

# “A Closer Look at the Environment: Predicting Sworn Officers’ Turnover Rates in U.S. Law Enforcement Agencies”

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## **Abstract**

*Ensuring public safety rests on maintaining a qualified police workforce. However, in recent years, practitioners have argued that doing so has proved difficult. One contributing factor has been increased turnover rates among police officers. In an effort to mitigate the effects of turnover, this research analyzes the factors which lead officers to leave the force. This research analyzes the extent not only to which sworn officers leave the force but also to which institutional factors impact those decisions. More specifically, this research uses a complementary log-log regression model to assess the probability of officers’ voluntary and involuntary turnover rates under various institutional determinants. The findings highlight the importance of institutional factors in explaining different types of voluntary and involuntary departures. Results are displayed by departure type. Implications of these findings are assessed with regard to the practice and study of policing.*

**Keywords:** turnover, police, work, voluntary, involuntary, institutions

## **1. Introduction**

A salient challenge facing law enforcement agencies is maintaining an adequate police workforce. The mass exodus of Baby Boomers from the market along with poor job fit among those hired has exacerbated this challenge (Heibutzki, 2016). Illustrating this verity, a retention study conducted by the International Association of Chiefs of Police (IACP) found the average tenure of officers ranges from 18 to 36 months with department turnover rates reaching as high as 25 percent (Heibutzki, 2016). To address these issues, the Office of Community Oriented Policing Services (COPS), in 2017, awarded state, local, and tribal law enforcement agencies \$229 million.

In addition to grants from the federal government, state, local, and tribal law enforcement agencies still spend millions of tax dollars each year on recruiting new officers to fill the gaps. According to Orrick (2002), the recruitment and training costs of replacing an officer with three years of experience costs more than twice his or her annual salary. Beyond high attrition costs, turnover can produce other effects. On the positive side, turnover allows agencies to increase productivity, introduce change, and replace poor performers (Ahlrichs, 2000). However, the loss of experienced personnel can reduce performance and increase operational risks for law enforcement agencies (Holtom, Mitchell, Lee, & Eberly, 2008). Given the implications of these effects on public safety, more research is needed to identify not only when turnover is likely to occur but also how best to prevent it.

Previous research exploring police turnover has primarily focused on how officers’ characteristics impact their decisions to leave. While studies on the turnover of first responders such as firefighters and nurses have explored the impact of institutional factors on firefighters and nurses’ decisions to leave (Alyn, 2010; Yang & Mi, 2017), few studies have examined the potential impact of these factors on police officers’ turnover decisions (James and Hendry, 1991; Lambert & Hogan, 2009; Sparger & Giacomassi, 1983). In addition, research analyzing police turnover has typically analyzed turnover as a whole without analyzing various types of turnover. Moreover, previous analyses have utilized models to predict turnover rates that do not account for low probabilities.

This research takes a step forward and explores the impact of departmental characteristics on sworn officers’ attrition rates. Using data from the 2013 Law Enforcement Management Administrative Statistics (LEMAS) survey and a rare events modeling procedure, this research analyzes whether departments’ institutional characteristics impact various types of voluntary and involuntary turnover. It is hoped that, in analyzing turnover from this perspective, this research will expand our knowledge of how best to manage it.

## **2. Theoretical Framework**

Institutional theory maintains that organizational outcomes are products of institutional characteristics (Frederickson, Smith, Larimer, and Licari, 2012). According to this theory, variations in police departments’ turnover rates might result from variations in the institutional characteristics of departments.

Although previous research has not used institutional theory to explain variations in police turnover rates, research has analyzed how variations in police work and contextual environments impact officers' decisions to leave and their perceptions regarding work (James and Hendry, 1991; Lambert & Hogan, 2009; Sparger & Giacopassi, 1983; Wilson, Dalton, Scheer, & Grammich, 2010).

### **2.1 Influences of the Work Environment**

In a five-year study of voluntary resignations among police officers in Memphis, Sparger and Giacopassi (1983) found resignations resulted from officer burnout. More specifically, the researchers found dissatisfactions and occupational frustrations precipitated officer burnout. Dissatisfactions and frustrations arose from community expectations, departmental politics, discipline, lack of appreciation, management styles, institutional policies, pay and fringe benefits, and relations with civic officials (Sparger and Giacopassi, 1983; Wilson, Dalton, Scheer, & Grammich, 2010). These findings suggest that officers do not resign for a single dissatisfaction or frustration but rather do so as a result of several dissatisfactions and/or frustrations. Similarly, James and Hendry (1991) found officers' dissatisfaction with work was the leading cause of early retirement. According to survey respondents, retirement decisions were precipitated by dissatisfactions resulting from the organization and management of departments rather than from the nature of police work itself or factors external to the organization (James and Hendry, 1991).

Since these studies, additional research has found correlations among police turnover intentions and perceived dangerousness of the job, group cohesiveness, role conflict, role ambiguity, role overload, and institutional support (Lambert & Hogan, 2009). Although most employees think about leaving their employers, the reality is that the majority do not. Thus, predicting turnover intention might not adequately predict actual turnover behavior. Still, the findings suggest that employees' perceptions of their work environments might influence their overall decisions to leave.

### **2.2 Influences of the Contextual Environment**

Moreover, research has found elements of officers' contextual environments to impact their decisions to leave. Analyzing voluntary resignations of officers using the 2003 Law Enforcement Management Administrative Statistics (LEMAS) survey, Smith, Wareham, & Lambert (2013) found voluntary resignations in small agencies were positively associated with jurisdictions' violent crime rates and mean temperatures. In medium-sized agencies, resignations were positively associated with concentrated disadvantage. However, in larger agencies, resignations were positively associated with concentrated disadvantage, local suicide rates, and mean temperatures. Collectively, this research suggests that contextual factors play a role in officers' decisions to resign. Still, little is known regarding how these factors might impact different types of turnover. Consequently, this research examines the potential impacts of various contextual factors.

## **3. Methodology**

### **3.1 Data**

Data for this research were collected from three sources. Police departments' institutional data were collected from the Bureau of Justice's 2013 Law Enforcement Management and Administrative Statistics (LEMAS) survey. The survey included data on 2,356 police departments across the United States.<sup>1</sup> Data on these agencies were collected during 2012. Population data and crime data were also collected. Population data were obtained from the U.S. Census Bureau's American Factfinder database, while crime data were collected from City-Data.gov and the Bureau of Justice Statistics' Uniform Crime Reports. To ensure accurate time order, both measures were lagged one year.

### **3.2 Method**

Turnover rates were calculated for each department. To analyze the impacts of institutional characteristics on various types of turnover, this research included measures for both types of turnover among sworn police officers. Voluntary measures of turnover included non-forced resignations, non-medical retirements, and other exits such as demotions, promotions, and transfers.<sup>2</sup> Involuntary measures of turnover included dismissals and medical retirements. Pooled models for total involuntary and voluntary turnover were also included for comparison.

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<sup>1</sup>Although the LEMAS survey included data on over 2,700 police departments, some departments were excluded from analysis for missing data.

<sup>2</sup>While demotions can result from punitive directives by management, this research assumes that officers' acceptance reflects their preferences to remain employed with the department, making the shift a voluntary exit.

While the focus of this research is sworn officers' turnover behavior, this research anticipates that the turnover rates of non-sworn personnel might also play a role. To assess this potential, a measure of the total turnover rate of non-sworn officers was included.<sup>3</sup> Because the distributions of each measure were skewed, natural log transformations were used.

Given that the mean turnover rate for sworn officers' in all police departments for the observed year was 8.87 percent, this research employed a complementary log-log regression model to estimate the effects of work and contextual factors on departments' turnover rates. Complementary log-log regressions are used when the probability of an event occurring is very small. Although primarily used when the dependent variable is binary, complementary log-log regressions can be used with rates that can be converted on a scale from 0 to 1. Thus, a simplified version of the likelihood model can be written as follows:  $\Pr(y_j \neq 0 | x_j) = 1 - \exp\{-\exp(x_j \beta)\}$  (StataCorp, 2017).

### **3.3 Predicting Turnover Rates with Elements of the Work Environment**

#### **3.3.1 Turnover**

Research suggests that turnover can have negative effects on employees' job commitment, job satisfaction, and morale (Camp, 1994). Given these findings, it is likely that turnover might spark more turnover. To test this assumption, this research included the log transformation of all other types of turnover on each type of turnover analyzed. Correlation matrices were ran to ensure that no one type of turnover fully explained another.<sup>4</sup>

#### **3.3.2 Education & Training**

While previous research has analyzed officers' education and turnover decisions (Jones, Jones, & Prenzler, 2006), research has failed to analyze whether officers' training impacts their decisions to leave or transfer. This research assumes that if officers' education and training are positively related to performance, the existence of a large number of officers with limited training and education should produce a performance issue that incumbent officers find difficult to ignore. To analyze whether education and training levels impact departments' turnover rates, this research included a measure for the number of direct hires, or those with no certification or training, and a measure for the number of pre-service hires, or those with certification but no training. Given the skewed distribution of each measure, the log transformation of each was included. Moreover, this research included binary measures for the requirement that officers have an Associate's degree and the presence of high community policing training activities within the department. The expectation is that the presence of these factors will mitigate both voluntary and involuntary turnover.

#### **3.3.3 Work Assignments**

Moreover, research has found correlations among characteristics of work assignments and turnover intention (Lambert & Hogan, 2009). Consistent with these findings, this research assumes that variations in work assignments and workload should impact departments' voluntary and involuntary turnover rates. To test the assumption regarding work assignments, log transformations of the percent of officers assigned to patrol and investigation within a department were also included. To test the assumption regarding workload, a log transformation of the rate of patrol officers per 100,000 residents was also included.

#### **3.3.4 Leadership**

Research findings regarding associations among gender, leadership, and police performance are mixed (Price, 1974; Morreale, 2003). While turnover can be positive or negative, high turnover rates are indicative of poorer leadership performance. To test whether female superior officers are better able to thwart turnover than their male colleagues, this research included a measure for the log of female superior officers within a department.

#### **3.3.5 Pay**

Similarly, existing research has found dissatisfactions with pay to be a key correlate of turnover intention (Sparger & Giacomassi, 1983; Wilson et al. 2010). To test the effects of pay on actual turnover behavior, this research included the log transformation of sworn officers' median salaries. The expectation is that officers located in departments with higher median salaries will have lower voluntary and involuntary turnover rates.

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<sup>3</sup>The survey did not disaggregate non-sworn officers' turnover counts by type. However, a measure of total turnover was included.

<sup>4</sup>The highest correlation was found between dismissals and voluntary resignations. This correlation was .24. Because the correlation was not higher, it was not thought to pose a methodological issue.

### **3.3.6 Diversity and Minority Representation**

Diversity within organizations has been found to have several positive outcomes. However, existing research assessing the impact of diversity on turnover intention and turnover behavior has failed to find a significant correlation (Leonard & Levine, 2006). Consistent with the literature, this research expects that diversity within departments will correlate with reduced turnover rates. Moreover, this research expects that officers working in departments more representative of the residents they protect will also have lower turnover rates. To test these expectations, this research included measures for the percent of black and Hispanic officers within a department as well as black officer-to-citizen and Hispanic officer-to-citizen ratios for each jurisdiction. To account for the skewness of these distributions, the log transformations of each measure were included.

### **3.3.7 Union Representation**

Conventional wisdom suggests that union representation might mitigate police turnover rates. However, Hammer and Avgar (2005) found that employees represented by unions typically have lower job satisfaction than those not represented by unions. Still, if union representation reduces turnover, then the presence of an active collective bargaining unit should be negatively associated with turnover. To test this assumption, this research included a binary measure for the presence of an active collective bargaining agreement.

## **3.4 Predicting Turnover Rates with Elements of the Contextual Environment**

### **3.4.1 Crime Rates**

One of the key indicators of police performance is their ability to not only lower but also thwart crime. Consequently, this research expects area crime rates to have a negative association with voluntary and involuntary turnover rates. To assess whether different types of crime affect these rates differently, this research included measures for the log transformation of jurisdictions' property and violent crimes rates per 100,000 residents.

### **3.4.2 Additional Controls**

Variations in police turnover rates are also likely to vary by government level, population of the jurisdiction, and region. To assess the potential influence of these factors on departments' turnover rates, nominal measures for government level and region were included. City and Northeast were excluded from the models and treated as reference categories. To determine the potential impact of population on departments' turnover rates, the log transformation of the jurisdictions' 2011 population was included.

## **4. Findings**

Table 1.1 in the Appendix displays the results regarding turnover. The results of the models illustrate that sworn officers' turnover rates were correlated with institutional characteristics of police departments. Moreover, the results revealed that the determinants of turnover differed by type. Moreover, the results revealed that the effects of those determinants also differed by type. For example, the results revealed that in departments with high voluntary resignation rates, non-medical retirements and other exits were low. Similarly, in departments with high non-medical retirement rates, voluntary resignations and other exit rates were low. However, in departments with high turnover rates for other exits, voluntary resignations and non-medical retirements were no different than in departments with low rates. Still, the findings suggest that some forms of voluntary turnover might mitigate other forms. However, this verity was not observed for involuntary turnover.

Additionally, the results illustrated that turnover is exacerbated by turnover. Although departments with high turnover rates resulting from other exits and voluntary resignations had low medical retirement rates, these departments had high dismissal rates. Moreover, departments with high dismissals and involuntary rates had high non-medical retirements and voluntary resignations. Furthermore, the results revealed that departments with high non-medical retirements, voluntary resignations, and overall voluntary and involuntary turnover rates also had high turnover rates among non-sworn personnel. With regards to education and training, the models revealed that departments with numerous indirect and pre-service hires had high dismissal, total involuntary, total voluntary, and voluntary resignation rates. Similarly, departments with high turnover rates resulting from demotions, promotions, and transfers also had high numbers of indirect hires. Similarly, the findings illustrated that departments that engaged in high community policing initiatives had high voluntary resignation rates. This finding suggests that more on-the-job training might have more adverse effects on job satisfaction, commitment, and turnover intention than originally hypothesized. However, departments that required an Associate's degree had lower voluntary resignation, dismissal, and total involuntary turnover rates, which suggests that higher education requirements might improve retention.

As expected, turnover rates were also influenced by variations in work assignments. For example, the results showed that departments with large numbers of sworn officers assigned to patrol had low voluntary and involuntary turnover rates. However, departments with large numbers of sworn officers assigned to investigation had high non-medical retirements and voluntary resignations. This finding suggests that investigative positions are more prone to voluntary turnover. Moreover, the results illustrated that as the ratio of officers to citizens increased, nearly all forms of involuntary and voluntary turnover increased. This finding suggests that the presence of more officers does not reduce turnover but rather increases it. Female leadership also influenced departments' turnover rates. While high numbers of female superior officers correlated with low medical and non-medical retirements and total involuntary turnover rates, more female superior officers also correlated with more demotions, promotions, and transfers. This finding suggests that under female leadership, sworn officers might experience greater structural change and succession.

The results did not yield as much support for pay as originally hypothesized. Moreover, in the models where pay was significant, its effect was not in the hypothesized direction. For example, the results revealed that high median salaries correlated with high non-medical retirements and voluntary resignations. These findings suggest that higher pay might not serve as a buffer against turnover as research suggests.

Mixed support was found regarding the effects of diversity on turnover. While high numbers of black officers correlated with low voluntary resignation and total voluntary turnover rates, high numbers of black officers also correlated with high involuntary turnover. Similarly, more Hispanic officers correlated with greater dismissal and total involuntary turnover rates. These findings suggest that superior officers are more punitive in departments that are more diverse. However, moderate support was found regarding the effects of minority representation on turnover. Specifically, the results revealed that departments with greater black officer-to-citizen ratios had lower total voluntary and involuntary turnover rates.

Contrasting to expectation, this research found union representation correlated with higher non-medical retirements. However, no support was found regarding union representation and other types of turnover. The lack of statistical support for this measure suggests that collective bargaining status has no statistical impact on most types of turnover. Nonetheless, the results did yield support for the effects of contextual factors on turnover. For example, departments with high property crime rates had high non-medical retirement and total voluntary turnover rates, while departments with high violent crime rates had low non-medical retirement rates. The lack of statistical support for other forms of turnover suggests that sworn officers' turnover rates are more affected by property crime rates than violent crime rates.

In addition, the results revealed that larger jurisdictions' experience greater turnover in general. Moreover, the results revealed that police departments in the South, Midwest, and West experienced higher voluntary resignations and dismissal than departments in the Northeast. Similarly, departments in the South and West had lower non-medical retirement rates, while departments in the South and Midwest had lower medical retirement rates. Different from the Northeast, departments in the West experienced more total involuntary turnover. These findings suggest that regional variations in turnover exist. Furthermore, the results revealed variations in turnover by government level. While state police departments had lower non-medical retirement rates than city police departments, state police departments experienced higher turnover as a result of demotions, promotions, and transfers. In addition, the results showed that while county police departments had lower total voluntary turnover rates than city police departments, they had higher total involuntary turnover rates. These findings suggest that departments' abilities to manage turnover might vary by government level.

### **5. Conclusion and Implications for Future Research**

Although sworn officers' voluntary and involuntary turnover rates are likely caused by a host of factors, the findings of this research indicate that institutional characteristics explain between 17 and 33 percent of all turnover rates. Thus, practitioners looking to reduce turnover rates within their departments should explore how different contextual and work factors influence turnover behavior. Moreover, the results revealed a unique relationship among different types of turnover that previous research failed to uncover. In addition, this research illustrates that while sworn officers' turnover rates vary by department, average turnover rates, at least for the year observed, were much lower than previous research has acknowledged. This finding yields support for the need for more advanced modeling techniques than previous studies have used.

While these findings shed greater light on how various institutional factors correlate with turnover, they must be accepted with caution. The cross-sectional nature of this research design might limit the associations found. Thus, future research analyzing officers' turnover rates should analyze rates in more than one year. Because research on turnover has primarily focused on individual and situational characteristics, few theories regarding organizations and institutional change have been examined. The findings of this research warrant the application of these theories in studies regarding police turnover.

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**Appendix**

**Table 1.1 Marginal Effects of Predictors on Sworn Officers' Turnover Rates**

	Voluntary Turnover			Involuntary Turnover			
	Voluntary Resignations	Non-Medical Retirements	Other Exits	Total Voluntary Turnover	Dismissals	Medical Retirements	Total Involuntary Turnover
<i>Elements of the Work Environment</i>							
<i>Turnover Rates</i>							
Log (Voluntary Resignation Rates)	----- -.039*** (.010)	-.009 (.007)	----- -.009 (.007)	----- - (.008)	.033*** (.008)	.008 (.009)	.026** (.010)
Log (Non-Medical Retirement Rates)	-.050*** (.012)	----- --- (.012)	-.005 (.008)	----- - (.008)	.018+ (.011)	.015 (.010)	.023* (.011)
Log (Other Exit Rates)	-.117** (.024)	-.126*** (.028)	----- ---- (.028)	----- - (.028)	-.004 (.014)	-.009 (.013)	-.014 (.018)
Log (Dismissal Rates)	.029* (.014)	-.009 (.016)	.015+ (.008)	.013 (.013)	----- (.013)	.005 (.013)	----- (.013)
Log (Medical Retirement Rates)	-.051** (.021)	-.021 (.020)	-.019+ (.010)	-.036* (.018)	-.007 (.016)	----- (.016)	----- (.016)
Log (Layoff Rates)	-.015 (.042)	.028 (.032)	-.172 (.108)	-.010 (.033)	.015 (.034)	.022 (.026)	----- (.026)
Log (Non-Sworn Officers' Turnover Rates)	.049*** (.006)	.039*** (.006)	.008 (.005)	.043*** (.005)	.008 (.006)	.010 (.006)	.017** (.007)
<i>Education and Training</i>							
Log (Indirect Hires)	.074*** (.008)	.037*** (.008)	.016** (.006)	.069*** (.007)	.046*** (.008)	-.002 (.008)	.031*** (.009)
Log (Pre-Service Hires)	.132*** (.018)	.045*** (.015)	.012 (.007)	.110*** (.022)	.020+ (.011)	.003 (.011)	.032* (.014)
High Community Policing Training Required	.035+ (.019)	-.018 (.017)	.008 (.012)	.007 (.017)	.009 (.017)	-.000 (.016)	.006 (.018)
Associate's Degree	-.060+ (.032)	.031 (.025)	-.018 (.021)	-.008 (.027)	-.065* (.032)	-.011 (.026)	-.054+ (.031)
<i>Work Assignments</i>							
Log (Percent of Officers Assigned to Patrol)	-.076** (.027)	-.082*** (.026)	-.023 (.019)	-.002** (.001)	-.063** (.024)	-.072*** (.023)	-.003*** (.001)
Log (Percent of Officers Assigned to Investigation)	.019+ (.010)	.030** (.012)	.003 (.008)	.001 (.001)	.011 (.011)	-.002 (.008)	-.001 (.001)
Log (Ratio of Patrol Officers per 100,000 Residents)	.091*** (.022)	.114*** (.021)	.025 (.016)	.078*** (.013)	.082*** (.020)	.079*** (.020)	.095*** (.017)
<i>Leadership</i>							
Log (Number of Female Superior Officers)	-.007 (.014)	-.051*** (.012)	.026*** (.008)	-.049*** (.013)	.003 (.011)	-.023* (.011)	-.021+ (.012)
<i>Pay</i>							
Log (Median Salary)	.004+ (.002)	.004+ (.002)	-.000 (.002)	.003 (.002)	-.003 (.002)	.003 (.002)	.002 (.002)
<i>Diversity and Minority Representation</i>							
	Voluntary Resignations	Voluntary Turnover Non-Medical Retirements	Other Exits	Total Voluntary Turnover	Dismissals	Involuntary Turnover Medical Retirements	Total Involuntary Turnover

		Retirements		Turnover		Turnover	
Log (Number of Black Officers)	-.024* (.012)	.003 (.011)	.001 (.008)	-.021+ (.011)	.020* (.010)	.035** (.010)	.041*** (.011)
Log(Number of Hispanic Officers)	-.011 (.011)	-.013 (.010)	.008 (.005)	.008 (.010)	.016+ (.009)	.014 (.009)	.025** (.010)
Log (Black Officer-to-Citizen Ratio)	.008 (.008)	.008 (.006)	.001 (.005)	-.016* (.007)	-.009 (.007)	-.002 (.006)	-.014* (.007)
Log (Hispanic Officer-to-Citizen Ratio)	.004 (.008)	.004 (.007)	.000 (.006)	-.000 (.008)	.000 (.007)	-.002 (.007)	-.002 (.008)
<i>Union Representation</i>							
Collective Bargaining Agreement	-.020 (.020)	.038* (.018)	.002 (.013)	.003 (.018)	-.018 (.018)	.007 (.016)	-.027 (.019)
<i>Elements of the Contextual Environment</i>							
<i>Crime Rates</i>							
Log (Property Crime Rate per 100,000)	-.004 (.015)	.048*** (.015)	.017 (.013)	.027* (.013)	.002 (.016)	-.006 (.016)	-.013 (.017)
Log (Violent Crime Rate per 100,000)	-.002 (.011)	-.022* (.011)	-.006 (.009)	-.011 (.009)	.017 (.012)	.013 (.012)	.021 (.013)
<i>Population</i>							
Log (Population)	.065*** (.013)	.144*** (.012)	.026** (.010)	.090*** (.009)	.085*** (.013)	.089*** (.013)	.120*** (.011)
<i>Region</i>							
South	.202*** (.029)	-.065** (.026)	.017 (.020)	.040 (.026)	.106*** (.028)	-.119*** (.024)	-.002 (.028)
Midwest	.139*** (.129)	-.013 (.023)	.017 (.021)	.036 (.023)	.071* (.029)	-.048* (.023)	-.001 (.027)
West	.162*** (.032)	-.047+ (.028)	.004 (.022)	.008 (.028)	.136*** (.030)	.005 (.025)	.076** (.030)
<i>Level of Government</i>							
County	.015 (.029)	-.009 (.026)	.015 (.020)	-.046* (.025)	.028 (.025)	-.025 (.024)	-.045+ (.026)
State	-.014 (.091)	-.180** (.072)	.126+ (.074)	_____	.078 (.071)	-.036 (.053)	-.061 (.065)
Observations	2,356	2,356	2,356	2,326	2,356	2,356	2,356
Adjusted R-Square	.189	.331	.178	.261	.199	.169	.199
AIC	2640.95	2162.23	1338.79	2082.08	2128.10	1965.65	2472.00
BIC	2808.13	2329.41	1505.97	2231.62	2295.28	2132.83	2627.65

Note: \*\*\*denotes  $p < .001$ , \*\* $p < .01$ , \* $p < .05$ , and + $p < .10$ .