Analysis of Drug Trafficking Ledgers

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ABSTRACT: Drug trafficking operations commonly document their activities in ledgers. The complexity of these ledgers is usually intended to help secrete the recorded information, making their interpretation challenging. The Federal Bureau of Investigation's Cryptanalysis and Racketeering Records Unit recently conducted a study of ledgers from 165 drug cases that spanned 15 years. The following characteristics were analyzed: Type of drug or drugs; use of slang, codewords, and weight indicators; the use of redenomination of numbers, pricing, and dates; and duplicate entries. The results illustrate the frequency with which these characteristics appear within ledgers. An emphasis is placed on the value of duplication, which is observed when critical information is recorded in multiple places within one or more ledgers.

KEYWORDS: Drug Ledgers, Record Analysis, Code, Duplication, Slang.

Introduction

According to statistics recently published on the Federal Bureau of Prisons website, 82,109 federal inmates were convicted as a result of drug offenses - 46.4% of all federal inmates [1]. The next largest criminal offense - weapons, explosives, and arson - accounted for only 29,834 inmates in prison - just over one third of the number of inmates incarcerated for drug-related offenses. The investigations and cases corresponding to drug-related crimes in the U.S. are handled by multiple levels of law enforcement, including local, state, and federal agencies. A major element of a number of these investigations is the analysis of drug ledgers. In an attempt to conceal the true nature of their illicit activities and/or for the sake of brevity, the authors of these ledgers often record data in (apparently) incomplete and/or cryptic manners. Careful review and interpretation of the ledgers, however, can reveal information about the business' inventory and distribution, the size and scope of the operation, the number and roles of participants, how long the business has operated, when transactions occurred, which drug or drugs were distributed, and cash flow and profit calculations [2]. Such information is extremely valuable in prosecuting and sentencing the individuals involved in the operation.

The Cryptanalysis and Racketeering Records Unit (CRRU) of the Federal Bureau of Investigation (FBI) Laboratory has a team of forensic examiners trained to analyze and decrypt drug ledgers. The CRRU analyzed ledgers from 165 cases spanning 15 years to determine their commonalities and differences. [In this study, a case refers to all ledgers from a single investigation.] The examined cases were geographically diverse, covering 27 U.S. states, Washington D.C., Puerto

Rico, and the U.S. Virgin Islands. The size and scope of the businesses varied significantly. One of the smaller operations documented less than 40 grams of heroin being sold predominantly at $10 per 0.1 gram to approximately 24 accounts, for a total of $3,705. In contrast, one of the larger operations documented a minimum of 272 kilograms of heroin priced between $45,000 and $54,000 each, for a minimum total value of $12,727,000. The latter operation also distributed 325 kilograms of cocaine, priced between $22,500 and $27,000 each, for a minimum total value of $8,160,300. The collective results highlight multiple characteristics within drug ledgers that have the potential to aid law enforcement agencies.

Experimental

The 165 cases in this study were worked from 2000 to 2015. Other cases from this time frame lacked sufficient data in one or more areas in question, and therefore were not included. A database was created to record and organize the data and characteristics from each selected case, including: The presence of one or more drugs; the inclusion of slang, abbreviations, and codewords; the presence of redenomination of numbers, pricing, and dates; and duplication (each of these terms is defined and described more fully below).

Results and Discussion

Table 1 illustrates the frequency with which each of the primary characteristics was identified in ledgers with respect to the different types of drugs involved.

Drug Type
The drug(s) represented in each ledger were as follows: Cocaine 37.0% (61 cases), heroin 7.3% (12), marijuana 37.6% (62), methamphetamine 12.1% (20), and unidentified drugs 40.6% (67). Even when the records clearly documented the operations of an illicit drug business, however, in some cases the identity of one or more of the drugs was not definitively clear. This was due

Table 1. Overall Results of the Study.

Drug	A	B	C	D	E	F	G
Cocaine	61	24	44	29	61	49	50
Heroin	12	6	9	7	12	8	9
Marijuana	62	28	55	25	59	51	58
Methamphetamine	20	12	18	9	20	17	15
Unidentified	67	19	53	26	61	47	52

A - Number of Cases
B - Cases Involving Multiple Drugs
C - Slang, Abbreviations, and/or Codewords Identified
D - Redenomination of Numbers Identified
E - Pricing Identified
F - Dates Identified
G - Duplication Identified

either to the drug's price not being present, or the price being consistent with the known prices of more than one drug. For example, a price of $1,000 per unit could be consistent with either pounds of marijuana or ounces of cocaine, at different time periods and/or locations. In such cases, the examiner would need to further examine the ledger to conclusively identify (if possible) which drug was actually being represented. It was determined that at least 24% of the cases in this study dealt with multi-drug businesses - which explains why the preceding summation of case numbers exceeds 165 and the percentages totaled more than 100%. For this reason, it is important that the determination of which drug or drugs is represented is made using the totality of the information in the ledgers, including elements such as pricing and slang.

Slang, Abbreviations, and Codewords
Identifying slang within ledgers usually provides useful clues in determining which drug is represented. The authors often use slang, abbreviations, and/or codewords when referring to drugs, unit quantities, and/or weights. The terminology typically varies based on the organization, geographic location, and time of occurrence, but still can be useful for identifying the drug(s). Figure 1 depicts a section of a drug ledger that refers to methamphetamine as "ventana" (Spanish for "window") and cocaine as "nieve" (Spanish for "snow"), which are common slang terms for those drugs [3]. In some cases, slang and abbreviations are quite likely used simply for the purpose of brevity. In these instances, the terms are understood in context. In other cases, however, codewords are specifically used as a means to disguise the true
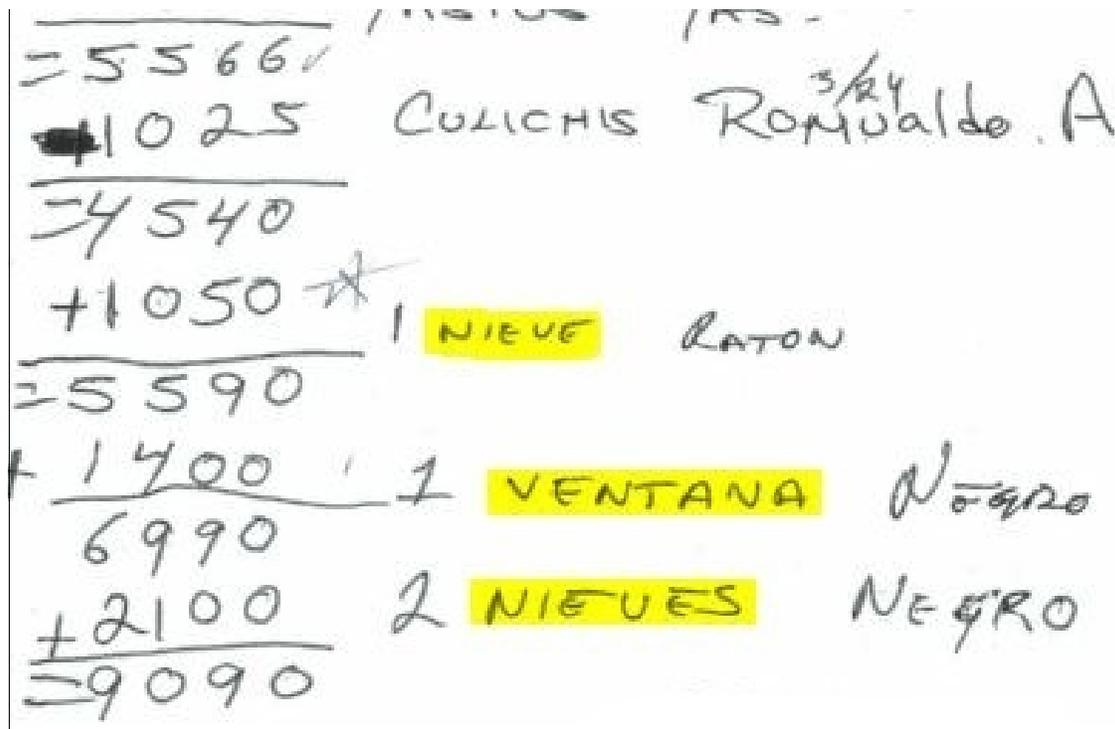

Figure 1 - Example of the Use of Slang in a Ledger.

nature of the records. This can make the writing cryptic, as it is intended (by design) to be fully understood only by the author or a small group within the operation [4,5]. However, one man's slang can be another man's codeword - and vice-versa. Over time, words that were once considered to be codewords may become common slang - and (again) vice-versa. For this reason, there are many cases where it cannot be determined from the ledger(s) if the author intended to make their writing cryptic, or if their verbiage was used for brevity, or if what was once intended to be cryptic became familiar simply due to long-term usage. In the present study, 77.0% of the cases were found to include slang, abbreviations, and/or codewords.

Weight Indicators
Weight indicators are the units in which a drug is measured, such as ounces (oz), pounds (lb), grams (g), and kilograms (kg). They are often referred to using slang terms such as "quarters", "grandes", "pieces", "cuadros", etc. These weight indicators can also be useful for identifying the drug in question. For example, if an examiner discovers the word "smack" in a ledger (historically used as a codeword for heroin), finding the notation "g" or "grams" - the most common weight indicator noted in the

heroin cases in this study - helps to strengthen the conclusion that the ledger is a record of a heroin business. Knowledge of such correlations can help an examiner to recognize which drug(s) are represented in the ledger(s).

Redenomination of Numbers
Another measure used to disguise the information in ledgers is redenomination of numbers. This occurs when the author, again as a means for making the writing cryptic or for brevity, either moves the decimal point within a number or drops the zeroes off the end of a figure. In most instances, redenomination of numbers was utilized when recording unit prices. For example, if an operation is selling kilograms of cocaine for $27,000 each, the author writes $27 or 27 as the price per unit. This practice adds to the complexity of interpreting the payments and units. Redenomination of numbers was found in 41.2% of the cases in this study. Figure 2 provides an example, where it is clear that three zeroes are omitted from each number since the phrase "1 Thousand blance" [balance] is written at the end. An effective technique to confirm redenomination of numbers is to verify the math on other documents where the author wrote out the same calculations in their entirety.
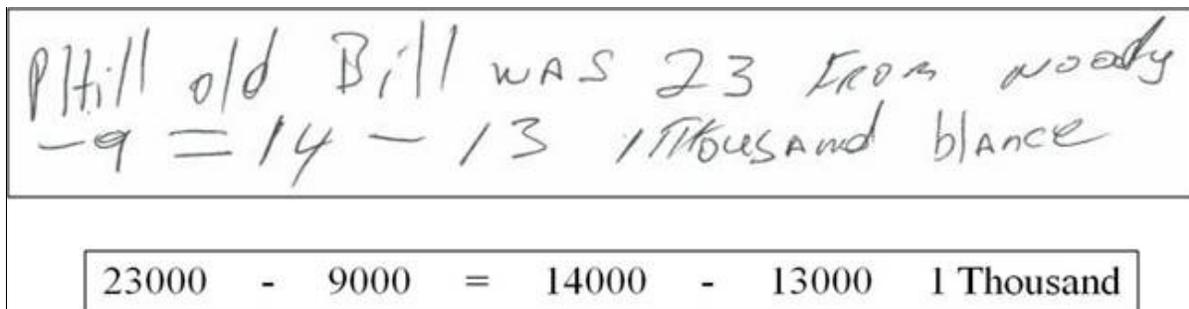

Figure 2 - An Example of Redenomination of Numbers.

Pricing

Inclusion of pricing is observed in 94.6% of the drug ledgers in this study. Examiners can make more informed decisions about which drug or drugs are represented by knowing the drug prices in the area where the seizure was made. These prices can then be compared to the numbers found in the ledgers. In this study, in the 76.9% of the times that an examiner identified pricing, the specific drug or drugs present was also conclusively identified. Additionally, since the price of a drug is often date dependent, finding both the dates of distribution (or acquisition) and the prices per unit can be useful information. For example, Figure 3 was identified as a marijuana bale list. This shows 10 bales with a gross weight of 199 pounds and 70 ounces. The weight of the wrapping is listed to the right of each bale, which actually totals 76 ounces, not 74 (the author of the list made a math error). The incorrectly calculated wrapping weight of 74 ounces was subtracted from the gross weight producing a total of 198 pounds and 12 ounces. The record also contains a total amount of $136,143.75, yielding a price of $685 per pound, which was consistent with marijuana prices for the date/location of the seizure. The pricing information in combination with the subtraction of the wrapping weight (which is only done with marijuana records), along with the format of the list, allows the examiner to testify that this is a marijuana bale list.
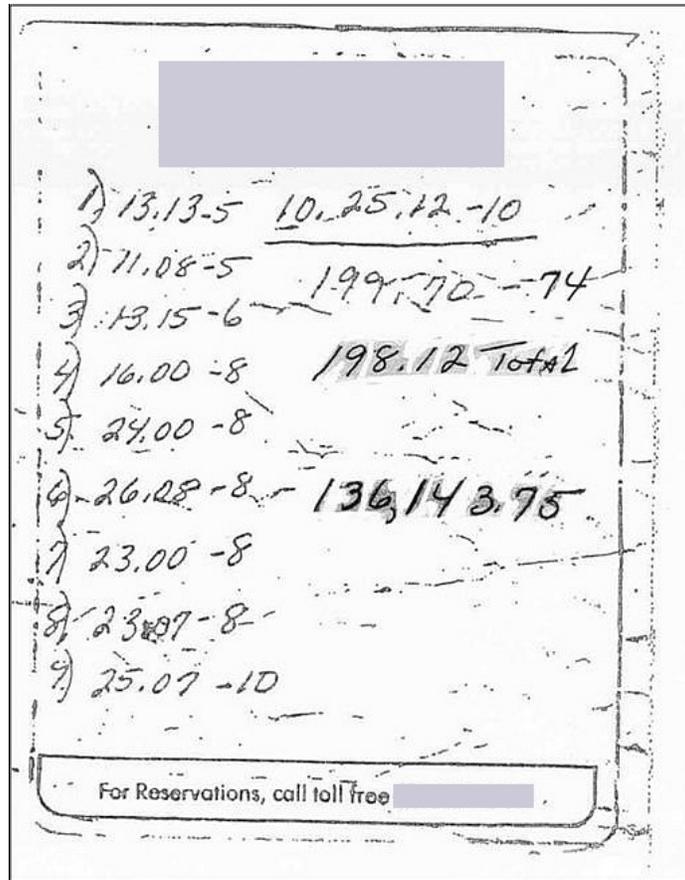

Figure 3 - A Marijuana Bale List.

Dates

Dates also aid in sorting and totaling amounts of money and drugs. Dates can appear in a variety of formats (e.g., omitting month, day, and/or year), and in this study were present in 74.6% of the records. Recording the dates enables the author to document the business' activity more accurately. Successfully identifying dates in a ledger is critical in determining when actual transactions occurred. They are also critical for determining if calculations and transactions were duplicated across different pages, ledgers, or seizure locations.

Duplication

When the same transactions or unit quantities are recorded in two or more locations within drug ledgers, duplication is said to be present.

This occurs as a result of multiple people within the business maintaining their own records, or as a result of a single author repeating notes within multiple ledgers. Figure 4 depicts an example of evidence from two different seizure locations that document an identical transaction of pounds of marijuana. Duplication was noted in 80% of the ledgers in this study. Figure 5 (next page) shows the number of records containing duplication with respect to each specific drug. Duplication in marijuana ledgers stands out at 93.6%, while the other drug records varied between 75 and 82%. As mentioned previously, many cases contained records of a multi-drug operation, which explains why the sum of the "total cases" portion of Figure 5 is greater than 165.
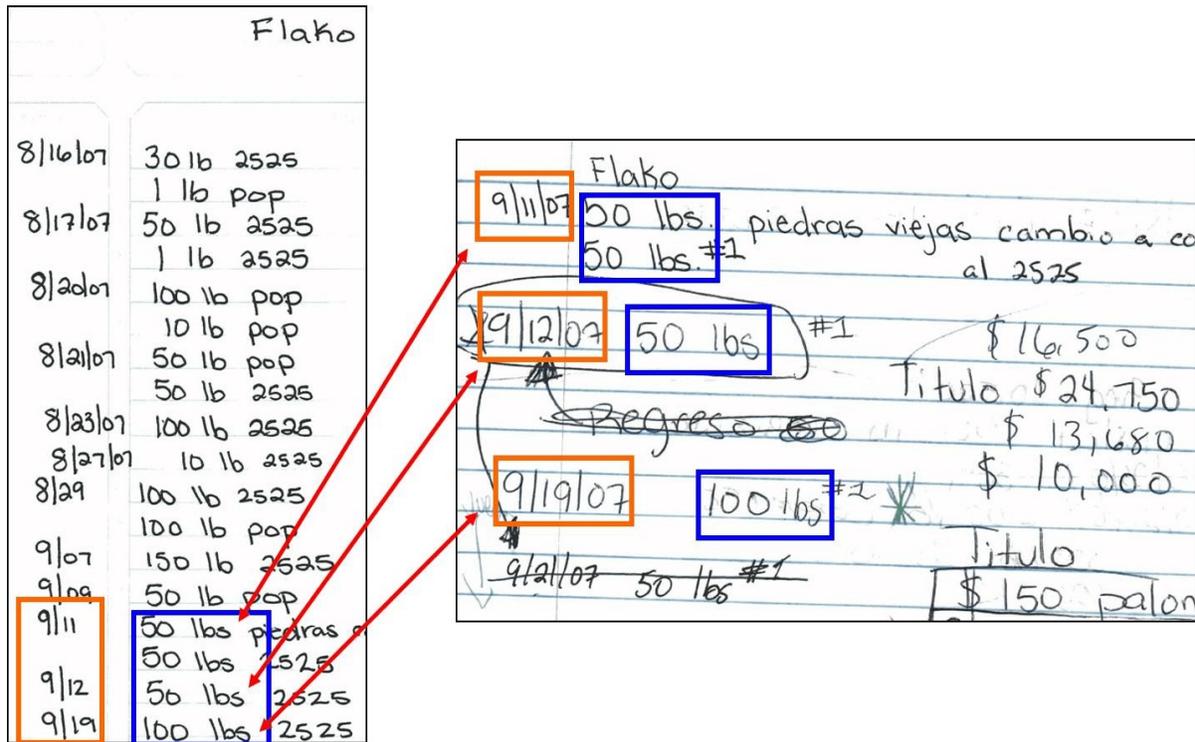

Figure 4 - An Example of Duplication.
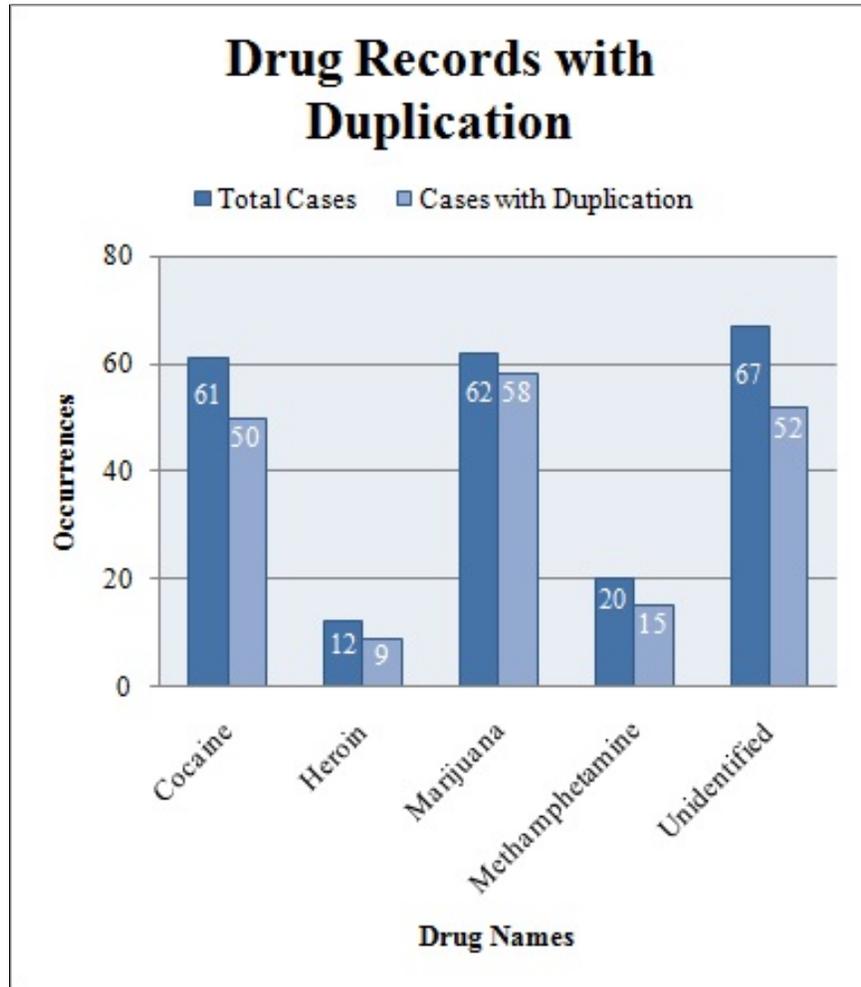
Drug Records with Duplication

Figure 5

Conservative Presumption

When sifting through the often massive quantities of data in drug ledgers, tallying every pricing figure as a new payment, or summing every unit of drugs as a unique quantity, can lead to potentially inflated (and therefore incorrect) conclusions. To avoid double or triple counting when totaling monies or drugs, CRRU examiners utilize a practice called conservative presumption, which involves comparing entries and calculations against one another in order to ensure that each transaction or unit is only counted once. If an examiner determines or even suspects that a set of calculations are duplicative, the numbers are only counted once in the report. While this may understate the totals, this more conservative approach ensures that the results are not exaggerated [4,5]. Conducting examinations without this caution introduces the possibility of inflation of unit totals, thus risking the inclusion of erroneous information in reports and testimony. Identification and discounting even minor duplication is important, as sentencing is sometimes based not on the amount of the drug seizure, but rather on the quantities documented in the ledgers.

Conclusions

This study highlights the typical characteristics found within drug ledgers. These characteristics can be used by law enforcement to conduct analyses of drug ledgers. A more complete understanding of an illicit drug trafficking operation can be elucidated through meticulous review of its ledgers. Identification of specific characteristics, such as slang, abbreviations, and codewords; the presence of redenomination of numbers, pricing, and dates; and the recognition of duplicate entries, are crucial in producing a wholly accurate report.

Disclaimers

This is publication 16-08 of the Laboratory Division of the FBI. The views expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the FBI or the U.S. Government. This work was prepared as part of their official duties. Title 17 U.S.C. 105 provides that "copyright protection under this title is not available for any work of the United States Government." Title 17 U.S.C. 101 defines a United States Government work as a work prepared by an employee of the United States Government as a part of that person's official duties.

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