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The Role of Collective Efficacy in Defendants' Acceptance of Plea Bargaining: A Perspective on Housing Density

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Abstract

The research analyzed the impact of community's collective efficacy on defendants' likelihood of accepting plea bargaining in Bexar County, Texas. The study used housing density in the community as a proxy of collective efficacy. Logistic regression models were used to examine the correlation between housing density and the likelihood of accepting plea deals. Propensity matching analyses were used to draw further casual relationships for certain groups of defendants. The results show that high housing density is significantly associated with high likelihood of accepting plea deals. However, the relationship disappears when controlling for defendants' demographic characteristics and their community characteristics respectively. Furthermore, Latino/Hispanic male defendants with misdemeanor charges are more likely to accept plea bargaining if they live in communities with high housing density, compared to those who live in communities with low housing density. The limitations and future research directions are also discussed.

Keywords: Community; Plea bargain; Housing density; Collective efficacy; Propensity matching analysis

Introduction

Plea bargaining and its controversy: A plea bargain is an agreement between a prosecutor and defendant in which the defendant agrees to plea guilty in return for some concession, such as less severe charge, and plea discounts, from the prosecutor [1,2] about 90-95 percent of the federal and state court cases are resolved by the plea-bargaining process.

A lot of research examines whether the plea-bargaining process is fair and equitable [3-5]. Proponents points out that the process decreases the prosecutors' work load, avoids expensive and time-consuming trials, and speeds up the criminal justice system. Moreover, many prosecutors use oral or written plea guidelines to ensure its consistency [1]. One the other hand, opponents criticize plea bargaining process by suggesting that prosecutors are found to coerce defendants to accept guilty pleas when the evidence is insubstantial [6]. Bar-Gill and Ben-Shahar indicate that defendants are better off without it because each case will be processed impartially and transparently [7]. Several methodologically rigorous studies [5,8,9] reveals that defendants who accept plea bargains, either voluntarily or coercively, are more likely to receive significantly lighter sentences than those who decide to go to trials.

Furthermore, Bushway and Redlich indicate that a rational and risk-neutral defendant will never accept a plea deal that is more than what he expects if going to a trial [4]. Plea discount is large when the probability of conviction is low [5]. However, each defendant perceives and evaluates the probability of conviction differently, as well as the plea bargain decision-making process [9]. Both legal and extralegal characteristics heavily influence prosecutors' and defendants' plea bargaining decisions [4]. Bibas argues that structural impediments (i.e., pretrial detention and agency costs), defendant's psychological characteristics (i.e., overconfidence and risk preferences), and institutional focus can all affect whether defendants accept the plea deal and how much plea discount they are able to get [4,10]. Therefore, the existing disparity and the underlying factors, which influence defendant's plea bargain decision-making, is noteworthy and needs more explorations.

The role of legal characters in plea bargaining

Research shows that legal characteristics from both defendants and prosecutorial process influence the likelihood of defendants' acceptance of plea bargaining and the degree of the plea discounts Ulmer and Bradley demonstrate that defendants' prior records and the seriousness of the current offenses significantly increase the chance of accepting a plea deal [9]. In addition, Kellough and Wortley state that the strength of the evidence, the use of a public or private defender, and the fact of a pretrial detention not only have strong effects on court's decision to offer a plea bargaining, but also impact the defendant's likelihood of accepting a plea bargaining. Those who are taken into custody or those chronic and more serious offenders are more likely to accept a plea, no matter how much the plea discount is offered [11]. The contextual characteristics of the court, including caseload volume, court community size, violent crime rates, the size of the black population, and the count's focal concern, affect both the court's decision and defendant's perceived probability of convictions, which consequently impact the defendant's acceptance of a plea bargaining [5,8].

Furthermore, point out that judges sentence offenders based on perceptions and stereotypes around three foci: the blameworthiness of the offenders [5], the protection of the community, the organizational restraints and practical consequences of the judgments. However, the images of dangerous offenders are shaped by the defendant's race, sex, and age [6]. Therefore, judges might recommend prison sentences, longer prison terms, and few plea discounts for minorities than for whites if minorities are considered as greater threats for communities

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[8,12] also support the focal concern theory and the racial disparity by concluding that blacks are more likely to be convicted but less likely to receive the benefits from the plea bargaining than whites are. Consequently, because defendants are generally aware of the court's focal concern and their cumulative disadvantages [12], their decisions of accepting the plea bargaining tend to based on their perceptions of the probability of conviction, and the potential plea discounts they can get. This results in disparities across different populations, which should be considered and evaluated seriously.

The role of extralegal characters in plea bargaining: race, gender, age

Studies generally find a relationship between race and the possibility of receiving a plea discount [1,8] further illustrates that defendant's race shapes future interactions and decision-making outcomes. Black defendants are significantly more likely to receive a plea deal in which they plea guilty to the current charges, as opposed to reduced charges [1]. Even after controlling for demographic and legal characteristics, the observed racial disparities in criminal justice system and plea bargaining decision-making process are statistically significant [1,5]. Research [6,13,14] consistently documents that Blacks and Hispanics tend to be related to crime fear and are more likely to perceived as particularly threatening in the contemporary American community [13]. Specifically, argue that race is the most influential factor in the sentencing process and the court's offer of plea bargaining [15].

There are mixed findings regarding the role of gender in plea bargaining. Some studies find that plea bargaining favors the female defendants with more beneficial plea deals [16,17], while others find male defendants fare better [15]. Still, Bishop and Frazier's research finds the non-significant effect of defendant's gender on plea bargaining process. However, a recent research shows a significant main effect of gender on sentencing outcomes and the plea-bargaining process. The gender effects are the largest, followed by age and race, net of controls [5].

The age effect on the plea-bargaining process is also mixed and inconclusive. On the one hand, many meta-analyses report a small or non-significant linear relationship [16]. On the other hand, several studies find that elderly offenders are treated more leniently and receive more plea discounts than younger offenders are further indicate that there is a curvilinear relationship [5]. There are more lenient plea deals for youthful offenders (aged 18-20) compared to adult offenders (aged 21-29), the peak age for receiving the harshest sentencing outcome and least plea discounts [5].

Steffensmeier et al. and Spohn et al. find a strong interaction effect among race, gender, and age on the plea-bargaining process [5,14]. Among males, younger and black offenders are sentenced harsher and more likely to be convicted [5,17]. Female and older offenders are viewed as less dangerous and receive more plea discounts, compare to young black males, which is consistent with the focal concern theory [5]. Study indicates that young adult black men are more likely to be conviction because they are more likely to perceived as dangerous and less remorse [18].

Consequently, because lots of researches have showed that there are race, sex, and age disparities in the plea-bargaining process, defendants will have general information to determine the likelihood of their convictions and the degree of their plea discounts, thereby differentially influencing their decision to accept the plea bargaining. As Finkelstein indicates [6], defendants, who have small probability of acquittal, are more likely to accept the plea deal. The fairness of plea bargaining process depends on the defendant's likelihood of conviction if no plea deal is ever offered (Finkelstein, 1975). However, it is a less visible fairness.

The role of collective efficacy: using housing density as a proxy

Collective efficacy is defined as the ability of a community to achieve common values of its residents and maintain effective social orders [19-21] further argue that low SES, ethnic heterogeneity, low household income, and residential instability lead to community disorganization, which are accounted for low collective efficacy [22].

Racial disparities are significantly related to defendant's socioeconomic status, including two proxies: the types of defense attorney, and the median household income in the defendants' living community [2]. When adding the SES proxies, the odds ratio comparing plea bargaining offers for blacks and whites is reduced, thus leading to a marginal significance [1]. Therefore, these two variables might have stronger effects on the plea-bargaining process [14]. Economic stratification by race causes the neighborhood to concentrate with cumulative disadvantages, exacerbating the low collective social control.

Moreover, Morenoff et al. demonstrate that both concentrated disadvantage and low collective efficacy lead to increased crime rate and influence defendant's plea bargaining decisions. The general court system pattern is that white and middle-class defendants are more likely to get benefits from plea bargaining process than are poor defendants and defendants of color. Zatz and Hagan point out that residents of neighborhoods characterized by poverty and low collective efficacy not only suffer higher victimization rates [22], but also have disproportionately higher probabilities of convictions. Additionally, Sampson et al.'s finding supports the focal concern theory by arguing that increasing collective efficacy of the community will inhibit crime rates, victimization rates, and social disorders. Wolf further indicates that poor defendants, living in the community with low collective efficacy, are particularly vulnerable to the court system, thereby are more likely to accept plea bargaining.

Sampson et al. particularly demonstrate that high socioeconomic status (SES) and homeownership are positively associated with collective efficacy, which is significantly negatively associated with violence, homicide, and victimization. Furthermore, Griffitt and Veitch find that, under high levels of population density, human's interpersonal behaviors are more negative [23], which cause more violent behaviors and more hostility [24]. Gall, Gove and McPherson's study (1972) already shows that housing density increases mortality and juvenile delinquency in the community. Specifically, high housing density results in psychological distress and negative interpersonal interactions across ethnic groups. Coupled with focal concern theory, defendants who suffer from high housing density tend to live in the communities with low collective efficacy, thereby leading to differential acceptance of plea bargaining [25]. Thus, housing density can be an effective proxy to predict a community's collective efficacy and a key factor in defendant's plea bargaining decisions.

Current study

Previous research has opened the Pandora box of plea bargaining process. Both legal characteristics and individual's demographic characteristics significantly influenced the probability of defendant's accepting plea bargaining [5,14]. However, researchers need to move beyond the impact of defendants' demographic information on plea bargaining decision-making and further explore the underlying

psychological mechanism for defendants, which is measured by collective efficacy and housing density [23,25].

The current study explores the relationship between the levels of community's collective efficacy and the likelihood of defendants accepting plea bargaining, controlling for defendants' race and gender, as well as the community's educational and income level. I predict that defendants living in a community with higher housing density, which indicates a lower collective efficacy, will be more likely to accept the plea deal than those living in a community with low housing density. Figure 1 represents the theoretical framework of our hypothesis.

Methods

Data

To assess the impacts of community housing density on defendant's likelihood of accepting plea bargaining, the current study combines data from two sources. First, Bexar County administrative court records are collected by Bexar County district clerks. These provide basic demographic information on defendants' names, gender, race, birth dates, home addresses, and their community block group numbers. The court records also include felony and misdemeanor charges, prosecution dates, disposition decisions, and detailed information on defendants' attorneys. Second, the block group level data for Bexar County is taken from the American Community Survey (ACS), the American Census data. I calculate defendant's housing density from the American Community Survey (ACS) as a proxy to estimate the collective efficacy.

The Bexar County administrative court data includes 105,419 felony defendants (23.22%) and 348,637 misdemeanor defendants (76.78%) processed in the Bexar County court, Texas. 76.65% of the total defendants are males, and 23.35% of the defendants are females. 34.86% are white, 14.29% are blacks, 49.85% are Latinos/Hispanics, and 1% belong to other minorities. Table 1 reports basic demographic characteristics of all the defendants included and excluded from our analysis.

Category	Type	Count (Percentage)
Types of Charge		
	Felony	105,419 (23.22%)
	Misdemeanor	348,637(76.78%)
Gender		
	Male	348,016 (76.65%)
	Female	105,999 (23.35%)
Race		
	White	158,275 (34.86%)
	Black	64,898 (14.29%)
	Latino/Hispanics	226,302 (49.85%)
	Others	4529 (1%)

Table 1: Basic Demographic Information of Defendants from Bexar County Court Records (n=454,018).

Each defendant's community estimate is matched with each defendant's block group number in the court record data. I calculate three community-level characteristics: educational level, income level, and housing density. Educational level in the community is calculated by adding up total numbers of people who obtained high school or above high school education, and then dividing it by the total population living in the community. The mean educational level ratio for all the defendants' communities is 0.7319. The minimum is 0.2004, and the maximum is 1. 47.7% of the community's educational level is below the mean, and 52.3% is above the mean. Income level in the community is indicated by the median household income for the community. The median income level for all the defendants' living communities is 42484.6 dollars. 61.02% of the defendant's community income level is below the mean, and 38.98% of the defendant's community income level is above the mean. Community housing density is estimated by dividing the total population in the community by the total occupied house units. The mean is 3.1316 persons per unit. 56.97% is below the mean, which indicates low housing density, and 43.03% is above the mean, which indicates high housing density. Table 2 reports the community characteristics.

Because I only focus on the defendants' plea bargaining decision making, I exclude the defendants whose disposition decisions are other than "plea guilty" and "not plea guilty." Moreover, defendants whose disposition decisions are "Nolo Contendere Plea" are included, because I consider "No Contest Plea" as having the same basic effects as guilty plea. The final data contains 143,456 observations. Table 3 summarizes the included defendants' demographic information. Table 4 lists the disposition decisions I both include and exclude in our analyses.

Dependent variable

Two distinct outcomes for defendants are whether to accept the plea bargaining offered by the courts. Therefore, the dependent variable is a binary variable. The acceptance of the plea bargaining is coded as 1, whereas the unacceptance of plea bargaining is coded as 0. I also code "Nolo Contendere Plea" as 1. Figure 2 shows the percentage of accepting plea deals in felony and misdemeanor charges respectively.

Independent variables

The main focus of this study is to examine whether housing density in the community impacts defendants' decisions of accepting plea bargaining. For all the analyses, the community's housing density is

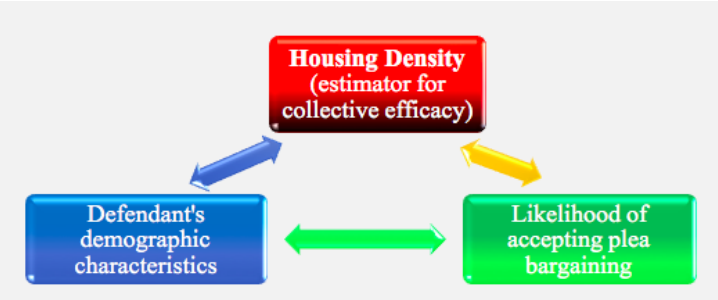

Figure 1: Theoretical framework of the hypothesis.

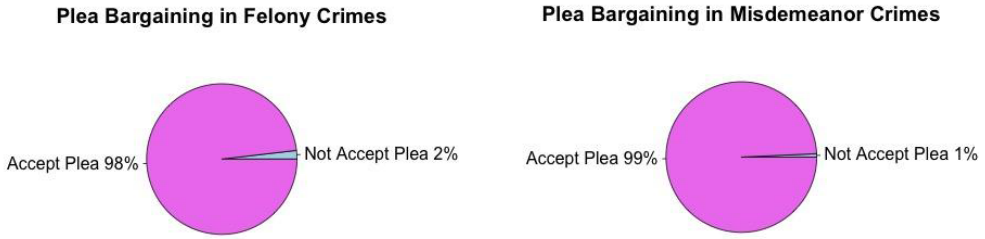

Figure 2: Percentage of Accepting Plea Deals.

Educational level of the community	
Total mean	0.7319
High educational level	201,258 (52.3%)
Low educational level	183,579 (47.7%)
Income level of the community	
Total mean	42484.6
High income level	150,065 (38.98%)
Low income level	234,772 (61.02%)
Housing density of the community	
Total mean	3.1316
High housing density	165,634 (43.03%)
Low housing density	219,203 (56.97%)

Table 2: Basic community characteristics (n=384,837).

Category	Type	Count (Percentage)
Types of Charge		
	Felony	48,386 (33.73%)
	Misdemeanor	95,070 (66.27%)
Gender		
	Male	118.858 (82.85%)
	Female	24.598 (17.15%)
Race		
	White	32.617 (22.74%)
	Black	23.116 (16.11%)
	Latino/ Hispanics	87.723 (61.15%)

Table 3: Basic Demographic Information of Defendants (only in plea bargaining) (n=143,456).

coded as a binary variable based on the average housing density in the whole Bexar County community (1=high housing density, 0=low housing density).

I introduce three control variables commonly documented in previous plea bargaining research [1,4,5,9]. Besides the defendants' community housing density, other extralegal variables in the analyses include the defendants' race (0=White, 1=Black, 2=Latino/Hispanics) and gender (0=female, 1=male). Since the community's SES and educational level can be confounding variables [9,16], I additionally control for community educational level ratio (0=low community educational levels, 1=high community educational level) and income level of the defendants' community compared to the average incomes in the whole Bexar County communities (0=low income level, 1=high income level). Table 5 reports the summary of "treatment" and control groups (high vs. low housing density) for propensity score matching analysis.

Analytic strategy

In order to investigate the impact of defendants' community housing density on the likelihood of accepting plea bargaining, I estimate three logistic regression models. The first model includes only defendants' community housing density. This provides insight into the basic correlation between community's housing density and the defendants' likelihood of accepting plea bargaining.

$$Y=\alpha+\beta \times \text{Housing Density}+\varepsilon i \quad (1)$$

The second model controls for defendants' demographic

INCLUDE	EXCLUDE
NOLO CT-GUILTY	BOOKING ERROR
NOLO CT-NOT GUILTY	CASE CLOSE
PG CT-GUILTY	CASE DISMISSED
PG CT-NOT GUILTY	CASE REJECTED
PG JRY-GUILTY	COMP-DECEASED
PG JRY-NOT GUILTY	DEF ADJ TERM UNSAT
PNG CT- DR VDT NG	DSMD- TO BE IND; REDUCED; FED PROSECUTE; IN COMPLIANCE; REDUCED CLS C; CASE REFILED; DEF CONV OTHR; DEF CSTDY ELS; DEF DECEASED; DEF GR IMUTY; COMP WAV PROS; DEFR ADJUD; FURTH INVEST; GLTY DIFF CHG; IN COMPIANCE; INSF EVIDENCE; INTRST JUSTCE; MISNG WITNESS; MTN SUPRS GTD; NO ARREST; NO PAPERWORK; OTHER; PAID IN FULL; PT DIVRSN; QUASH GRANTED; REST PD/FULL; SPEEDY TRIAL
PNG CT-GUILTY	MISTRIAL-JURY
PNG CT-NOT GUILTY	MTN TO DSMD FILED
PNG JRY-DIR VDT GT	NO BILLED
PNG JRY-DIR VDT NG	NO PROBABLE CAUSE
PNG JRY-GUILTY	PROB TERMINATED
PNG JRY-NOT GUILTY	PROBATION EXPIRED
	REJ-MULTI COUNT; FURTHER INVEST

Table 4: Court Disposition Decisions Include and Exclude.

variables	Treatment Group (High Housing Density)	Control Group (Low Housing Density)
Observations	65,670	77,786
Gender		
Female=0	10,620 (16.17%)	13,978 (17.97%)
Male=1	55,050 (83.83%)	63,808 (82.03%)
Race		
White=0	11,768 (17.92%)	20,849 (26.8%)
Black=1	9,306 (14.17%)	13,810 (17.75%)
Latino/Hispanics=2	44,596 (67.91%)	43,127 (55.44%)
Educational level		
Low=0	47,271 (71.98%)	34,653 (44.55%)
High=1	18,399 (28.02%)	43,133 (55.45%)
Mean	0.2802	0.5545
Standard Deviation	0.4491	0.497
Offending type		
Misdemeanor=0	42,942 (65.39%)	52,128 (67.01%)
Felony=1	22,728 (34.61%)	25,658 (32.99%)
Mean	0.3461	0.3299
Standard deviation	0.4757	0.4702
Income level		
Low=0	45,699 (69.59%)	54,713 (70.34%)
High=1	19,971 (30.41%)	23,073 (29.66%)
Mean	0.3041	0.2967
Standard deviation	0.46	0.4568
Plea bargaining		
Not plea guilty=0	659 (1%)	906 (1.16%)
Plea guilty=1	65,011 (99%)	76880 (98.84%)
Mean	0.99	0.9884
Standard deviation	0.0997	0.1073

Table 5: Summary of treatment and control groups.

characteristics, such as race and gender, to explore the relationship between housing density and acceptance of plea bargaining.

$$Y=\alpha+\beta \times \text{Housing Density}+\lambda 1 \times \text{Race1}+\lambda 2 \times \text{Race2}+\theta \times \text{Gender}+\varepsilon i \quad (2)$$

The third model includes crime types and two other community characteristics, namely community educational levels and income levels, which can influence defendants' community collective efficacy [1,5].

$$Y=\alpha+\beta \times \text{Housing Density}+\lambda 1 \times \text{Race1}+\lambda 2 \times \text{Race2}+\theta \times \text{Gender}+\delta 1 \times \text{Educational Level}+\delta 2 \times \text{Income Level}+\varepsilon I. \quad (3)$$

I report separate models with and without these additional controls because the relationship is unclear and never explored by previous researchers. The counterfactual hypothesis is the non-existing correlation between housing density and the likelihood of accepting plea bargaining. The likelihood of accepting plea bargaining for defendants living in the high housing density community is not significantly different from the likelihood of accepting plea bargaining for defendants living in the low housing density community.

To further address the causal relationship between housing density and the likelihood of accepting plea bargaining, I perform propensity score analysis, controlling for both defendants' demographic characteristics and community level characteristics. I consider defendants living in communities with high housing density as the Treatment group and weight the Control group (low housing density) to match the other dimensions in the Treatment group. The propensity score matching attempts to control for confounding variables, mimicking the randomization for observational data, to make the treatment group and control group more comparable and similar. Therefore, I am able to analyze the differences with a common support. I also do additional analyses, such as linear regression analysis, by sub-setting the sample into different groups. I report and discuss statistical findings that are significant at $p<0.01$, $p<0.05$, and $p<0.10$ levels.

Results

Preliminary analysis of correlation

As I hypothesized, the correlation between housing density and the likelihood of accepting plea bargaining is significant when controlling for no other variables. Living in a high housing density neighborhoods, defendants are 1.16 times more likely to accept plea deals than those living in a low housing density neighborhoods. Thus, high collective efficacy decreases the probability of defendants accepting plea deals in general. Table 6 represents the basic logistic regression model and the odds ratio.

Further, I consider defendants' living in the community with high housing density as the treatment group and those living in the community with low housing density as the control group. After propensity score matching analysis between two groups, I fail to reject the null hypothesis. The main causal effect of housing density on the likelihood of accepting plea bargaining fades away. Table 7 shows the propensity matching information of two groups and Table 8 reports the insignificant finding.

Additional analysis for casual relationship

The current research reveals that defendants with felony crimes are significantly less likely to accept the plea bargaining from both the logistic regression model and the propensity matching analysis. Table 9 summarizes the logistical regression results including both defendants' demographic information and their living community characteristics. Therefore, I further subset the sample into two groups: felony offenses vs. misdemeanor offenses. Higher housing density in the community significantly increases the likelihood of accepting plea deals for defendants with misdemeanor offenses instead of with felony offenses. Table 10 reports the significant result for misdemeanor offenses ($\alpha < 0.10$) and Table 11 reports the insignificant result for felony offenses.

Furthermore, the current research focuses on gender differences, which significantly influence the likelihood of guilty plea, with in misdemeanor offenses [6]. I can only reject the null hypothesis at

Plea Guilty or Not Plea	Exponential Coef. (Odds Ratio)	Std. Err.	P	[95% conf. interval]
High Housing Density	1.163	0.052	0.003***	0 .051~1.286

Note: ***P<0.01.

Table 6: Basic logistic regression model.

	Control Group (Low Housing Density)	Treatment Group (High Housing Density)
Gender: Male	83.85%	83.83%
Race: White	17.86%	17.92%
Race: Black	14.21%	14.17%
Race: Latino/Hispanic	67.93%	67.91%
Educational Level (Community): HIGH	28.04%	28.02%
Income Level (Community): High	30.38%	30.41%
Offense Types	34.57%	34.61%

Table 7: Propensity matching information.

	E. Accept Plea	E. Not Accept	Se. Accept Plea	Se. Not Accept	High Housing Density	Se. High Housing Density	P
Propensity Score	98.90%	98.95%	0.0004	0.0005	0.048	0.058	**0.412**

Table 8: Propensity Matching Analysis of Plea Bargaining.

Plea Guilty	Exponential Coef. (Odds Ratio)	Std. Err	P
High housing density	1.634	0.055	0.369
Gender: Male	0.731	0.076	0.000***
Race: Black	1.01	0.073	0.891
Race: Latino/Hispanic	1.592	0.062	0.000***
Educational Level: High	0.775	0.064	0.000***
Income Level: High	0.64	0.062	0.000***
Offense Type: Felony	0.372	0.052	0.000***

Note: ***p<0.01.

Table 9: Logistic Regression Analysis (controlling for demographic and community characteristics).

	E. Accept Plea	E. Not Accept	Se. Accept Plea	Se. Not Accept	High Housing Density	Se. High Housing Density	P
Propensity Score	99.41%	99.30%	0.0004	0.0005	0.162	0.09	0.073*

Note: *p<0.10.

Table 10: Propensity Matching Analysis of Plea Bargaining for Misdemeanor offenses.

	E. Accept Plea	E. Not Accept	Se. Accept Plea	Se. Not Accept	High Housing Density	Se. High Housing Density	P
Propensity Score	98.22%	98.28%	0.0009	0.001	-0.033	0.077	0.664

Table 11: Propensity Matching Analysis of Plea Bargaining for Felony offenses.

	E. Accept Plea	E. Not Accept	Se. Accept Plea	Se. Not Accept	High Housing Density	Se. High Housing Density	P
Propensity Score	99.42%	99.30%	0.0004	0.0005	0.19	0.101	0.059*

Note: *p<0.10.

Table 12: Propensity Matching Analysis for Plea Bargaining (Males with Misdemeanor offenses).

α<0.10 level. Male defendants with misdemeanor charges are more likely to accept plea deals if they live in the community with higher housing density, compared to the female defendants. Table 12 reveals the significant causal relationship between housing density and the likelihood of accepting plea deals within males with misdemeanor offenses.

Next, I investigate the racial differences on the causal relationship between housing density and the likelihood of accepting plea deals within both female and male defendants with misdemeanor offenses by using propensity score matching analysis. Only Hispanic/Latino male defendants with misdemeanor charges are more likely to accept plea bargaining by 26%, compared to their White and Black counterparts. Table 13 shows the significant results at *α<0.10 level*.

Then, I analyze the role of community's educational level on the casual relationship between housing density and the acceptance of plea bargaining. After sub-setting the data into two groups: community with high educational level vs. community with low educational level, the result enables us to reject the null hypothesis, thus supporting our alternative hypothesis. High housing density significantly increases the likelihood of accepting plea bargaining for Latino/Hispanic male defendants with misdemeanor charges if they live in a community with high educational level, instead of low educational level. Table 14 reports the statistically significant finding at *α<0.01 level*.

Furthermore, I use linear regression analysis to estimate the relationship in more depth. As I predicted, high housing density significantly increases the likelihood of accepting plea bargaining for Latino/Hispanic male misdemeanor defendants who live in the community with high educational but low income level at *α<0.10 level*. Additionally, high housing density significantly increases the likelihood of accepting plea bargaining by 70.5% for Latino/Hispanic male misdemeanor defendants who live in communities with high educational and high income level at *α<0.01 level*. Tables 15 and 16 report the significant linear relationship between plea bargaining and housing density for different groups separately.

Discussion

Plea bargain has been the focus of numerous prior studies [5,8]. Past research has attempted to determine whether plea bargaining process is discriminatory and what legal and extralegal factors influence defendants' plea bargaining decision-making. Interest has been focused on examining legal characteristics [8,11], such as the strength of the evidence, the use of public or private attorneys, and the court caseload, as well as defendants' demographic characteristics namely gender, race, and age. Nevertheless, the question of whether social context plays an important role in defendants' plea bargaining decision-making has not been addressed [5]. The current study presents the first (to our knowledge) analysis of the impact of housing density in the community on defendants' likelihood of accepting plea bargaining because it is well-established that high housing density in the community leads to low collective efficacy, which increases the community crime rates.

	E. Accept Plea	E. Not Accept	Se. Accept Plea	Se. Not Accept	High Housing Density	Se. High Housing Density	P
PS	99.54%	99.40%	0.0004	0.0006	0.266	0.141	0.058*

Note: *p<0.10.

Table 13: Propensity Matching Analysis (Hispanic/Latino Males with Misdemeanor Offense).

	E. Accept Plea	E. Not Accept	Se. Accept Plea	Se. Not Accept	High Housing Density	Se. High Housing Density	P
PS	99.57%	99.07%	0.0009	0.0011	0.773	0.239	0.001***

Note: ***p<0.01.

Table 14: Hispanic/Latino Males with Misdemeanor Offense in a Community with Educational Level.

	Coef.	Std. err	P
Housing Density	1.1408	0.602	0.058*

Note: *p<0.10.

Table 15: Linear Regression Model (Plea Bargaining and Housing Density).

	Coef.	Std. err	P
Housing Density	0.7047	0.263	0.007***

Note: ***p<0.01.

Table 16: Linear Regression Model (Plea Bargaining and Housing Density).

By analyzing the correlation between housing density and the likelihood of accepting plea bargaining, I find that housing density is significantly correlated with defendants' likelihood of accepting plea bargaining. Higher housing density in defendants' living community is associated with higher probability of accepting plea deals. This result provides support for Zatz's and Wolf's findings that defendants, living in the community with low collective efficacy, are more likely to accept plea bargaining. However, after controlling for defendants' demographic characteristics and social characteristics in the community, the correlation disappears. The insignificant finding suggests that defendants' demographic characteristics and common collective efficacy proxies, such as educational level and income level, have relatively stronger impacts on defendants' plea bargaining decision-making [5].

Surprisingly, I notice that defendants who commit felony crimes rather than misdemeanor crimes are extremely unlikely to accept the plea bargaining in the regression analysis. Additionally, male defendants have higher probability of accepting the plea deal than females. Therefore, I find that male defendants with misdemeanor charges are more likely to accept the plea deals if they live in the community with high housing density, compared to those live in the community with low housing density. This finding not only is consistent with that the seriousness of the current offense increases the likelihood of accepting plea bargaining, but also shows low collective efficacy in the community significantly leads to higher probability of accepting plea deals.

Furthermore, as I hypothesized, the analysis reveals that high housing density significantly increase the probability of accepting plea deals, especially for Latino/Hispanic male defendants with misdemeanor charges, whom live in the community with high educational and income levels. One possible explanation is the geographical reason. The data is from Bexar County, Texas, in which has a larger population of Latino/Hispanics. Other racial groups in the sample might not be bigger enough to show a significant difference. Another explanation is that high housing density, an indicator of low collective efficacy, psychologically makes defendants more vulnerable in the criminal justice system [23]. This finding also support Evans et al.'s research (2009) that high housing density results in defendants' high probability of accepting plea deals.

To sum up, housing density of the community do play a crucial role on defendants' plea bargaining decision-making. Based on current data, it is significantly specific for a certain group of defendants: Latino/Hispanic male defendants with misdemeanor charges living in a community with high educational and income levels.

Limitations

Although this study was carefully analyzed, it still has its limitations. First of all, there is a limitation of external validity. The data is limited to Bexar County, Texas, in which differs with the rest of the states demographically, geographically, and climatically. Because the major ethnic group of the population is Latinos/Hispanics, the results may not be able to generalize to other areas. Secondly, the findings are based largely on the observational data. I should draw casual conclusions with cautions due to the fact that correlation or potential casual relationship is not causation. Lastly, I do not know if there are policies coming out during 2000 to 2014 that can influence how plea bargaining processes in criminal justice system or how defendants perceive the benefits from the plea deals. Therefore, there might be some confounding variables that I omitted in the analyses.

Policy implication

The decades-long plea bargaining debate is based on a combination of scholarly conclusions and theoretical models, with little systematic and convincing evidence to support either arguments [8]. On the one hand, some scholars argue that plea bargains facilitate wrongful convictions [3,4]. On the other hand, some researchers indicate that plea bargaining benefits the innocent defendants by providing them with an alternative to the risky trial, which may lead to harsher sentence [5,9]. The current study reveals that housing density in the community could increase the probability of certain ethnical and gender groups of defendants to accept plea deals. Therefore, the results require both camps to re-evaluate their policy prescriptions by considering defendants' psychological states and offer some new proposals for these specific types of defendants to minimize false convictions, thereby protecting the innocents and ensuring the plea-bargaining process to be fair and impartial.

Future research direction

The aim of the current study is to move beyond the impact of defendants' demographic characteristics on plea bargaining process and explore the underlying psychological factors. Future research should analyze the plea-bargaining process by using aggregated and more representative data to generate casual inferences. Additionally, future study should consider other indicators of collective efficacy and other meso-level factors in the neighborhoods that can affect defendants' plea bargaining decision-making. Future research also should replicate our findings in other jurisdictions and with a greater variety of crimes.

Altogether, the results of our study make an important contribution to the growing body of evidence that low collective efficacy, particularly in terms of high housing density in the community, increases defendants' likelihood of accepting plea bargaining. But the study also suggests the need for additional research. I examine the influence of housing density in only one jurisdiction and only as it applies to Latino male defendants with misdemeanor charges. The current study provides a foundation upon which psychological rather than demographic characteristics can influence the plea-bargaining process. The practical nature of the study will hopefully give policy-makers some evaluations to make the plea-bargaining process more fair and impartial across all regions and all ethnical groups.

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