A shorter sentence of a minimum of seven years up to 15 years shall be given to those who smuggle, traffic, transport, or manufacture less than 10 g to 50 g of heroin or methamphetamine. Being the head of a trafficking organization, using weapons to protect transportation, or engaging in violence against police inspection escalates the level of severity of an offense. Compared to the international standard (e.g., International Narcotics Control Board, 2019), the threshold for the death penalty is relatively low. For example, according to publicly available records, the *crime of manufacturing, trafficking and transporting drugs* accounts for 33.37% of a total of 8186 cases where the death penalty was imposed between 2007 and 2019.[1]

To utilize the principle of "Balancing Leniency and Severity", the number of crimes eligible for the death penalty has been substantively reduced from 68 to 55 cases in 2011, and 46 in 2015 (Jiang, 2017), indicating an important shift from the position of "kill many" to a new orientation of "kill fewer, and kill cautiously" (Johnson and Zimring, 2009). In addition, the SPC issued a regulation that provides unified standards for evidence to apply to all capital cases, especially for cases of murder, armed robbery, drug trafficking, and assaults resulting in death (SPC, 2006, 2007). In particular, a memorandum that contains detailed guidelines to further regulate sentencing regarding drug trafficking was published in 2008 (SPC, 2008). According to the memo, in cases that deal with a large quantity of drugs (e.g., more than 50 g of heroin or methamphetamine), without any discretionary circumstances, the defendant shall be given the death penalty if aggravating factors exist, such as being the head of a trafficking organization or engaging in violence against police inspection. A lenient punishment could be given to body packers, especially for their first offense, even if the amount of drugs exceeds the quantity that makes them eligible for the death penalty (SPC, 2008).

Although sentencing decisions are supposed to be derived solely from legal factors, there is a wide array of literature showing that extra-legal factors play a significant role in judicial sentencing (e.g., Steffensmeier, Ulmer & Kramer, 1998). However, data from sentencing documents in China are mixed. For example, the data from Li and colleagues indicated that after controlling for legal factors, extra-legal factors such as the offender's gender, race, and victim-offender relationship did not contribute much to the chance of receiving the death penalty (Li, Longmire & Lu, 2018). While a recent study reported that a minority of defendants in the Yunnan province received extra 1.5 to 8.0 months of sentences compared to their Han counterparts who had committed similar drug crimes (Hou & Truex, 2019).

Data and methods

Data

The present study retrieved all the sentence documents filed under *Crime of manufacturing, trafficking and transporting drugs* between 2006 and 2016 from the China Judgments Online (CJO) website, which is the official platform for publicizing legal documents in China. In order to improve judicial transparency, the Supreme People's Court of China demanded all levels of courts to release sentence documents within seven days of being effective (SPC, 2013). Only documents from the first trial were analyzed, and there were 8025 eligible cases in which at least one offender was convicted of drug transporting or smuggling at the time of downloading for our analysis (March 19, 2017). Since the focus of this study is body packing, the sample is limited to 1508 cases related to body packing, which contains 1541 routes and 2028 captured body packers as defendants.

Measurements

All sentencing documents uploaded to the CJO contain three parts:

[1] Keyword search of "death penalty" on the website of China Judgements Online at https://wenshu.court.gov.cn retrieved 8,186 sentencing documents for criminal offenses of first trial from all levels of courts between 2007 to 2019 (visited on Feb 12, 2020).

the caption that lists the parties involved in the dispute, the court, and the case number; the main body that consists of a description of facts, such as offender information, and offense characteristics; and the conclusion, such as articles cited and sentences. We manually coded the main body section of the sentence documents for information related to the following: evidence provided by both the defendant and prosecutor; the legal reasoning and the sentencing outcomes for the defendants; digitated information on trafficking routes, such as the origin and the destination, the type and the quantity of drugs, the mode of transportation, and the place of drug seizure; offender-related variables, such as demographic characteristics (gender, age, ethnicity, level of education, place of birth, occupation, etc.); regular discretionary circumstances (whether the defendant has a criminal record, confessed, whether the defendant is a repeat offender, etc.). Sentencing outcomes (fixed term imprisonment, life imprisonment, or death sentence) were also coded for each of captured body packers involved. Since each of the documents may contain multiple routes and multiple offenders, we chose captured body packers and trafficking routes as our units of analysis because not all of the offenders participated in the body packing or were sentenced in the same cases, and each case may contain information for more than one route or offender.

In our analysis, the origin and the destination referred to where the drugs originate and where they go; however, it is not uncommon that trafficking was intercepted at some location en route, and that the final destination was not known or given. Therefore, if the sentencing document contains definitive information regarding the location where the drugs were intended to arrive, the final destination is known; otherwise, the destination is treated as unknown.

Analytical methods

In this study, we focused on characteristics of trafficking routes as well as those of captured body packers. For the trafficking routes, we performed network analysis to depict the trafficking flows and summarized the patterns of trafficking routes by their origins and destinations, e.g., the type, the amount and level of purity of the trafficked drugs, the method of concealment, and transportation. For captured body packers, in addition to providing descriptive analyses on demographic and behavioral characteristics, we utilized a negative binomial model to explore the effects of legal and extra-legal factors on sentence length. Exploratory analysis revealed that 84% of captured body packers received a fixed-term imprisonment, 15% received life imprisonment, and less than 1% (18 cases) were given death penalty with reprieve. Disproportionally high number (12 out of 18) of death penalties with reprieve were given before 2015 although the number of captured body packers sentenced in the same period only composed 35% of the total. Among captured body packers in our dataset, 98.49% of them carried more than 50 g of heroin or methamphetamine. Therefore, we limited our analysis of sentence length to those who carried more than 50 g of heroin or methamphetamine, and were sentenced to a fixed-term of imprisonment.

Furthermore, one of the distributional characteristics of sentence length is the concentration of values (e.g., Abrams, 2011; Rydberg, Cassidy & Socia, 2017). In our final analytical sample of 1655 captured body packers, for the length of sentence, 71.72% of defendants received exactly fifteen years fixed-term of imprisonment, which exceeds the predicted probabilities from a regularly assumed Poisson or negative binomial distribution (Poston & McKibben, 2003). To avoid possible biased estimates and incorrect inferences due to the concentration of certain values, we adopted a modeling framework that combines two distribution outcomes (e.g., Hall, 2000; Vieira, Hinde, & Demetrio, 2000). For instance, Cai, Xia and Zhou (2018)) proposed a generalized inflated negative binomial model that utilizes parametric components to address inflation on certain values by adding a binary component for heaping in addition to a regular negative binomial component for the outcome.[2]

Results

Characteristics of trafficking routes

Table 1 presents the descriptive statistics of the drug routes involving body packing. Among the total of 1491 routes with information on both the origin and the destination, there are 36.62%, 40.51%, and 22.87% involving international, intra-provincial, and inter-provincial trafficking, respectively. We conducted a series of likelihood ratio (χ^2) tests to see whether the characteristics of the drugs being transported, such as the type, the amount, the purity level, and the methods used for drug concealment and transportation, impacted how and where they were intercepted. In terms of the type of drugs, heroin and methamphetamine were the two dominant drugs trafficked by captured body packers, as 68.88%, 26.63%, and 4.09% of routes involved heroin, methamphetamine, or both, respectively. There is a significant difference in the drugs smuggled across the types of trafficking routes. The inter-province routes are more likely to traffic heroin (81%), while the international routes are associated with a high proportion of methamphetamine (28%). However, it is worth noting that the high percentage of heroin among inter-provincial routes might be due to international drug smuggling destined for the area of the Yunnan province that shares a border with the Golden Triangle, as that alone contributes to 96.19% (328 out of 341) of inter-provincial body packing routes.

The international routes reported the highest quantity of drugs seized, with 591 g per route on average, followed by the intra-province and the inter-provincial routes, with a mean of 567 g per route and 371 g per route, respectively. Comparatively, inter-provincial trafficking routes are more likely to be intercepted by police (92%), and the most common location of capture are checkpoints (78%), which is probably related to the high percentage of captured body packers using cars or buses as their means of transportation (82%); there is little difference between international and intra-provincial trafficking in the method of being captured. However, the intra-provincial trafficking shows a slightly higher percentage (43% vs. 35% or 15%) of being caught at an airport or train station, which again might be associated with its relatively high percentage of captured body packers using an airplane (28%) or train (21%) as their means of transportation. Concerning the methods of concealment, the international and the intra-provincial routes are more likely to find drugs in luggage as compared to the inter-provincial routes (10% or 11% vs. 5%). Although the average payment for international or intra-provincial routes is higher than that of the inter-provincial routes (10.69 or 10.06 vs. 7.00 in thousand RMB), the test statistic only reaches significance at the 0.05 level—probably due to the high variance of the inter-provincial payment. There is not much difference in the level of purity of trafficked drugs when considering the routes.

Table 2 shows the frequency distribution of the type of drugs by the origin and the destination of trafficking routes. To simplify the presentation, only the locations with a frequency higher than two are presented. Regarding the origin of trafficking routes, the top origin is Yunnan province, with 60% of routes originating from that location, and a drug composition of 72% heroin, 24% methamphetamine, and 4% both. The second is Myanmar with 35% of routes originating from this location, and a similar composition of drugs (e.g., 60% of heroin,

[2] Suppose a discrete outcome Y, such as the length of sentence, has inflated probability at value k, the model can be specified as follows: $p(Y_i = y_i|\lambda_i, \phi, \pi) = \begin{cases} \pi_i + (1-\pi_i) \times pr(Y_i=k|\lambda_i, \phi) & \text{if } y_i = k \\ (1-\pi) \times pr(Y_i = y_i|\lambda_i, \phi) & \text{if } y_i \neq k \end{cases}$ where $pr(Y_i = y_i|\lambda_i, \phi)$ is a negative binomial distribution with the mean λ_i and the dispersion parameter ϕ; and π_i is the probability of inflation at the value k. The probability of inflation at the value k, π_i, could also depend on covariates. For example, if a logit model is specified, $\pi_i = \frac{1}{1+exp(-\mathbf{z}_i\gamma)}$ where $\mathbf{z}_i$ and γ is the matrix of predictors for the ith observation and the vector of corresponding parameters, respectively.

Table 1
Descriptive analysis of drug routes.

		Type of Routes International $N = 546$	Intra-province $N = 604$	Inter-province $N = 341$	
Variable	Category	Mean(SD)	Mean(SD)	Mean(SD)	χ^2
Type of drug	Heroin	67% (0.47)	73% (0.45)	81% (0.39)	27.53***
	Meth	28% (0.45)	22% (0.41)	16% (0.37)	22.43***
	Heroin+ Meth	5% (0.21)	6% (0.23)	3% (0.16)	5.21+
Quantity (g)		590.94(456.53)	566.98(726.76)	371.51(273.89)	44.71***
Purity		44% (0.22)	48% (0.19)	44% (0.18)	4.04
Payment		10.69(7.07)	10.06(15.85)	7.00(4.52)	5.72+
Caught	Police	84% (0.37)	85% (0.36)	92% (0.27)	17.53***
	Tip offs	5% (0.22)	5% (0.22)	2% (0.14)	7.92*
	Turn self in	1% (0.08)	0% (0.05)	1% (0.10)	2.88
	Unknown	10% (0.30)	10% (0.29)	5% (0.21)	11.09**
Caught location	Hotel	6% (0.24)	6% (0.23)	3% (0.18)	5.06+
	Check points	52% (0.50)	45% (0.50)	78% (0.41)	132.51***
	Airport/Train station	35% (0.48)	43% (0.50)	15% (0.36)	102.04***
Concealment	Inside body	100% (0.04)	100% (0.00)	100% (0.00)	1.83
	On body	12% (0.33)	13% (0.33)	17% (0.37)	4.21
	Luggage	10% (0.30)	11% (0.31)	5% (0.21)	14.84***
	Other	2% (0.13)	2% (0.15)	4% (0.18)	2.96
Transportation	Motorcycle	1% (0.09)	1% (0.09)	1% (0.07)	0.6
	Car	56% (0.50)	48% (0.50)	82% (0.38)	144.14***
	Train	8% (0.28)	21% (0.40)	4% (0.20)	87.09***
	Airplane	33% (0.47)	28% (0.45)	11% (0.31)	76.61***

Note: + $p<.1$, * $p<.05$, ** $p<.01$, and *** $p<.001$.

Table 2
Type of trafficked drugs by origin and destination of routes for trafficking volume >2.

Type	Location	N	Heroin Mean(SD)	Meth Mean(SD)	Heroin+ Meth Mean(SD)	Cocaine Mean(SD)	Morphine Mean(SD)	Purity Mean(SD)
Origin	YN	894	72% (0.45)	24% (0.42)	4% (0.19)	–	0% (0.03)	47% (0.20)
	MM	520	60% (0.49)	35% (0.48)	5% (0.22)	–	–	36% (0.23)
	SC	46	98% (0.15)	–	2% (0.15)	–	–	43% (0.13)
	TZ	7	100% (0.00)	–	–	–	–	57% (0.07)
	PK	6	100% (0.00)	–	–	–	–	41% (0.19)
	NG	4	–	–	–	100% (0.00)	–	54% (0.17)
	GD	3	100% (0.00)	–	–	–	–	60% (-)
Destination	YN	492	78% (0.41)	19% (0.39)	3% (0.16)	–	0% (0.05)	46% (0.20)
	SC	440	90% (0.30)	4% (0.19)	6% (0.24)	–	–	52% (0.16)
	HB	216	21% (0.41)	75% (0.43)	4% (0.19)	–	–	31% (0.25)
	GZ	91	81% (0.39)	18% (0.38)	1% (0.10)	–	–	47% (0.15)
	CQ	61	15% (0.36)	82% (0.39)	3% (0.18)	–	–	19% (0.19)
	HN	34	41% (0.50)	38% (0.49)	21% (0.41)	–	–	28% (0.21)
	SN	31	90% (0.30)	6% (0.25)	3% (0.18)	–	–	33% (0.11)
	XJ	25	92% (0.28)	–	8% (0.28)	–	–	50% (0.13)
	GD	19	47% (0.51)	32% (0.48)	–	21% (0.42)	–	59% (0.12)
	HA	17	18% (0.39)	82% (0.39)	–	–	–	21% (0.14)
	SH	14	86% (0.36)	7% (0.27)	–	7% (0.27)	–	53% (0.10)
	ZJ	13	15% (0.38)	85% (0.38)	–	–	–	23% (0.16)
	BJ	7	86% (0.38)	14% (0.38)	–	–	–	40% (0.16)
	GX	5	80% (0.45)	20% (0.45)	–	–	–	–
	JL	5	20% (0.45)	80% (0.45)	–	–	–	–
	GS	3	100% (0.00)	–	–	–	–	56% (0.26)
	HK	3	100% (0.00)	–	–	–	–	60% (-)
	NM	3	100% (0.00)	–	–	–	–	34% (0.04)

Note: 1. Mainland Province/Municipality/Autonomous Region: Beijing (BJ), Chongqing (CQ), Guangdong (GD), Gansu (GS), Guangxi (GX), Guizhou (GZ), Henan (HA), Hubei (HB), Hunan (HN), Jilin (JL), Inner Mongolia (NM), Sichuan (SC), Shanghai (SH), Shaanxi (SN), Jiangsu (JS), Jiangxi (JX), Shanxi (SX), Tianjin (TJ), Hebei (HE), Yunnan (YN), Xinjiang (XJ), & Zhejiang (ZJ).
2. Outside of Mainland: Hong Kong (*HK*), Myanmar (*MM*), Nigeria (*NG*), Pakistan (*PK*), & Tanzania (*TZ*).

35% of methamphetamine, and 5% of both). Sichuan province only shows 3% of origination, with a drug composition of 98% of heroin and 2% of both.

In terms of common destination, Yunnan province again is ranked at the top with 33% of routes destined to it, closely followed by Sichuan (32%). Both Yunnan and Sichuan provinces share a similar composition of drugs, for example, methamphetamine far exceeds heroin in both provinces. The same pattern can be found in Guizhou (6%) and Shaanxi (2%). However, interestingly, the pattern is reversed for Hubei (14%), Chongqing (4%), and Henan (1%), which all have more methamphetamine than heroin. This might be due to the demand of the local market at the destination, geographic adjacency, or transportation convenience to a manufacturing hub.

To further explore the geographic patterns of body packing, we implemented network analysis on the trafficking routes. Fig. 1 gives a graphical illustration of how body-packing routes are geographically connected, and Table 3 presents descriptive characteristics of the network, such as in- and out-degree, closeness, and betweenness. There are

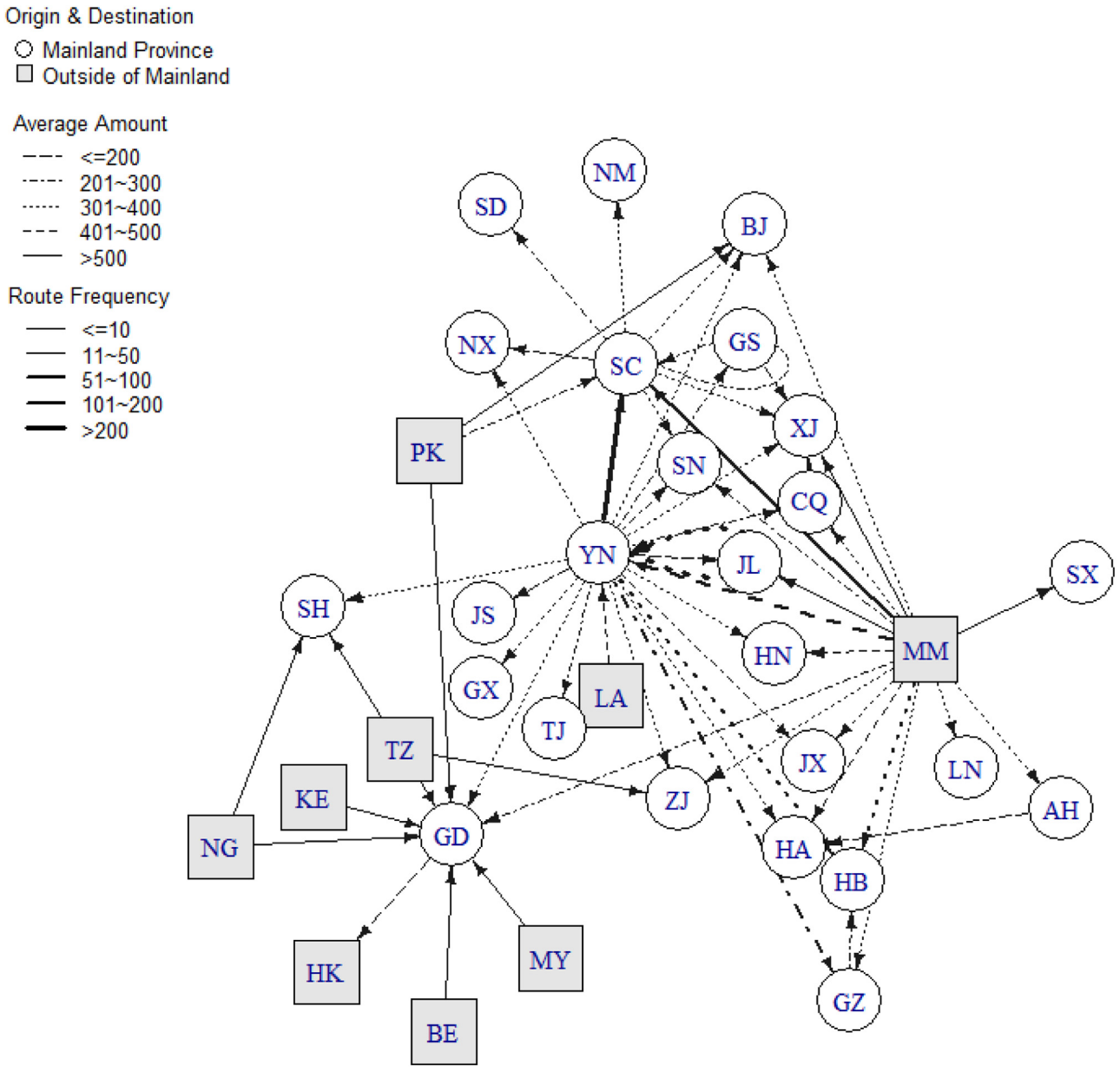

Fig. 1. Network of Body Packing Drug Routes
Note: 1. Mainland Province/Municipality/Autonomous Region: Anhui (AH), Beijing (BJ), Chongqing (CQ), Guangdong (GD), Gansu (GS), Guangxi (GX), Guizhou (GZ), Henan (HA), Hubei (HB), Hebei (HE), Hunan (HN), Jilin (JL), Jiangsu (JS), Jiangxi (JX), Liaoning (LN), Inner Mongolia (NM), Ningxia (NX), Sichuan (SC), Shandong (SD), Shanghai (SH), Shaanxi (SN), Shanxi (SX), Tianjin (TJ), Xinjiang (XJ), Yunnan (YN), & Zhejiang (ZJ).
2. Outside of Mainland: Benin (BE), Hong Kong (HK), Kenya (KE), Laos (LA), Myanmar (MM), Malaysia (MY), Nigeria (NG), Pakistan (PK), & Tanzania (TZ).

two types of centers described: hubs that send outgoing links, and authorities where many incoming links are received (Kleinberg, 1999). Clearly, Yunnan, Myanmar, and Sichuan where a large number of routes originate, are the three major hubs, as ranked by their out-degree; showing high values of in-degree, Guangdong, Xinjiang, and Sichuan are potential authorities as the destinations of many incoming routes. The measure of betweenness also indicates that Guangdong, Sichuan, and Yunnan are important because they act as pivotal bridges for other routes; while closeness measures do not provide much information because some pairs of provinces do not have a path between them.

Myanmar serves as a hub outside of China that frequently sends large quantities of drugs to Yunnan and Sichuan, as well as other inland provinces, such as Hubei and Shanxi. In contrast, Yunnan is the largest inland supplier, providing drugs to almost all the rest of the inland provinces, while receiving its supply from outside of China, for instance, Myanmar and Laos. In addition, consistent to the pattern of drug trafficking flows, Yunnan also has a large volume of inter-province trafficking originating from its border areas (e.g., Dehong, Simiao, and Lincang) to major cities (e.g., Kunming and Dali). Meanwhile, Sichuan is a regional headquarter of redistribution that gets its incoming drugs from Yunnan and Myanmar, and delivers to its local market and other inland provinces with relatively high in and out degrees. Likely due to its well-developed international and domestic transportation system, Guangdong is an authority that collects from outside of China, such as Pakistan, Myanmar, Malaysia, Kenya, and Tanzania.

In general, the body packing routes match the general drug trafficking flows in China. For instance, heroin and methamphetamine are transported from the Golden Triangle to Yunnan across the border areas, and are redistributed to the rest of country. However, there were

Table 3
Descriptive analysis for network of body-packing drug routes.

	Degree			Closeness			Betweenness
	In	Out	Total	In*	Out*	Total	
AH	1	1	2	0.03	0.03	0.41	0
BE	0	1	1	0.03	0.03	0.36	0
BJ	4	0	4	0.03	0.03	0.49	0
CQ	2	1	3	0.03	0.03	0.46	0
GD	8	1	9	0.04	0.03	0.56	9
GS	1	1	2	0.03	0.03	0.43	0
GX	1	0	1	0.03	0.03	0.43	0
GZ	2	1	3	0.03	0.03	0.46	0
HA	3	0	3	0.03	0.03	0.46	0
HB	3	0	3	0.03	0.03	0.46	0
HK	1	0	1	0.04	0.03	0.36	0
HN	2	0	2	0.03	0.03	0.45	0
JL	2	0	2	0.03	0.03	0.45	0
JS	1	0	1	0.03	0.03	0.43	0
JX	2	0	2	0.03	0.03	0.45	0
KE	0	1	1	0.03	0.03	0.36	0
LA	0	1	1	0.03	0.09	0.43	0
LN	1	0	1	0.03	0.03	0.41	0
MM	0	17	17	0.03	0.12	0.67	0
MY	0	1	1	0.03	0.03	0.36	0
NG	0	2	2	0.03	0.03	0.37	0
NM	1	0	1	0.03	0.03	0.35	0
NX	2	0	2	0.03	0.03	0.45	0
PK	0	3	3	0.03	0.04	0.41	0
SC	4	7	11	0.03	0.04	0.52	11.5
SD	1	0	1	0.03	0.03	0.35	0
SH	3	0	3	0.03	0.03	0.45	0
SN	3	0	3	0.03	0.03	0.48	0
SX	1	0	1	0.03	0.03	0.41	0
TJ	1	0	1	0.03	0.03	0.43	0
TZ	0	3	3	0.03	0.03	0.38	0
XJ	5	0	5	0.04	0.03	0.49	0
YN	3	20	23	0.03	0.08	0.73	27.5
ZJ	3	0	3	0.03	0.03	0.46	0
Centralization	0.19	0.55	0.30	0.01	0.09	0.60	0.03
Max	1122	1122	2178	32.03	32.03	16.25	34,848

Note: *Closeness centrality is not well-defined for disconnected graphs.

no body packing routes identified from Guangdong to other provinces or within it, except for Hong Kong. Guangdong has become a major area for the drug manufacturing of primarily methamphetamine and ketamine, holding a dominant position not only in the drug market within China, but as a supplier to adjacent countries. The reason for why very few body packing routes were found in Guangdong is perhaps due to the fact that body packing is not an efficient way of trafficking, and the drugs were largely transported by other means (Xu & Qiu, 2015).

Characteristics of captured body packers

According to the regulations of the SPC, personal information that may lead to revealing one's identity must be removed before any sentencing document is released (SPC, 2013). However, regulations regarding exactly what kind of extra-legal information should be released are lacking. It becomes the judge's discretion to decide what demographic information can be included in a sentencing document. Therefore, many of the demographic variables coded from the sentencing documents contain a substantial proportion of missing values, and thus cautions should be taken when interpreting the test results.

Table 4 summarizes characteristics of captured body packers by the type of routes. With regard to the test results, there are significant differences in gender, ethnicity, occupation, and the level of education of captured body packers by the type of trafficking routes. For instance, for captured body packers involved in international routes, there is a higher percentage of Han ethnicity (74% vs. 59% and 62%), unemployed (25% vs. 22% and 7%), college level of education (33% vs. 27% and 29%); while female (19%), less than elementary school level of education (15%), drug user (80%), and travel destination as hometown (39%) are associated with captured body packers for the intra-provincial routes. Captured body packers recruited for inter-provincial trafficking are more likely to be a "peasant" (53%), and local born (29%). Although both captured body packers and the people who use drugs in rehabilitation centers share some demographic similarities, such as being male and relatively young, besides the difference in using drugs, captured body packers tend to have a higher level of education and are more likely to be a minority or peasant. Again, these characteristics might be contextual, because Yunnan contributes to 96.19% of the inter-provincial routes and is an agricultural province. The payment of captured body packers is slightly higher for international and intra-provincial routes compared to the inter-provincial routes (11.13 and 10.36 vs. 7.09 in thousand RMB). There is not much difference in whether he/she belongs to a special group that would be given lenient punishment (e.g., pregnant/lactating women, the disabled, minors, and patients with fulminating infectious disease), across the type of trafficking routes.

Similar to the pattern shown from the analysis of drug routes, captured body packers on the international routes carry more drugs, with an average of 343.93 g per person, followed by the intra-provincial ones with an average of 324.06 g per person, and the inter-provincial ones with an average of 267.68 g per person. The international and inter-provincial captured body packers are more likely to conceal drugs in luggage (8% and 9% vs. 4%). The current results also suggest that the intra-provincial captured body packers receive more severe punishment, for instance, a higher proportion of life imprisonment (0.17 vs. 0.12 and 0.13), confiscation of property (0.82 vs. 0.73 and 0.75), and deprival of political rights (0.29 vs. 0.22 and 0.15).

Length of sentence of captured body packers

The sentencing outcomes for captured body packers vary dramatically by the quantity of drugs carried. Yet, in reality, given various discretionary circumstances, a body packer could receive less than fifteen years of imprisonment even if he or she trafficked more than 50 g of drugs, which provides an opportunity to explore the effects of legal and extra-legal factors on sentencing. We limited our analysis to those who processed more than 50 g of drugs (98%) and who were sentenced to anywhere between seven and fifteen years of imprisonment (84%). As reported in the previous table, many of the demographic variables contain a large percentage of missing information, e.g., birthplace (33.82%), the level of education (29.04%), drug use (74.33%), and promised payment (66.33%). Thus, those variables were excluded from this analysis. The final sample contains 954 observations without missing values.

In addition, since our sample contained all of the cases involving body packing, blindly applying a regression technique on a collection of non-randomly selected sentencing documents and using the conventional p value and confidence intervals to evaluate the effects of covariates might not be appropriate due to selection, omitted variables, or unobserved heterogeneity (Gormley & Matsa, 2014). Hence, we adopted a bootstrapping procedure to obtain bootstrapping confidence intervals (BCIs) for our estimates. Generally speaking, the BCIs are asymptotically more accurate than the standard intervals constructed from a sample variance with assumptions of normality (Davison & Hinkley, 1997; Efron & Tibshirani, 1994), and more appropriate to evaluate the stability of the results with potential selection processes and omitted variables (Clougherty, Duso and Muck, 2016; Fox, 2002). The bootstrapping procedure drew a sample of 900 with replacement out of the original sample, and then the analysis was conducted. The procedure was repeated 1000 times, and the final BCIs were constructed based on the estimates pooled from all the bootstrapping replicates.

Table 5 reports the estimated effects of legal and extra-legal factors

Table 4
Characteristics of body packers by type of routes.

Variable	Category	International N = 733 Mean(SD)	Intra-province N = 757 Mean(SD)	Inter-province N = 387 Mean(SD)	χ^2	Missing
Female		5% (0.23)	19% (0.39)	10% (0.30)	62.26***	7.03%
Han		74% (0.44)	59% (0.49)	62% (0.49)	29.75***	22.40%
Age		28.29(8.53)	29.90(9.39)	28.67(8.52)	10.08**	20.32%
Occupation	Peasant	41% (0.49)	46% (0.50)	53% (0.50)	14.74***	0.15%
	Unemployed	25% (0.43)	22% (0.41)	7% (0.26)	59.44***	
Education	< =Elementary	6% (0.24)	15% (0.36)	10% (0.29)	37.42***	29.04%
	Middle/High school	23% (0.42)	21% (0.41)	25% (0.43)	2.31	
	College & +	33% (0.47)	27% (0.44)	29% (0.46)	6.10*	
Drug using		62% (0.49)	80% (0.40)	64% (0.48)	17.30***	74.33%
Payment		11.13(7.65)	10.36(16.47)	7.09(4.60)	5.87 +	66.33%
Birth place	Origin	3% (0.16)	15% (0.35)	29% (0.45)	114.01***	33.82%
	Destination	26% (0.44)	39% (0.49)	29% (0.45)	22.31***	
Special group		2% (0.13)	3% (0.16)	3% (0.16)	1.81	0.00%
Type of drug	Heroin	66% (0.47)	73% (0.45)	81% (0.39)	27.27***	0.00%
	Meth	28% (0.45)	23% (0.42)	17% (0.37)	17.83***	
	Heroin + Meth	5% (0.22)	4% (0.20)	2% (0.14)	6.05*	
Quantity (g)		343.96(190.32)	324.06(236.48)	267.68(165.48)	34.92***	0.44%
Criminal record	None	88% (0.32)	91% (0.28)	90% (0.30)	4.09	0.00%
	Drug	1% (0.11)	2% (0.14)	1% (0.07)	4.68 +	
	Violence	4% (0.20)	2% (0.14)	2% (0.15)	6.31*	
	Property	3% (0.18)	4% (0.19)	4% (0.21)	0.91	
	Other	1% (0.09)	1% (0.08)	0% (0.05)	1.49	
Concealment	Inside body	99% (0.08)	98% (0.12)	100% (0.05)	6.09*	0.00%
	On body	10% (0.31)	11% (0.31)	12% (0.33)	1.11	
	Luggage	8% (0.27)	9% (0.29)	4% (0.19)	11.23**	
	Other	2% (0.13)	1% (0.11)	2% (0.13)	0.64	
Punishment	Confiscation	73% (0.45)	82% (0.38)	75% (0.43)	21.42***	0.00%
	Mulct	27% (0.45)	17% (0.38)	25% (0.44)	23.01***	
	Deprival of rights	22% (0.42)	29% (0.45)	15% (0.36)	26.87***	
Sentence	Fixed term	86% (0.34)	82% (0.38)	86% (0.35)	5.67 +	0.00%
	Life	12% (0.33)	17% (0.38)	13% (0.34)	8.80*	
	Death w/ reprieve	1% (0.12)	0% (0.06)	0% (0.05)	6.21*	

Table 5
Effects of legal and extra-legal factors on length of sentence for body packers.

Parameter		Negative binomial Model 1	Model 2	Inflated negative binomial Model 3
Parameter	Category	Beta[2.5th, 97.5th BCIs]	Beta[2.5th, 97.5th BCIs]	Beta[2.5th, 97.5th BCIs]
Inflation @15 years				
Intercept				−2.51[−4.03, −0.87]***#
Quantity				0.49[0.17,0.85]***#
Criminal record				−0.51[−1.79,0.31] +
Confessed				4.69[3.37,6.16]***#
Recidivism				1.86[−0.44,4.06]**
First offense				0.49[−0.14,1.32]*
Quantity*Confessed				−0.56[−0.92, −0.19]***#
Length				
Intercept		5.00[4.95,5.04]***#	4.88[4.81,4.94]***#	4.79[4.68,4.90]***#
Female		0.01[−0.02,0.03] +	0.00[−0.02,0.02] +	−0.06[−0.14,0.01]***
Age		0.01[0.00,0.02]***#	0.01[0.00,0.02]***#	0.00[−0.02,0.02] +
Han		−0.01[−0.03,0.00]**#	−0.01[−0.03,0.00]**#	0.00[−0.03,0.03] +
Route type	International	0.00[−0.02,0.02] +	0.00[−0.02,0.01] +	0.01[−0.02,0.04] +
	Intra-province	0.01[−0.01,0.03] +	0.01[−0.01,0.02] +	−0.01[−0.05,0.03] +
	Inter-province			
Occupation	Peasant	0.03[0.01,0.04]***#	0.03[0.02,0.04]***#	0.01[−0.01,0.04] +
Special group		−0.09[−0.19, −0.02]***#	−0.09[−0.20, −0.02]***#	−0.20[−0.49, −0.02]***#
Quantity		0.01[0.00,0.01]***#	0.04[0.03,0.06]***#	0.04[0.02,0.06]***#
Criminal record	No	0.00[−0.04,0.04] +	0.00[−0.03,0.04] +	0.05[−0.01,0.13]*
Confessed		0.11[0.09,0.13]***#	0.25[0.19,0.32]***#	0.09[0.00,0.18]***
Repeated offender		0.06[0.01,0.11]***#	0.06[0.01,0.11]***#	0.05[−0.10,0.21] +
Accessory		−0.05[−0.07, −0.02]***#	−0.05[−0.07, −0.02]***#	0.04[0.01,0.08]***#
First offense		0.00[−0.02,0.03] +	0.01[−0.02,0.03] +	−0.09[−0.15, −0.03]***#
Quantity*Confessed			−0.04[−0.06, −0.03]***#	−0.03[−0.05, −0.01]***#
−2LL		8165	8104	3574
AIC		8193	8134	3618
BIC		8261	8207	3725
N		954	954	954

Note: Coefficients were estimated from the whole sample, while BCIs were obtained from 1000 Bootstrapping replicates with size of 1000; # indicates the 95% BCIs do not include zero; and Model-based p values were indicated by: + $p<.1$, * $p<.05$, ** $p<.01$, *** $p<.001$.

on the length of sentence for captured body packers. The point estimates were obtained from the original sample, while the BCIs were constructed from 1000 bootstrapping replicates. Consistent with previous studies, the transportation of a large quantity of drugs and repeat offenders were associated with heavier punishment, and those in special groups, such as pregnant/lactating women, the disabled, or minors, received relatively shorter sentences. For instance, Model 1 shows that the length of a sentence for repeat offenders is 1.06 times (exp(0.06) = 1.06) as long as those who did not previously engage in body packing. In terms of racial disparities, the length of Han offenders' sentence is only significant at $\alpha = 0.01$, however, the size of effect is trivial ($\exp(-0.01) - 1 = -0.01$). Interestingly, the model predicted that those who confessed to their crime would receive longer sentences compared to those who did not, e.g., 0.12 times longer ($\exp(0.11) - 1 = 0.12$). We added an interaction term between the quantity of drug and the variable *Confessed* to see if the positive effect is spurious, as captured body packers who carried high quantities of drugs are more likely to confess in hopes of getting leniency given the fact that the quantity of drug is positively related to the length of sentence. Shown in Model 2, the coefficient of interaction is negative; however, the size of the coefficient (-0.041) is very close to that of the quantity of drug ($+0.043$), nullifying each other. Therefore, the positive effect of the variable *Confessed* cannot be explained by the potential selection, such as those carried high quantities of drugs are more likely to confess.

As we mentioned before, the length of sentence concentrates heavily on the right tail, especially the maximum, with 71.72% of captured body packers receiving 15 years (180 months) of fixed-term imprisonment. To address the issue of the concentration, we estimated an inflated negative binomial model with the inflation at the value of 15. Model 3 has two parametric components: a Logistic component that evaluates the effects of covariates on the probability of the length of sentence at exactly 15 years, and a negative binomial component that is similar to those shown in Model 1 and 2. Model 3 suggests that those who confessed have a much higher chance of being sentenced at exactly 15 years, and the effect is robust against bootstrapping, e.g., BCIs [3.37, 6.16]. Similar to the results in Model 2, the interaction term (-0.56) and the main effect of the quantity of drugs ($+0.49$) roughly cancel out. Meanwhile, in the negative binomial part, the effect of *Confessed* is only marginally significant, and the BCI contains zero, indicating the effect might not be robust. Putting all the pieces together, the results suggest that the positive effect of *Confessed* is possibly driven by the fact that many of the confessed body packers are sentenced to the maximum fixed-term of imprisonment, which may be considered as a "downgraded" punishment because the next sentencing level is a life sentence or the death penalty. In addition, similar to Model 1, the variable *Han* is only significant at $\alpha = 0.10$ level in Model 3, and does not pass the bootstrapping procedure.

Discussion and conclusion

Through the utilization of court sentencing documents, the present study identified three types of trafficking routes involving body packing: intra-provincial, inter-provincial, and international trafficking. Our results showed that heroin and methamphetamine are the two major drugs trafficked by captured body packers, and the international routes are associated with a higher proportion of methamphetamine, while the inter-province routes are more likely to traffic heroin, which might be due to the redistribution of drugs smuggled from the Golden Triangle area to Yunnan province, with which it shares a border. Possibly because of the high percentage of captured body packers using public transportation, such as trains and airplanes, intra-provincial trafficking is more likely to be intercepted by police at airport and train station checkpoints.

Our network analysis indicated that there are three major hubs and three authorities among body packing routes. Yunnan, Myanmar, and Sichuan are common origins for trafficking routes. For instance, Myanmar serves as a hub outside of China that sends drugs to inland provinces, Yunnan in particular. Yunnan is the largest inland supplier, while Sichuan is a regional center for redistribution. In addition, Yunnan also transits a large volume of drugs from its border area to major cities by body packing. In contrast, in spite of being a notorious center for both methamphetamine and ketamine manufacturing, Guangdong is an authority that gets body packed heroin from outside of China. Along with Guangdong, Sichuan and Yunnan also serve as crucial connection points that link routes passing between other places.

Our analysis found that there are significant differences in gender, ethnicity, occupation, the level of education, and drug use of captured body packers by the type of trafficking routes. Relatively speaking, the Han ethnicity, the unemployed, and those with a college level education are typical characteristics of the international captured body packers; while less educated females and those with a travel destination as their hometown are associated with captured body packers in the intra-provincial routes. The inter-provincial captured body packers are more likely to be a "peasant" and local born; again, these characteristics might only echo those of Yunnan because it contributes to 96.19% of the inter-provincial routes.

Consistent with previous studies, our research also demonstrated that cases that included the transport of a larger quantity of drugs and repeat offenders necessitated heavier punishment, and those in the special groups received more lenient sentences. In addition, our analysis further revealed that the reason why those confessed received longer sentences than those who did not is possibly due to the concentration of values at 15 years, as many of the confessed body packers are sentenced to the maximum fixed-term of imprisonment. However, our findings did not provide support for racial or gender disparities in sentencing for captured body packers.

Nonetheless, the current research is limited in several respects. To begin with, although we retrieved all the sentencing documents involving body packing from the CJO official website, the sample may still be subject to selection bias. First, the sentencing documents available on the CJO website might be subject to selective uploading, because the SPC allows exemptions for certain types of cases to be publicized, such as cases involving state secrets, minors, or those deemed "inappropriate" (SPC, 2013). As such, cases using minors as body packers were under-represented. Secondly, the destinations of drug routes were not clearly indicated in many of the sentence documents, and even if the information was given, the accuracy of the information could not be verified, introducing a possible measurement error or non-random selection. In addition, due to a lack of regulations on releasing extra-legal information, many extra-legal factors were missing in the sentencing documents. Although we implemented the bootstrapping procedure to reduce the influence of selection, omitting variables or unobserved heterogeneity to gain some robustness, without further information, we are still not in a position to argue that the identified patterns of body packing are meant to be complete, or rule out alternative explanations for our findings.

Moreover, because body packing is only one means of drug trafficking, the patterns we found here might not be generalizable to other types of drug trafficking. For example, recent media reports revealed that much of the drug trafficking originating from China involved the use of the postal and logistics system (Mansoor, 2019; Nixon, 2018; Wagner & Sonmez, 2018). Therefore, the role of a specific location in a trafficking network may vary by the type of drugs, where they were produced, and how they were trafficked. Cautions should be taken when making further generalizations based on this data.

Despite those limitations, without more comprehensive data, our analysis represents the most systematic approach to analyze body packing in China. As China faces a rampant drug problem and a thriving drug market, it would be unrealistic to use our findings to thoroughly explicate the complexities of body packing. However, our research does provide insights to inform evidence-based strategies for fighting against body packing activity in China. Although a systematic review for the

effectiveness of location-based policing is still lacking, our results show that police checkpoints are the most frequent places where body packers were intercepted. Therefore, location-based policing in the hotspots and high-frequency routes connecting Guangdong, Yunnan, and Sichuan may be both an efficient and straightforward method to intercept body packers. In addition, we hope that the Chinese judicial system adopts a more streamlined format when recording court cases to facilitate future studies on body packing.

Conflict of interest statement

No conflict of interest is declared.

CRediT authorship contribution statement

Ruoyang Tang: Data curation, Formal analysis, Writing - original draft. **Tianji Cai:** Conceptualization, Methodology, Formal analysis, Writing - review & editing.

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Supplementary materials

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