Fining the Hand That Feeds You: Situational and Violation-Specific Factors Influencing New York City Street Vendor Default in Payment

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Abstract

A large portion of levied street-vending fines in New York City (NYC) historically have gone unpaid. In 2009 alone, the NYC Independent Budget Office estimated street-vending fine enforcement cost more than $7 million (Turetsky, Vega, and O'Brien, 2010). Rather than generating revenue from the associated $15 million in written fines, approximately 93 percent of these potential returns went uncollected. While legislative victories in 2013 for street vendors resulted in lower fine levels for some violations, no further policy changes have occurred.

Given the high public cost associated with street-vending fine enforcement, a better understanding of the violation-specific and situational factors that influence default in payment is needed. This article represents a step in that direction from the enforcement perspective. We define violation-specific factors to include ticket attributes, such as whether the cited statute is "crystal clear" or "muddy" in terms of its interpretation. Situational factors include attributes such as the borough location of the proposed transgression.

Using data from more than 25,000 2010 NYC vending citations, we estimate the influence of several factors on the probability of citation nonpayment via a binary logit model and subsequent odds ratios. Our results suggest that more crystal-clear violation statutes and lower fine amounts could help manage public enforcement costs. We conclude that enforcement agencies should take into account both situational and violation-specific factors when ticketing street vendors as a means to both combat the public cost of vending regulation enforcement and improve current policy.

Introduction

Street vending is a phenomenon that has become globally prevalent (Bromley, 2000). In the United States, street merchants have long been an essential part of the economic structure of cities themselves. Vending has been used to enhance food security, alleviate unemployment, and even integrate new immigrants into social and economic life. At the same time, local municipalities have paralleled these trends by regulating vending to maintain order and traffic flow and to reduce potential competition with brick-and-mortar businesses.

Street vending in New York City (NYC), in particular, has a long history and continues to remain synonymous with the city itself. Historical records from as far back as the 17th century highlight just how intertwined street vending was with daily city life (Bluestone, 1991). Throughout the 19th century, street vending was a way for many immigrant residents to earn a living; the goods they purveyed provided lower-income residents with a source from which to purchase household necessities (Taylor et al., 2000). Street merchants were then widespread in NYC from the late 1800s until the mid-1930s, when city improvements for the upcoming 1939 New York World's Fair began to restrict their street presence.

The current framework of street vending in NYC continues to be restrictive: since the early 1980s, the city has limited the number of vending permits issued to 3,100 2-year permits, 1,000 seasonal permits, and 1,000 green (produce) cart permits (City of New York, 2015). These numbers have remained unchanged for more than 30 years, with the exception of green cart permits, which were added in 2008 (Leggat et al., 2012). This cap on vending permits has resulted in a "black market" for leased permits in NYC. Leasing a permit from another holder, which is illegal, can cost a potential vendor upwards of $20,000, while those who are selected to apply for a new permit legally via a random lottery system (maintained by the city) pay only $200 (Marritz, 2015). Once issued a permit, license holders may renew their permit indefinitely, without having to prove that they continue to operate. Coupled with the difficulty in obtaining a proper vending permit is the complexity and irregularity of street-vending rules and regulations. No single city agency currently is responsible for overseeing street-vending activities. Sluszka and Basinski (2006) noted that such a "multiagency approach" has resulted in a set of vending regulations that are complex, unclear, and, in some cases, contradictory for both vendors and enforcement officers.

Street vending perhaps can be considered one of the most visible examples of irregularly enforced activity in the United States today. While some violations are "crystal clear," others are often viewed as murky, ambiguous, and "muddy." Every rule of law may be characterized as either crystal clear or not. A rule that one "may not vend within 8 feet of a bus stop" is crystal clear. Disagreements over its application are likely to be rare and are quickly resolved. By contrast, a rule that a street vendor "must keep adequate records of sales" is ambiguous and can be interpreted differently from vendor to vendor. Such a rule encourages disagreement over what constitutes "adequate records," and thus complicates dispute resolution. Such muddy violations also empower law enforcement officials with a substantial amount of discretion (Kettles, 2014).

Given these challenges, it is perhaps not surprising that many issued vending tickets go unpaid. For 2009, the NYC Independent Budget Office reported that street-vending fine enforcement alone

cost the city $7.4 million (Turetsky, Vega, and O'Brien, 2010). Coupled with the cost of enforcement, only a small percentage of fines written in 2009 were actually paid. Out of an estimated $15.8 million in total civil vending penalties for 2009, approximately $14.9 million in written fines went uncollected.

Earlier research on NYC street-vending violations by Davis and Morales (2012) concluded that, as the fine level of the ticket increased, so did the likelihood of nonpayment by the vendor. Davis and Morales examined violations from 2006 through 2010 and recommended that NYC change its policy so that frequently cited violations were associated with less-expensive fine levels. In 2013, the city council passed a series of bills that reduced vending penalties by more than 50 percent, thus overturning the higher penalty structure that was introduced in 2004. While the earlier work of Davis and Morales (2012) suggests that lowering ticket charges would lead to an increase in net revenue for the city, it is probable that other factors besides fine size influence whether a vendor defaults in payment. Such factors may be situational, such as the borough in which the violation occurred, or may be violation-specific, as with the aforementioned fine levels. By identifying possible additional factors, vending enforcement and regulation could be further improved and public cost reduced.

Given the high public costs associated with street vendor fine enforcement, a better understanding of the violation-specific and situational factors that influence default in payment is needed. We define violation-specific factors to include ticket attributes such as whether the cited statute is crystal clear or muddy in terms of its interpretation. Situational factors include attributes such as the borough location of the proposed transgression. It is possible that interactions between and within these two types of factors further influence the likelihood of default in payment; for example, those officers who use their discretion to write a lot of tickets (a violation-specific factor) may make the situation (the borough location) and thus the likelihood of default in payment more complex. The influence of both situational and violation-specific factors has yet to be examined for street vendor ticket payment in NYC. Therefore, the objectives of this research are to (1) identify the violation-specific and situational factors that increase the likelihood of a vendor defaulting in payment and (2) uncover whether interactions within and between these two types of factors influence the probability of payment. We use 2010 violation data containing more than 25,000 NYC written street vendor tickets (of which 54.25 percent were in default) to explore potential factors related to default in payment. We employed a binary logit model to estimate factor influence on imposed fine default in payment, with odds ratios computed from the estimated coefficients.

By identifying those factors that influence default in payment, enforcement agencies and policymakers alike could use such information to better manage the public cost of vending-regulation enforcement. To the knowledge of the authors, this research is the first effort to focus on the enforcement of street-vending regulations from the perspective of nonpayment likelihood and public cost.

The remainder of this article is organized as follows: we present a review of pertinent background information and literature, followed by a discussion of our research methods. Next, we include the estimated model, its subsequent results, and a discussion. We conclude with a summary of pertinent findings, suggestions for street-vending enforcement agencies and policy change, and implications for future research.

Background and Literature Review

In considering street-vending regulation enforcement and fine repayment, we review two high-level issues—vending regulation and officers' citation behavior—that provide context for the analysis.

Vending Regulation

As the population of NYC expanded over the years, immigrant vendors across the city played an important role in employing and provisioning the city's residents. Today, immigrant and minority vendors comprise the majority of streetcart entrepreneurs (Sluszka and Basinski, 2006).

Although these street vendors have filled an important need in the community, some city stakeholders have frowned on their activities and have continually pushed for stiffer penalties, regulation, and enforcement. Enforcement historically focused on unlicensed street vendors; however, in response to "quality of life" regulations introduced in the 1990s, policing tactics expanded enforcement to licensed vendors. Work by Duneier (1999) discusses how enhanced police enforcement of booksellers led to an increase in ticketing for minor infractions and, in some cases, even the confiscation of goods. As Stoller (2002) later mentioned, the resulting fines from this increased enforcement caused some vendors to lose their licenses and ultimately exit the vending business.

Earlier work by Austin (1994) examined the role and police treatment of Black street vendors in society. She argued that for many poor Black vendors, the only way to survive economically was to break the law. Austin also noted that police officers subjectively enforced street-vending regulations, with many of them using personal discretion when writing citations. In a later study focusing specifically on street vending in NYC, Devlin (2011) concluded that regulation enforcement was ambiguous and, at times, statutes were contradictory. In particular, he found that regulation in Manhattan was inconsistent and influenced by property owners and other business stakeholders who used intimidation to discourage vendors from operating.

In 2004, before Devlin's study, the NYC Department of Health and the Department of Consumer Affairs increased the penalties on street-vending violations, some of which were raised from $250 to $1,000 per offense (Turetsky, Vega, and O'Brien, 2010). Two earlier research efforts explored street-vending violation data from NYC and the relationship between fine size and the likelihood of fine payment. The first effort by Schwefel (2011) analyzed violation data from 2009 and 2010 and concluded that, as fine size increased, the likelihood of fine payment decreased. Davis and Morales (2012) extended this research to include violations from 2006 through 2010 and likewise concluded that the most expensive violations are paid with less frequency compared with other fine levels. They proposed that NYC restructure its fine scheme so that frequently written tickets would be associated with a less-expensive fine, thus increasing the likelihood of the vendor paying the ticket. Although the city ultimately reduced the fine levels in 2013, it is probable that other factors beyond fine levels influence vendor default in payment.

Officers' Citation Behavior

The second issue is the subjective behavior associated with giving citations. This issue has been most widely studied in the context of traffic citation issuance, and a large body of research has

examined situational factors influencing traffic tickets. Ingram (2007) looked at traffic citations for a large metropolitan area of the Southwestern United States and concluded that neighborhood characteristics, such as racial demographics, played a role in the issuance of traffic citations. In particular, officers behaved differently depending on the neighborhood in which they were policing traffic, thus influencing the number of citations written.

Earlier studies by Meehan and Ponder (2002) and Petrocelli, Piquero, and Smith (2003) likewise examined the influence of place on the practices of police traffic enforcement and found the place the citation occurred to be a significant factor. Meehan and Ponder found minority drivers were more likely to be racially profiled when the traffic stop occurred in an area with a low minority composition. In areas where the population was mostly White, minority drivers were also more likely to be stopped and monitored by police.

Petrocelli, Piquero, and Smith (2003) similarly concluded that socioeconomic indicators were a factor: Black drivers were more likely to be searched by police because of officers' perceptions of them. In addition, the higher the crime rate of the neighborhood, the greater the number of total traffic stops performed by police officials. A similar study by Engel and Calnon (2004) concluded that minority drivers (particularly Black and Hispanic drivers) were at higher risk of being issued a violation, holding constant the traffic behavior of all races.

Taking a more economic approach, Makowsky and Stratmann (2009) explored how traffic officers issue citations using a utility maximization framework and the concept of opportunity costs. They concluded that officers often make ticket-issuing decisions after first taking into account the likelihood of the recipient contesting the violation. They also consider how the ticketing decision will reflect on their overall work performance. Similar to Ingram (2007), Makowsky and Stratmann (2009) imply that officers might behave differently when faced with similar circumstances, depending on the particular situation. We generalize the work of Makowsky and Stratmann, then, to our current context by exploring situational factors that influence the payment of vendor citations. Such factors would be of importance to city agencies looking to minimize the public costs of vending regulation enforcement.

Methods

To explore the effect of vending regulation and officer citation behavior on unpaid vendor citations, we obtained data on street vendor tickets from the City of New York. We propose an empirical framework to examine the influence of violation-specific and situational factors on the probability of default in payment.

Data Procurement and Variable Coding

Data for all civil street vendor tickets for 2010 were obtained from the City of New York through the use of a Freedom of Information Law request. Violations included in the data set consisted of more than 100,000 vendor tickets returnable to the Environmental Control Board for the 5-year period of 2006 through 2010, which the researchers entered from paper tickets. The entered

data consisted of details for each violation, including the relevant section ordinance, fine amount, borough location, date and time of the offense, and whether the respondent defaulted in payment on the imposed ticket.

To test for significant differences across the 5-year period, we tested several variables for differences in their proportions across years by conducting a series of Tukey-type multiple comparison tests on proportions appropriate for unequal sample sizes (Elliott and Reisch, 2006). This approach enabled us to test all possible pairwise differences simultaneously. We tested the following proportional variables: violations in default, muddy violations issued, health-code violations issued, moderate fines imposed, high fines imposed, violations issued in Manhattan, and violations issued on a street corner location. For each variable, testing the multiple comparisons for differences across time periods failed to yield any comparisons that were significant at the 5-percent level; we found no evidence of differences across time periods for the variables examined. Therefore, we focused on the more recent 2010 data, which contained 25,820 violations with complete ticket information.

Using the available ticket information for 2010, we next created dummy variables for a series of five violation-specific attributes and five situational-factor attributes. It is probable that both types of enforcement factors (beyond fine levels only) influence vendor default in payment. If so, vending enforcement and regulation could be further improved and public cost reduced by taking both types of factor attributes into consideration when revisiting policy recommendations and officer regulation procedures.

Violation-Specific Factors

Violation-specific factors investigated included the clarity of the specific law (crystal clear or muddy), the type of section ordinance (health code or administrative), whether the section cited was a frequently cited ordinance, whether the officer was a frequent ticket issuer, and the fine level for the ticket.

One of our central claims is that some rules found in the sections of the New York City Administrative Code and of the New York City Health Code are either muddy or crystal clear; that is, either ambiguous or not. We executed a coding process to determine whether a particular rule should be deemed crystal clear or muddy. Two members of the research team each independently coded the rules on the basis of whether the rule was clearly defined and later compared codes. Each coder executed the same process, which was to examine each rule for its degree of clarity. For instance, a relatively clear rule requires the vendor to be a certain distance from a driveway or subway, and a relatively muddy rule requires the vendor to permit regular inspections. The former can be physically measured; the latter is not measurable and subject to interpretation. We then enjoined an external legal expert to independently code the rules. We found 94 percent initial agreement across the three coders. For cases in which a discrepancy existed, all coders jointly reexamined the rule in question and, if necessary, deferred to the more experienced opinion of the external legal expert.

Type of section ordinance was included as a factor because vendors probably perceive these two types of ordinances differently. Before becoming a licensed vendor, applicants must complete an 8-hour, 2-day "food protection" course offered by the city. They must also pass a vending unit

inspection by the Department of Health. Vendors then may feel better informed of and educated about health-code violations compared with administrative ordinances, and thus view the importance of these two types of ordinances differently.

Of the 127 different sections cited on vending tickets, 10 accounted for more than 64 percent of all violations issued in 2010. Vendors may be more likely to pay these particular violations if they are commonly understood and less likely to pay if they deem them a nuisance. Likewise, 10 officers accounted for 29 percent of all violations issued in 2010. These 10 officers issued more than 475 tickets each; the average issuance for the remaining officers in the sample was less than one-half this number. As previously mentioned, no single city agency is responsible for street-vending regulation and enforcement. It is unclear why these 10 officers are writing so many vending tickets, but it may be that vendors view their individual and independent vigilance as a nuisance, which reduces the likelihood that a vendor would pay an issued ticket.

Following the earlier work of Davis and Morales (2012), the fine level of the ticket was likewise included here as a potential variable. Because of the city's fine structure, the violation fines issued were only between the ranges of $25 and $100, $200 and $880, and $1,000 and $2,200.

Situational Factors

Situational factors coded included the borough in which the infraction occurred, whether it occurred on a street corner location, the day of the week, the time of day, and the season of the year. Devlin (2011) noted that vending regulation in Manhattan was particularly inconsistent. Of vending violations in 2010, 78 percent were written in the borough of Manhattan, and 62 percent were written on a street corner location. Corner locations may be an area frequently patrolled by officers due to their high visibility. As Makowsky and Stratmann (2009) mentioned, officers may make ticketing decisions based on how it reflects on their work performance. These locational factors may influence the likelihood of default in payment if vendors think tickets issued in these areas are particularly unfair.

Additional situational factors may include day-of-the-week effects. Bryson and Forth (2007) found day-of-the-week effects for office workers; office workers were more likely to be productive midweek. It may be that such effects occur for police officers as well. Therefore, variables for a midweek day and a weekend day were coded.

Tickets also appeared to be somewhat clustered around the early afternoon, with more than 35 percent of tickets issued during the lunchtime hours of 12:01 to 3:00 p.m. During this timeframe, officers would likely be highly visible to vending patrons who are on their lunch break and frequenting vending units. Makowsky and Stratmann (2009) suggested that officers may wish to be seen by large volumes of patrons when issuing citations if they think this action reflects well on their job performance. Because the city issues seasonal vending permits in addition to annual permits, it may be that seasonality influences ticket payment, particularly if ticket payment is linked to the profitability of the vendor's enterprise at the time of issuance.

Descriptive statistics for the 2010 data are presented in exhibit 1. Approximately 64 percent of tickets issued were for the violation of 1 of a set of 10 different ordinances.

Exhibit 1

Descriptive Statistics, 2010 NYC Street Vendor Violations

Ticket Attribute	Percent of Sample
Violation-specific attributes	
Law characterization	
Muddy violation	11.78
Statute type	
Health code violation	22.93
Commonly written section violation	
Top 10 ticket-written section	64.03
Prolific ticket-writing officer	
Top 10 ticket-writing officers[a]	29.03
Level of fine	
Moderate	21.26
High	39.77
Situational attributes	
NYC Borough	
Manhattan Borough[a]	77.99
Street corner location[a]	62.19
Day of the week	
Wednesday	18.74
Saturday	11.84
Time of the day	
Early afternoon	35.36
Season of the year	
Winter	21.85
N	26,028

NYC = New York City.

[a] This variable included some missing values. It included 25,931 observations for prolific ticket-writing officers, 26,026 observations for Manhattan Borough, and 25,916 observations for street corner location.

Empirical Framework

We propose that both situational and violation-specific factors influence the probability of default in payment for street vendors. The dependent variable of interest was evenly split in the data, with 54.25 percent of tickets defaulted. Therefore, to estimate the influence that factor attributes and attribute interactions have on the probability of ticket default in payment, we employed a binary logit model. Binary logit models are used in a variety of fields when the dependent variable of interest is binary in response, including transportation research (White and Washington, 2001), urban land use and policy (Braimoh and Onishi, 2007; Krizek and Johnson, 2006), and mechanical systems (Phillips et al., 2015).

From Horowitz and Savin (2001) and Hosmer, Lemeshow, and Sturdivant (2013), we specify the binary logit model as—

$$P(D = 1 \mid \mathbf{X}, \mathbf{Q}) = F(\beta_0 + \sum \beta_k \mathbf{X} + \sum \beta_k \mathbf{Q}), \quad (1)$$

where F is the cumulative logistic distribution function, k represents factor attributes $1 \ldots n$, and $D = 1$ if the vendor defaulted in payment of the violation. The vector $\mathbf{X}$ consists of dummy variables for violation-specific and situational factor attributes, while vector $\mathbf{Q}$ consists of dummy interaction variables for factor attributes. Descriptions of the model variables are presented in exhibit 2.

The logistic distribution function is defined as—

$$F(v) = \frac{1}{(1 + e^{-v})} \text{ with } v = \beta_0 + \sum \beta_k \mathbf{X} + \sum \beta_k \mathbf{Q}. \quad (2)$$

Equation (1) is estimated using maximum likelihood in Stata 12.1.

We compared the model specification against a similarly specified probit to check for misspecification. Following Horowitz and Savin (2001), we recall that both logistic distributions, and the cumulative normal distribution of the probit model, are symmetrical around zero and have similar distribution shapes. The logistic however has fatter tails. Coefficient estimates between the logit and probit models were similar, and parameter significance was the same. Postestimation, Akaike's and Schwarz's Bayesian information criteria (AIC and BIC) were examined between the two models, which resulted in conflicting conclusions: the AIC was slightly lower for the logit, whereas the BIC was slightly lower for the probit. The similarity of the reported criterion indicates that either model would be an appropriate fit for the data.

Exhibit 2

Description of Model Variables and Expected Coefficient Signs

Variable	Description	Expected Coefficient Sign
Defaulted	1 if vendor defaulted on payment, 0 otherwise	NA
MuddyVio	1 if for an ambiguous statute, 0 otherwise	+
HealthCodeVio	1 if for a health code violation, 0 otherwise	–
TopSection	1 if for one of the top 10 most commonly cited sections for 2010, 0 otherwise	–
TopOfficer	1 if by one of the top 10 officers in terms of ticket abundance for 2010, 0 otherwise	–
ModerateFine	1 if fine was between $200–$880, 0 otherwise	+
HighFine	1 if fine was between $1,000–$2,200, 0 otherwise	+
Manhattan	1 if in Manhattan, 0 otherwise	+
StreetCorner	1 if on a street corner, 0 otherwise	–
Wednesday	1 if on a Wednesday, 0 otherwise	–
Saturday	1 if on a Saturday, 0 otherwise	–
EarlyAfternoon	1 if between 12:01–3:00 p.m., 0 otherwise	+
Winter	1 if between December 21–March 19, 0 otherwise	+
*HealthCodeVio*MuddyVio*	Interaction between *HealthCodeVio* and *MuddyVio*	–
*HealthCodeVio*TopSection*	Interaction between *HealthCodeVio* and *TopSection*	–
*HealthCodeVio*TopOfficer*	Interaction between *HealthCodeVio* and *TopOfficer*	+
*TopSection*TopOfficer*	Interaction between *TopSection* and *TopOfficer*	+
*Manhattan*HealthCodeVio*	Interaction between *Manhattan* and *HealthCodeVio*	–
*Manhattan*TopSection*	Interaction between *Manhattan* and *TopSection*	+
*Manhattan*TopOfficer*	Interaction between *Manhattan* and *TopOfficer*	+
*Manhattan*HighFine*	Interaction between *Manhattan* and *HighFine*	+
*StreetCorner*TopSection*	Interaction between *StreetCorner* and *TopSection*	+
*StreetCorner*TopOfficer*	Interaction between *StreetCorner* and *TopOfficer*	+
*Saturday*EarlyAfternoon*	Interaction between *Saturday* and *EarlyAfternoon*	+
*Winter*Wednesday*	Interaction between *Winter* and *Wednesday*	+

NA = not applicable.

Due to the usefulness in interpreting the odds ratios of the logit, we chose the binary logit in equation (1) as our final model. To correct for heteroskedasticity in the error structure, we employed robust standard errors. Due to the large number of observations in the data set, we also conducted a sensitivity analysis to estimate the predictive power of the final model. The results of this analysis indicated good predictive power, with more than 77 percent of violations correctly classified. Finally, we computed odds ratios, the exponential function of the regression coefficient, from the reported logit estimates. Because logit estimates range from negative to positive infinity, it is helpful to interpret the model results using odds ratios.

Hypotheses

We made hypotheses on the model variables a priori. We expected that both violation-specific and situational factors would have a significant effect on the probability of ticket default in payment. The expected parameter sign for each variable is also presented in exhibit 2.

A primary interest of the study was whether violations for ambiguous rules were more likely to go unpaid. Therefore, *MuddyVio* was expected to have a significant positive effect, because it seems likely that vendors may choose to not pay a fine for a statute that they think is ambiguous and subject to the discretion of the issuing officer.

Of secondary interest was whether the type of section ordinance influenced ticket payment. We hypothesized that *HealthCodeVio* would have a significant negative effect, which may indicate that vendors view health-code violations as being more pertinent to their business than administrative violations. We likewise hypothesized that interactions with *HealthCodeVio* would be significant. It is probable that there is a gradient when it comes to default in payment outcomes, particularly between crystal clear and muddy administrative violations and between crystal clear and muddy health-code violations, although the direction of the effect is indeterminate.

Also of secondary interest were the effects of fine level and street corner location. From the earlier conclusions of Davis and Morales (2012), we hypothesized that both *ModerateFine* and *HighFine* would have a significant positive effect on the probability of default in payment compared with citation fines of less than $200. We also hypothesized that the variable *StreetCorner* had a significant negative effect on the probability of default. Vendors who operate on street corner locations are perhaps more visible to law enforcement and also are located in a higher traffic area. It is plausible that such vendors are less likely to default on a violation so they can keep their business operating smoothly.

Results and Discussion

We tested the previously mentioned hypotheses by estimating a binary logit model on the probability of vendor default in payment. Model results and odds ratios are subsequently presented, followed by conclusions and implications for future research.

Binary Logit Model

The results of the binary logit model are presented in exhibit 3. For violation-specific factor attributes, *MuddyVio*, *ModerateFine*, and *HighFine* all had a significant positive effect on the probability

Exhibit 3

Binary Logit Model, Vendor Default in Payment

Variable[a]	Estimated Coefficient	Robust Standard Error	*Pr* > |z|
Constant	– 1.45391	0.09771	< 0.001
MuddyVio	0.60667	0.05102	< 0.001
HealthCodeVio	– 0.02179	0.11123	0.846
TopSection	– 0.17203	0.09382	0.069
TopOfficer	– 0.85321	0.14994	< 0.001
ModerateFine	1.15139	0.04451	< 0.001
HighFine	2.92302	0.08031	< 0.001
Manhattan	0.24941	0.09918	0.012
StreetCorner	– 0.22749	0.05739	< 0.001
Wednesday	– 0.23764	0.04773	< 0.001
Saturday	– 0.29756	0.06508	< 0.001
EarlyAfternoon	0.15493	0.03557	< 0.001
Winter	0.18768	0.04280	< 0.001
HealthCodeVio*MuddyVio	– 0.34788	0.15062	0.021
HealthCodeVio*TopSection	– 0.52196	0.11422	< 0.001
HealthCodeVio*TopOfficer	0.85464	0.12004	< 0.001
TopSection*TopOfficer	0.29249	0.12143	0.016
*Manhattan*HealthCodeVio*	0.20778	0.10676	0.052
Manhattan*TopSection	0.36504	0.09036	< 0.001
Manhattan*TopOfficer	– 0.56246	0.09256	< 0.001
Manhattan*HighFine	0.72479	0.09216	< 0.001
StreetCorner*TopSection	0.31904	0.06841	< 0.001
*StreetCorner*TopOfficer*	0.13531	0.07288	0.063
Saturday*EarlyAfternoon	0.31627	0.10649	0.003
Winter*Wednesday	0.33810	0.09574	< 0.001

[a] *Variables in bold are significant at the 5-percent level or better.*
Note: N = 25,820.

of ticket default in payment, as was expected. Vendors are more likely to pay a citation if the reason for the violation is clearly reflected in the cited statute and if the fine amount is less than $200.

TopSection was found to have a mildly significant negative effect at the 10-percent level only, which may indicate that vendors are somewhat less likely to default in payment (that is, more likely to pay) when a commonly cited section violation is used. The effect of *TopOfficer* was found to be significantly negative, indicating that vendors are less likely to default when a prolific ticket-writing officer issues the citation. Vendors may be more familiar with these commonly cited sections and with the officer and, thus, may be more likely to pay the fine. Vendors may also see the officer who wrote these tickets on a daily basis and pay because they know they will see the officer again, as it makes sense that a top ticket-writing officer would frequent areas with a large volume of street vendors. These top ticket-writing officers may also have other characteristics, such as being more skilled or highly trained (or working harder) at their job, or they may be longer tenured officers with a better relationship with (or be more trusted by) vendors.

The following situational factor attributes had a significant positive effect on the probability of ticket default in payment: *Manhattan*, *EarlyAfternoon*, and *Winter*. The finding for *Manhattan* may be attributed to the large number of street vendors operating in that borough compared with the number in other areas. With more vendors, it may be harder to find those who choose not to pay. It may also be that the culture in Manhattan is such that vending tickets are viewed as a nuisance: the social norm may be to not pay the fine. The inconsistency of regulation in Manhattan noted by Devlin (2011) may also contribute to this higher likelihood of default in payment.

It is important to note that the early afternoon coincides with what is typically lunchtime for many individuals and, thus, perhaps one of the busiest times of the day for vendors. Officers may think early afternoon is a key time to enforce regulations, because many vending units will be operating and well populated. By contrast, vendors may think these efforts are a nuisance and opt for nonpayment as a form of protest. The effect uncovered for the winter season could be due to lower revenue and financial stress on the part of the vendor. With colder temperatures, individuals spend less time outdoors, and consumers may be less likely to purchase items in the winter compared with other seasons. The holiday season is also an expensive and busy time of year, and vendors may be less able to pay violations or less willing to spend time on paying the fine during this period.

We find it interesting that situational factor attributes *StreetCorner*, *Wednesday*, and *Saturday* all had a significant negative effect on the probability of violation default in payment. Officers may choose to cluster at busy street corner locations with both high traffic and prominent public visibility, thus leading to more fines issued at these locations. As theorized previously, vendors may be loath to default on these violations, because such an action might jeopardize their access to these high-traffic locations.

The day-of-the-week effect may be attributed to an increase in officers' citation writing on these days. A study by Bryson and Forth (2007) on officers' work productivity found evidence of day-of-the-week effects; worker productivity peaked on Tuesdays and was lowest on Fridays. Perhaps officers are more inclined to write violations on midweek days, although why this might occur is unclear. It may be that officers are more prolific at ticket writing midweek. Likewise, they may write more tickets on Saturdays when many individuals are off from work and have time to frequent vending carts. From a vendor's perspective, more consistent payment of fines levied on Wednesday and Saturday may indicate that these days are of particular importance in terms of business volume, and that vendors do not want to draw attention to themselves and potentially lose access to otherwise profitable business locales.

All the interaction terms between factor attributes were found to have a significant positive effect on the probability of default in payment, with the exception of the interactions *HealthCodeVio*MuddyVio*, *HealthCodeVio*TopSection*, and *Manhattan*TopOfficer*, which had a significant negative effect. Note that the positive effects of *Manhattan*HealthCodeVio* and *StreetCorner*TopOfficer* were only mildly significant at the 10-percent level.

The results for *HealthCodeVio*MuddyVio* in particular indicate evidence of a gradient in default in payment outcomes: while clear violations are overall more likely to be paid than muddy tickets, muddy health-code violations in particular are more likely to be paid than clear administrative tickets. Perhaps vendors are more likely to pay muddy health-code violations because they

consider such tickets to be clear due to the health-code affiliation. It could also be that food vendors will sacrifice larger profit margins if they quit vending. It may be that even if vendors view muddy health-code tickets as ambiguous, they may worry that consumers will see the rule as clear (although difficult to enforce) and thus are more likely to pay the violation as a way to protect their businesses.

The results for the main effect of *HealthCodeVio* are particularly interesting. Although the variable is not significantly associated with repayment on its own—indicating that whether a violation is administrative versus a health-code statute alone does not appear to influence the probability that a vendor will default in paying his or her ticket—it does appear to have a significant effect when interacted with other factor attributes.

*HealthCodeVio*TopOfficer* had a significant positive effect on the probability of default in payment. It may be that vendors who commit health-code violations are more likely to stop vending because of the expense of equipment to ensure compliance. Health-code violators may also be mindful of top officers, those being the officers who use their discretion to write the most tickets and, thus, would likely fine them again if they continued to operate. These vendors may feel persecuted by such officers and could become unwilling to go on in business. Without more information regarding whether health-code violators continue to operate after being issued a ticket, however, it is difficult to draw firm conclusions.

Odds Ratios

Exhibit 4 presents the computed odds ratios for each model variable and interaction term, using 95 percent confidence intervals. Fines written for muddy violations overall were found to be 83.4 percent more likely to default in payment than fines written for crystal-clear violations. As previously mentioned, however, we uncover a clear gradient in terms of ticket nonpayment: crystal-clear versus muddy violations are more likely to be paid overall, but muddy health-code tickets are more likely to be paid than crystal-clear administrative tickets.

As expected, moderately priced fines (ranging from $200 to $880) and higher-priced fines (ranging from $1,000 to $2,200) both had greater odds of default compared with the odds of default for low-priced fines (ranging from $25 to $100). Moderate fines were 3.16 times more likely to default compared with the odds of default for low fines. This finding is consistent with earlier efforts focused on reducing violation fine levels. Estimates for higher fines were even greater, with higher fines 18.6 times more likely to default compared with citations involving low fines for all boroughs, excluding Manhattan. High fines issued to Manhattan vendors were 2.06 times more likely to default compared with the odds of default for low fines in other boroughs.

The odds of a street vendor in NYC defaulting on his or her imposed fine was found to be higher (28.3 percent) for Manhattan-issued tickets compared with the odds of defaulting in payment on tickets from the remaining four boroughs combined, excluding higher-priced fine tickets, health-code violations, and top section tickets.

The time of day a violation was written was also found to be significant; vendors issued fines in the early afternoon (between 12:01 p.m. and 3:00 p.m.) were 16.8 percent more likely to default

Exhibit 4

Odds Ratios, Binary Logit Model

Variable[a]	Odds Ratio	Robust Standard Error	*Pr* > |z|
Constant	0.23365	0.02354	< 0.001
MuddyVio	1.83431	0.06931	< 0.001
HealthCodeVio	0.97845	0.10366	0.846
TopSection	0.84195	0.07665	0.069
TopOfficer	0.42605	0.06356	< 0.001
ModerateFine	3.16258	0.14088	< 0.001
HighFine	18.59729	1.49695	< 0.001
Manhattan	1.28327	0.12569	0.012
StreetCorner	0.79653	0.04575	< 0.001
Wednesday	0.78848	0.03760	< 0.001
Saturday	0.74263	0.04836	< 0.001
EarlyAfternoon	1.16757	0.04149	< 0.001
Winter	1.20644	0.05149	< 0.001
HealthCodeVio*MuddyVio	0.70618	0.10637	0.021
HealthCodeVio*TopSection	0.59336	0.06978	< 0.001
HealthCodeVio*TopOfficer	2.35053	0.28204	< 0.001
TopSection*TopOfficer	1.33976	0.16315	0.016
*Manhattan*HealthCodeVio*	1.23096	0.13195	0.052
Manhattan*TopSection	1.44058	0.13178	< 0.001
Manhattan*TopOfficer	0.56980	0.05280	< 0.001
Manhattan*HighFine	2.06432	0.18998	< 0.001
StreetCorner*TopSection	1.37581	0.09403	< 0.001
*StreetCorner*TopOfficer*	1.14489	0.08353	0.063
Saturday*EarlyAfternoon	1.37199	0.14643	0.003
Winter*Wednesday	1.40229	0.13424	< 0.001

[a] *Variables in bold are significant at the 5-percent level or better.*

compared with the likelihood of defaulting on tickets issues at other times, for all days of the week excluding Saturdays. For tickets written on Saturdays in the early afternoon, vendors were 37.2 percent more likely to default in payment. It could be that early afternoon is the busiest time of the day for many vendors, because consumers may be shopping during lunchtime. During this busy time, vendors may misplace tickets or even forget issued violations (especially if tickets are frequently issued) in their efforts to keep up with increased customer demand.

We find it interesting that a seasonal component was uncovered: fines written during the winter (December 21 to March 19) were 20.6 percent more likely to default in payment compared with fines written during other times of the year, excluding Wednesdays. For Wednesdays, tickets written during the winter season were 40.2 percent more likely to default in payment.

Health-code violations written by top ticket-writing officers were 2.35 percent more likely to default than administrative violations written by other officers. It may be that top ticket-writing officers are more likely to ticket clear health-code violations by vendors, who then end up going out of business or changing what they sell.

Conclusions and Implications for Future Research

The results presented in the previous section suggest that both situational and violation-specific factor attributes influence the probability that a vendor will default in payment of a ticket. As expected, the odds of default in payment for more expensive fines compared with odds for lower fines were greater. Results presented here suggest more crystal-clear violation statutes, lower fine amounts, and attention to the time of day and even seasonality can all influence fine payment, the management of public enforcement costs, and thus the fining of "the hand that feeds you."

The implications of this research suggest that street-vending policy needs to take into account the interactions between both factor types when managing public costs of vending-regulation enforcement. Our findings also propose a few considerations of interest to city police departments, city planners, and policymakers interested in increasing compliance, and thus city revenues. From a policy perspective, the findings uncovered here suggest policymakers should aim to rewrite ambiguous vending statutes so that they are crystal clear in interpretation. First, stakeholders who are in a position to rewrite ambiguous statutes should consider doing so. Officers who are in charge of levying street-vending tickets should likewise be mindful of whether the cited violation is crystal clear to the vendor or open to interpretation. That vendors are more likely overall to pay fines for crystal-clear statute violations is information that could help increase the payment of future imposed fines, and it is important information for city planners as they work to manage public costs.

For vendors, it would be beneficial if all violations were crystal clear. Street vendors might be better able to avoid future tickets if they clearly understood how additional violations could be avoided, thus increasing their business revenue. Crystal-clear tickets could work as a learning tool for vendors working to be in compliance and wishing to reduce future fines. Muddy violations, however, are open to officers' interpretation, and vendors may feel unsure about how to avoid such tickets in the future. If a goal of issuing tickets is to prevent future occurrences, statutes must be written in a way to effectively educate the vendor on why they were in violation in the first place (Kettles, 2014; Morales and Kettles, 2009).

More detailed analyses of the practices of the top ticket-writing cops could also yield important information for street-vending stakeholders. Our findings confirm those by earlier researchers that street vendors are more likely to pay fines that range from $25 to $100 compared with greater fine levels. Although a cost-benefit analysis of lower fine amounts is beyond the capabilities of this article, future research of such an analysis would be vital to cities looking to increase their violation revenue.

Expanding these initial questions is of importance. Our findings regarding compliance were from the perspective of the officer issuing the citation and with respect to situational factors. Such factors are a proxy for the issuing officer's perception of the situation and the policing policy that officer is enacting. Thus, it is one side of the compliance problem and process. The social process of compliance must also include the perspective of the vendor responding to being ticketed and also the bureaucratic and organizational intricacies of this larger social process of compliance. Our research agenda must comprehend other components of this larger process and we offer a few thoughts in this regard.

Further, and importantly, to produce some comparison of the factors we analyzed, we are seeking new data from after the policy change. Note that the research presented here uses citation data from 2010; these data are from tickets that were issued before the 2013 vending policy change that lowered fine levels. Using the 2010 data enabled us to follow up on the earlier efforts and findings of Davis and Morales (2012). The 2010 citation data were also the most readily accessible citation data available, given the arduous task of obtaining and entering the fine information from paper tickets provided by the city.

Future efforts would use citation data from after the 2013 policy change, to compare whether results are similar to our current findings. It may be that an anchor effect occurs after the policy change in that, after fines are reduced, vendors are more likely to now default on moderately priced tickets than they were before the policy change. Additional research efforts could compare the likelihood of payment default before and after the policy change by building off of the pre-policy change findings presented here.

We examined and coded vending regulations in the data set from the perspective of whether the rule itself was legally ambiguous. Additional coding of vending statutes could consider how the vendors themselves would view these regulations and whether variation in interpretation occurs based on vendor characteristics. For example, vendors may consider certain violations to be justifiable and others simply a nuisance, regardless of whether the regulation is clearly interpreted. Further, characteristics such as the education level of the vendor may represent additional situational factors that may influence both regulation interpretation and the likelihood of default in payment. Such questions could be answered via the collection of additional primary data examining how vendor-level demographics influence the interpretation of existing statute wording and how differences in interpretation influence the likelihood of violation default in payment. Coupling such primary data with existing secondary data on vending violations after the policy change could yield further insights for managing public costs of regulation.

In addition to analyzing such organizational and situational factors, we suggest further analysis regarding the aforementioned perspective of the vendor, which is not well understood and again provides a number of important questions for future research. Possibly the first of these is whether vendors would agree with the coding scheme we used here. Developing a clearer understanding of how vendors perceive the citation, and act on it, is essential to understanding the social process of compliance.

Although the city council reduced vending penalties by 50 percent in 2013, the city needs to take further steps to make the current structure of street-vending violations clear for the city's vendors. Policy statutes are often written from the legal enforcement perspective and, as such, can be challenging to navigate and interpret without adequate training. Revising current street-vending statutes so that regulations are not contradictory across city agencies would be beneficial for vendors and officers alike; such revisions could help reduce the public cost of enforcement by minimizing violations that vendors might think are unclear.

Large cities such as NYC should also be mindful that violations imposed during slower and financially stressed business times of the year may be more susceptible to lack of payment; we found the likelihood of default higher during the winter. The results uncovered here indicate that vendors

who are issued violations in Manhattan are more likely to default in payment than vendors who are issued tickets in other boroughs. Although these results may be attributed to the large number of vendors in Manhattan as a whole, it is still vital information for officers policing street vendors in NYC.

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