
**The Impact of Armory Relocations
on Recruiting and Retention in the
Pennsylvania Army National Guard:**
A Statistical Analysis

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EXECUTIVE SUMMARY

Overview

This study investigates the impact of armory placement on recruiting and retention within Pennsylvania Army National Guard units. The study leveraged data from the Director's Personnel Readiness Overview (DPRO), the Force Management System (FMSWeb), and U.S. Census Bureau sources. The researcher cleaned, combined, and analyzed this data using quantitative methods including bivariate correlations and comparisons of means to answer four primary research questions:

- Where are armories located across Pennsylvania and what was the composition of tenant units from 2012 to 2023?
- To what extent have unit composition demographic changes mirrored community demographic changes?
- Did any units demonstrate statistically significant strength patterns over the last twelve years, and did they align with armory movements?
- From what distances have units been drawing members and has this changed with armory relocations?

Key Findings

- 01 Short-term negative correlations were observed between armory movements and unit strength, however **long-term positive correlations indicate strategic benefits to these moves.**
- 02 Soldiers' commuting distances to drill at armories increased over time, peaking at 58 miles this past year. **2023 was the first year that commute distance negatively correlated with unit strength.**
- 03 **Philadelphia is the only county in which units don't closely align with county demographics.**
- 04 **Asians are under-represented in units.** All other demographics tend to correlate with county trends.

Key Recommendations

- 01 Senior leaders should continue to **evaluate the potential long-term benefits and risks** of armory movements, recognizing that there will potentially be short-term negative impacts.
- 02 Senior leaders should **develop targeted recruitment strategies** tailored to geographic and demographic factors, especially in Philadelphia.
- 03 Senior leaders should **address the challenges of increased commuting distances** for soldiers, especially following armory relocations.

BACKGROUND

In the Pennsylvania Army National Guard (PAARNG), as in the rest of the United States Army, recruiting and retention is a top priority.

Recognizing that the strength of the force hinges upon the ability to attract and retain talented personnel, strategic decisions regarding placement of armories, recruitment strategies, and retention initiatives hold profound significance for the PAARNG's ability to fulfill mission obligations.

Armory placement serves as a linchpin in recruitment and retention efforts in the National Guard, directly influencing soldiers' access to training facilities, logistical support, and community engagement opportunities. Moreover, the geographic proximity of units to potential recruits and the commuting distances for existing members are important factors in attracting and retaining personnel. Therefore, gaining insights into how armory placement impacts recruiting, and retention outcomes is essential for senior leaders as they chart the course for the PAARNG's future readiness.

This study provides empirical insights into the relationships between armory placement, unit composition, and recruitment and retention dynamics within the PAARNG. This study uncovers patterns, trends, and correlations that can help inform strategic decision-making processes by leveraging historical data and conducting quantitative analysis.

Armed with a deeper understanding of these dynamics, senior leaders can make better informed decisions regarding unit movements, resource allocation, and recruitment strategies. By aligning armory placement strategies and recruitment and retention goals, the PAARNG can optimize organizational effectiveness, enhance unit readiness, and uphold its commitment to maintaining a skilled, diverse, and resilient force. Ultimately, this study serves as a critical background for senior leaders as they strive to ensure the force remains capable, adaptive, and mission-ready in fulfilling its obligations to the Commonwealth and nation.

EVALUATION GOALS & QUESTIONS

This study aims to determine whether armory placement has influenced recruiting and retention for units that experienced physical armory relocations. It analyzes unit locations and their member demographics over the last twelve years to assess the direct correlation between unit composition and the communities in which they are situated.

Additionally, the study compares the home of records of unit members to their assigned armory locations to see how soldier commuting distance has changed and ascertain how armory movements have impacted their commuting distances.

Finally, this study examines unit strength reports to assess whether armory movements have statistically significant effects on recruiting and retention efforts both in the short and longer terms. These objectives align with four primary research questions.

Armory Locations

Where are armories located across Pennsylvania and what was the composition of tenant units from 2012 to 2023?

Unit Demographics

To what extent have unit composition demographic changes mirrored community demographic changes?

Strength Patterns

Did any units demonstrate statistically significant strength patterns over the last twelve years, and did they align with armory movements?

Soldier Travel Distance

From what distances have units been drawing members and has this changed with armory relocations?

METHODOLOGY

This study used existing Soldier and unit data from the primary personnel management system of the United States Army, known as DPRO (Director's Personnel Readiness Overview). I pulled the initial data set from DPRO, comprising all soldiers in the PAARNG, their basic demographics, assigned unit, and distance traveled from home of record to their assigned unit from 2003-2023. I also used this initial data set to identify where armories were located during that time frame.

The initial data I pulled from DPRO only provided a means to determine how many soldiers were assigned to units each year, so to determine each unit's strength (the number of assigned personnel in a unit compared to the number of soldiers authorized in the unit), I used the US Army's Force Management System (FMSweb) to pull existing data on authorized strength for each unit.

I combined and cleaned the two initial data sets of over 280,000 unique data points to determine what percentage was usable for analysis. What I found through the cleaning process was that numerous unit identifiers have changed over the past twenty years, and the type of variables tracked by DPRO also changed. Because of how incomplete the data was prior to 2012, I determined that I could conduct a more refined analysis by only looking at the twelve years spanning 2012-2023.

The final data set I analyzed was comprised of personnel data from 66 unique units. These units had complete personnel data from 2012-2023 with no significant changes in reported data other than change of armory location.

To contextualize the demographic composition of these units, I compared unit demographic data with demographic data obtained from the American Community Survey (ACS) 5-year average datasets on the county level within Pennsylvania, sourced from the US Census Bureau.

METHODOLOGY

I computed bivariate correlations to examine the relationships between variables of interest. Specifically, I interpreted the Pearson’s correlation coefficient to assess the strength and direction of the relationships between unit strength, soldier commute distance, time since an armory relocation, racial demographics of units as well as county racial demographics. When variables displayed significant relationships, I then calculated the difference of means to compare group averages for added context. These comparisons typically looked at differences between units that experienced an armory movement and those that did not.

This study protects the privacy and confidentiality of Pennsylvania Army National Guard soldiers’ information. I anonymized data on a government system prior to analysis to ensure individual privacy. The relevant authorities that oversee data access, specifically those within the Pennsylvania Army National Guard G1, approved the study.

| Data | Source |
|---|--|
| <ul style="list-style-type: none">• Unique PAARNG units (UIC) and location (5-digit zip code)• Unit assigned personnel• Unit assigned personnel demographics (sex, race, travel distance) | Director’s Personnel Readiness Overview (DPRO) |
| <ul style="list-style-type: none">• Unit authorized personnel | US Army Force Management System (FMSWeb) |
| <ul style="list-style-type: none">• County racial demographics | U.S. Census Bureau ACS (5-Year Average) |

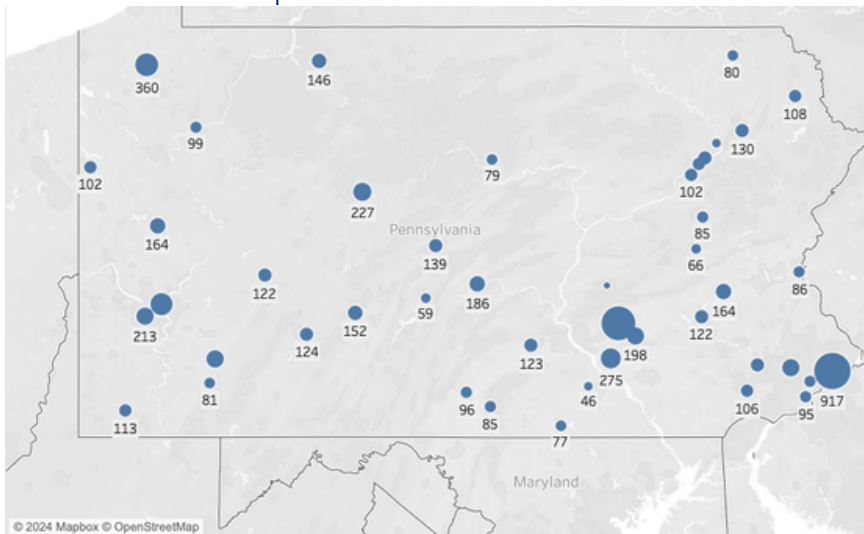
FINDINGS

Armory Placement

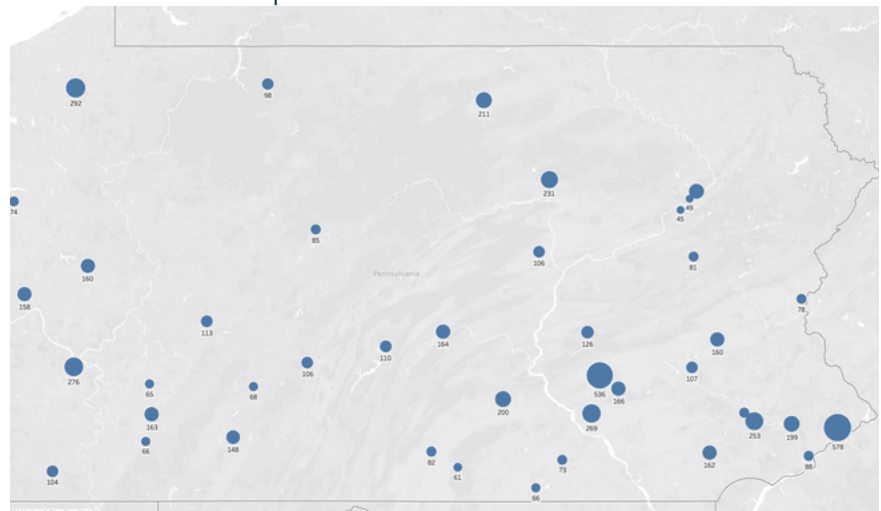
01 There was no significant change in areas served by armories over the last 12 years.

Although many units relocated armories over the time examined, the overall distribution of units throughout the State remained fairly constant. The maps below show the difference in distribution between 2012 and 2023. While there was slight consolidation of the northeastern part of the State, units remained clustered in Philadelphia, Lebanon, and Allegheny counties with a consistent placement of units covering the majority of the southern half of the State.

Distribution of Sampled Soldiers - 2012



Distribution of Sampled Soldiers - 2023

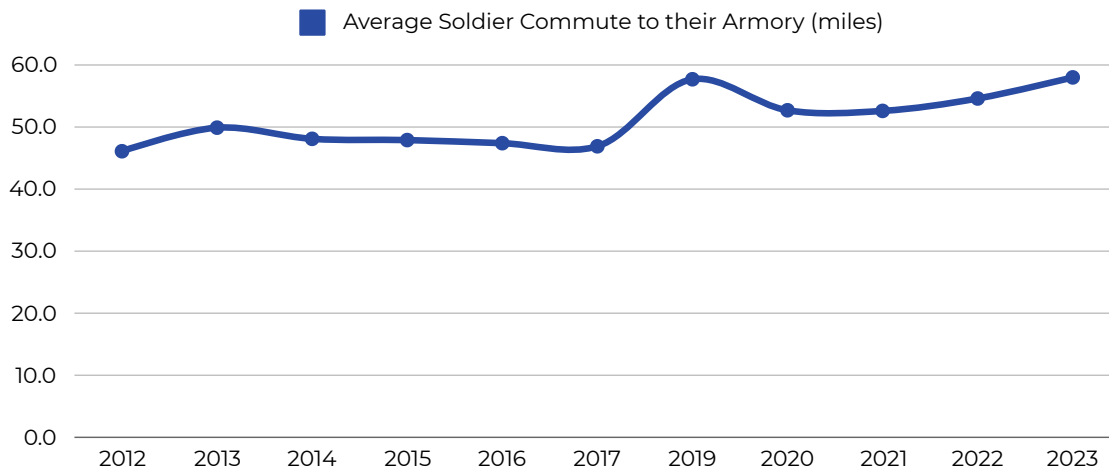


FINDINGS

Commute Distance

01 Commuting distance has increased and was negatively correlated with unit strength in 2023.

Soldiers are traveling further and further to get to drill, but there hasn't been a statistically significant correlation between that distance traveled and the strength of a unit until 2023.



In 2012, soldiers traveled an average distance of 46.1 miles from their home of record to their assigned armory. However, from 2019 to 2023, the average distance traveled surpassed 50 miles, reaching its peak in 2023 at 58.0 miles (25.8% increase).

A significant relationship exists between the distance soldiers travel to their armory in 2022 (from home of record) and the strength of a unit in 2023 ($r = -.30, p < .05$). This relationship is characterized by a moderate, negative correlation.

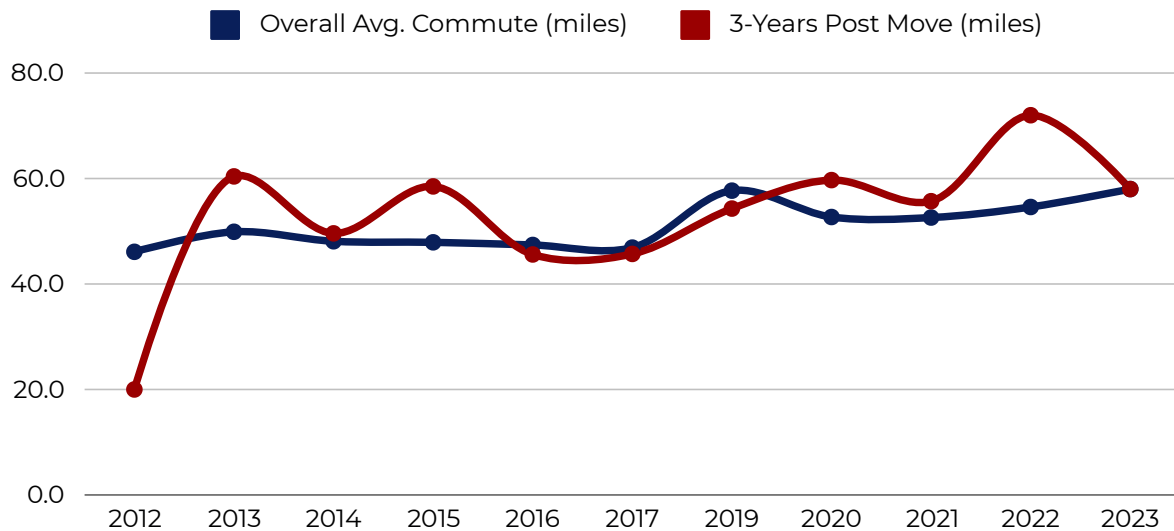
FINDINGS

Commute Distance

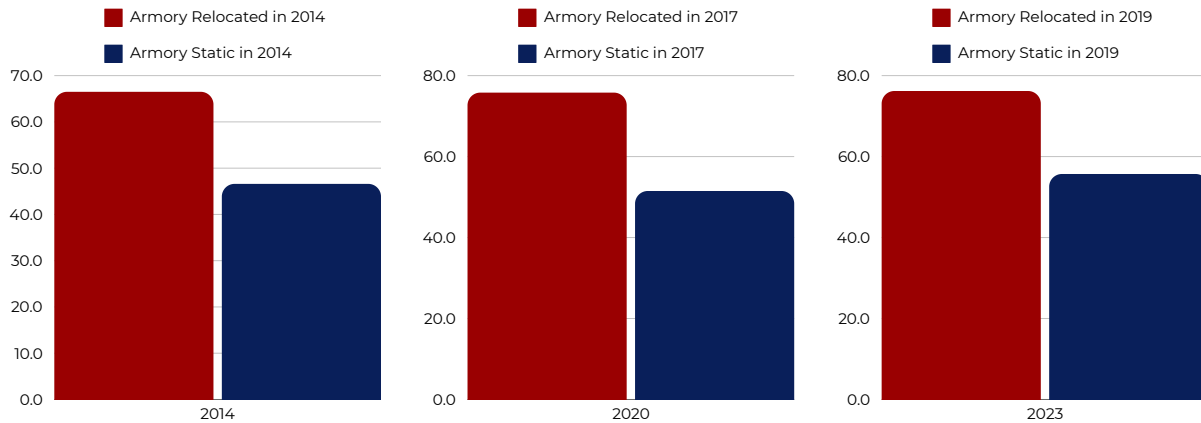
02 Armory relocations correlated with increased commuting distances.

Multiple significant relationships exist between the travel distances of soldiers and whether their unit underwent a relocation within the past three to five years.

Average Commutes of Units 3-Years After Armory Relocation



Comparisons of Average Commutes for Units that Relocated vs Remained Static



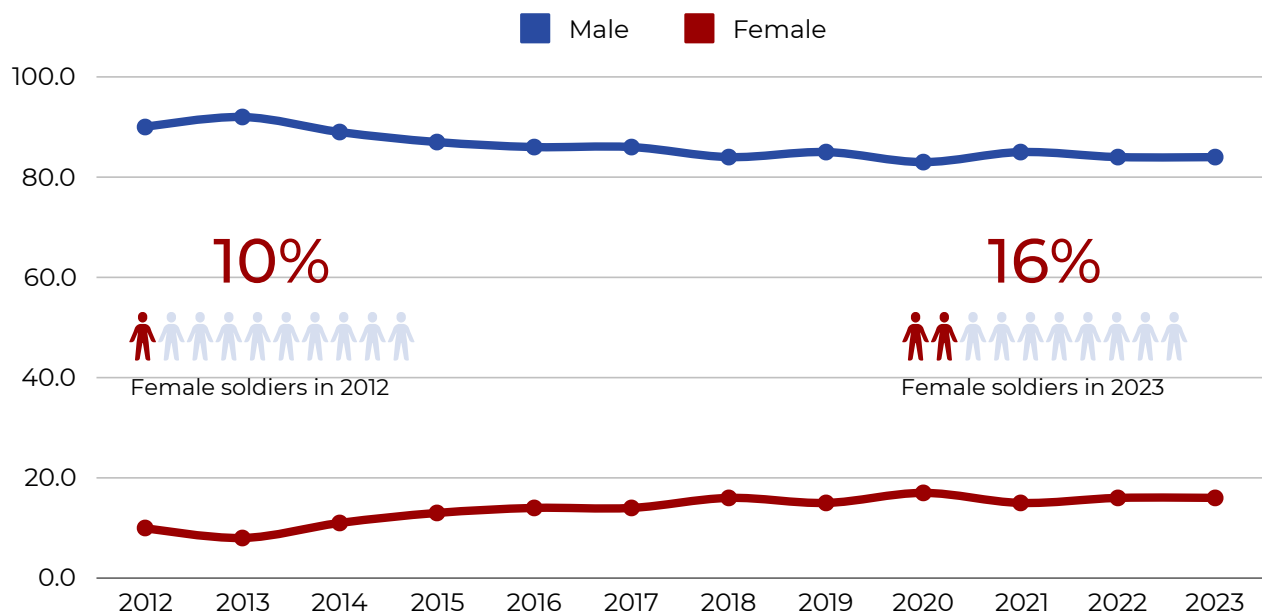
FINDINGS

Demographics

01 Female representation is slowly rising.

The units analyzed are predominately male with moderate increases from 2012 to 2023 in the average percentage of females (10% to 16%).

Sex of sampled units from 2012-2023



FINDINGS

Demographics

02 Asians are under-represented in units.

Asian populations in units are the only racial demographics that did not correlate with county trends over the last twelve years.

03 All other demographics correlate with counties.

The number of white soldiers in a unit correlated with county white population trends from 2012 to 2022 except for 2021 (r values ranging from .63 to .78 with all p values < .05). The associations were generally strong positive associations.

The number of black soldiers in a unit correlated with county black population trends from 2012 to 2022 except for 2020 (r values generally in the .66 range with p values all < .05). The associations were generally strong, positive associations. 2022 saw a weak association (r = .284, p < .05).

The number of Hispanic soldiers in a unit correlated with county Hispanic population trends from 2012 to 2018, as well as in 2021 (r values ranging from .30 to .45 with all p values < .01). The associations were generally moderate, positive associations.

The number of Asian soldiers in a unit had no significant correlation with county demographic trends.

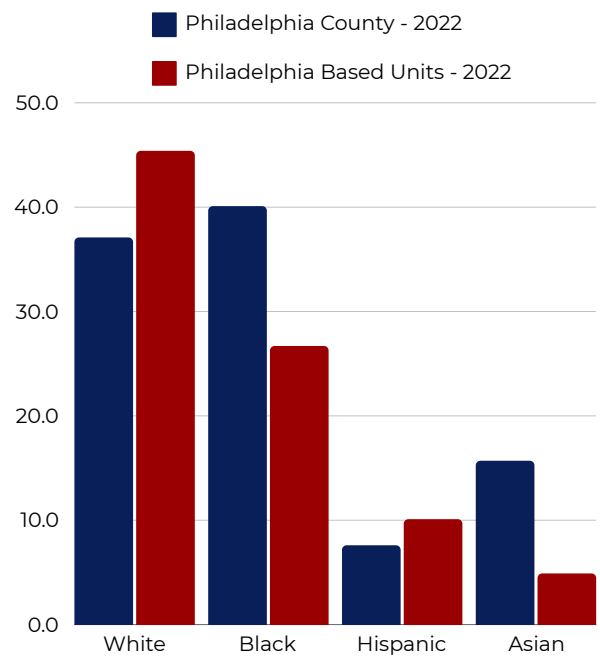
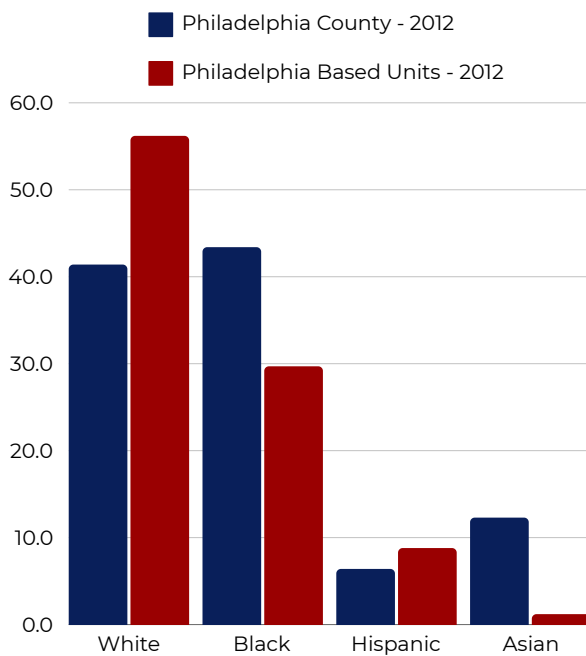
FINDINGS

Demographics

04 Philadelphia is the only county in which units don't closely align with county demographics.

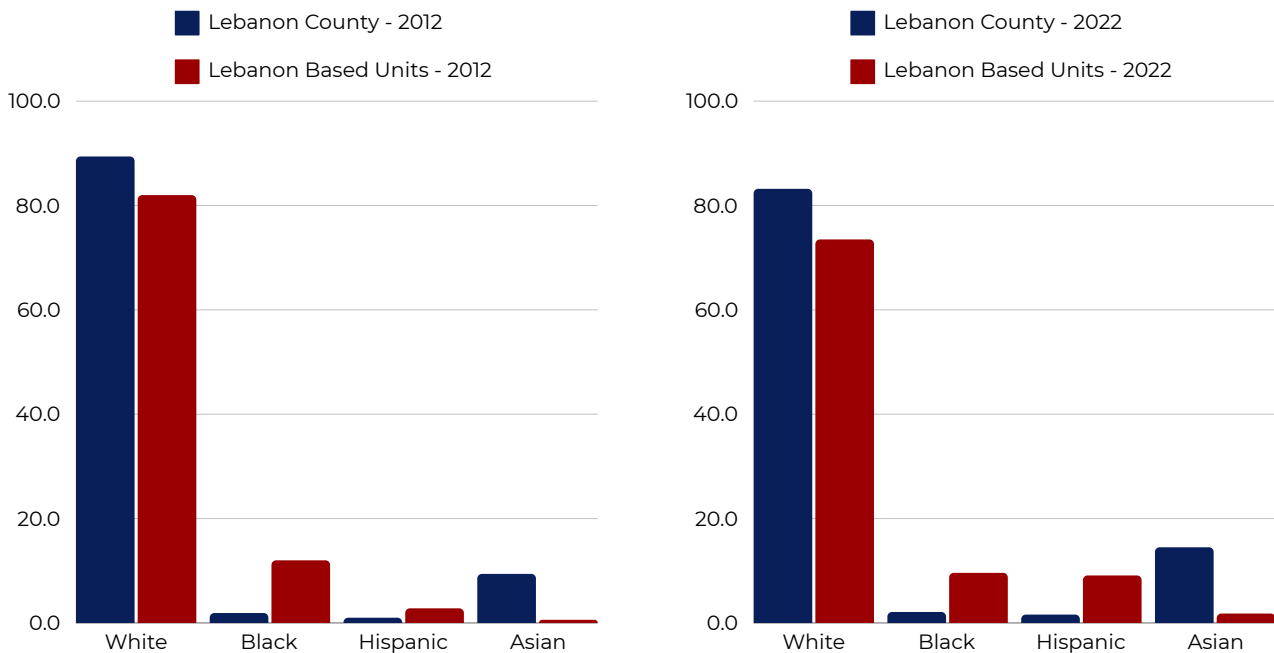
Rural counties as well as metropolitan counties such as Allegheny County all closely align with unit racial composition. Philadelphia-based units are consistently less diverse.

Racial demographics of Philadelphia-based units compared to County demographics

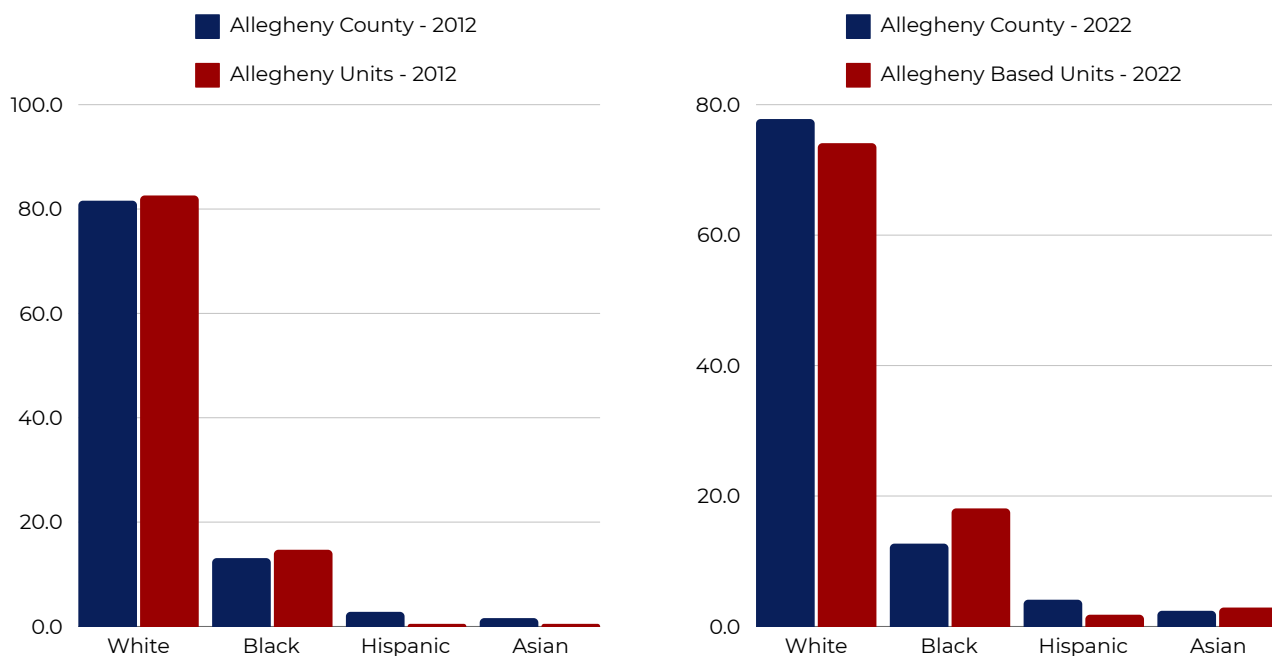


FINDINGS - DEMOGRAPHICS

Racial demographics of Lebanon-based units compared to County demographics



Racial demographics of Allegheny-based units compared to County demographics

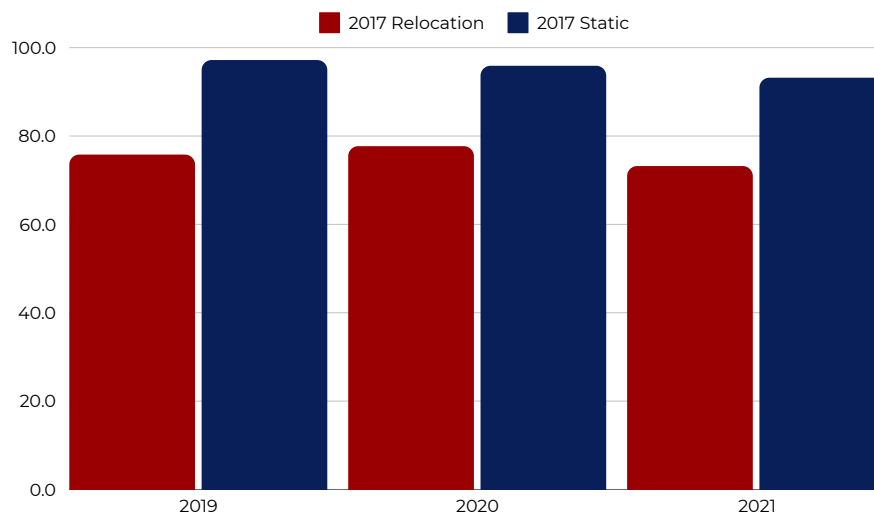


FINDINGS

Strength Patterns

01 Units that relocated in 2017 exhibited short-term negative strength patterns.

2017 Armory Relocation Impacts to Units Strength



2017 was the first time armory relocations showed a statistically significant negative correlation with unit strength patterns. Those correlations weren't seen until a year later (2019) and continued through 2021 (r values all = $-.25$, $p < .05$). The associations were low to moderate associations. Unit strength in 2022 and 2023 did not correlate with the move. This shows that there appears to be a short-term immediately negative impact to unit strength, but after five years that impact isn't felt anymore.

Three units moved armory locations in 2017: PGRB0, PGRD0, and ZFXB0. PGRB0 relocated 126 soldiers from New Milford, PA (Susquehanna County) to Williamsport, PA (Lycoming County). PGRD0 relocated 79 soldiers from Pittston, PA (Luzerne County) to New Milford, PA. Finally, ZFXB0 moved 80 soldiers from Philadelphia, PA to Elizabethtown, PA.

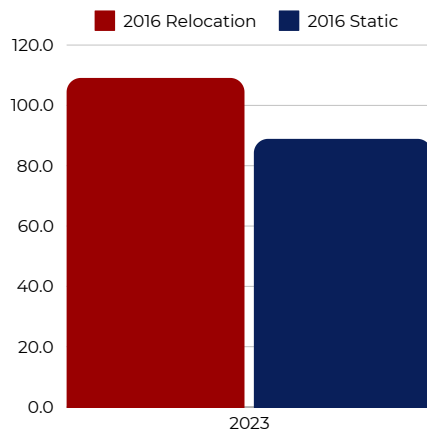
FINDINGS

Strength Patterns

02 Units that were relocated in 2016 are beginning to show long-term, positive strength patterns.

2016 was the first time armory relocations showed a statistically significant positive correlation with unit strength patterns. Those correlations weren't seen until seven years later ($r = .24$, $p = .05$). The association is a low, positive one.

2016 Armory Relocation Impacts to Units Strength



03 Unit strength patterns that correlate with overall PAARNG strength tend to not relocate as much.

Out of the sampled UIC's, 30.3% exhibited a positive correlation with overall PAARNG strength trends, while only 4.5% displayed a negative correlation. The remaining sampled UIC's did not show any significant correlation with the overall strength trends of the PAARNG.

Interestingly, among the UIC's that demonstrated statistically significant correlations with overall PAARNG strength trends, 80% did not undergo any armory movement throughout the 12-year period examined, and 90% experienced one or less.

LIMITATIONS

This study cannot determine causality. Although the longitudinal nature of the study provided valuable insights into trends over time, many external factors potentially impacted strength over the last twelve years, such as mobilizations, regionalized employment trends, and modernization of units. Future analysis can better account for these factors, as this study's scope did not allow for it.

The external validity of this study may be impacted by regional demographics, geographic considerations, and the size of the state being examined. Pennsylvania can pull recruits from multiple states in close proximity and has good access to multiple major metropolitan areas outside of the state (e.g. New York, Baltimore, and Washington, D.C.). The state consistently boasts one of the largest National Guard forces in the country, which enhances the amount of data available for conducting such a large-scale analysis. Other states looking to conduct strength analysis of this magnitude may not have enough Unit Identification Codes (UICs) and corresponding data to draw significant conclusions.

Data collection beyond twelve years is inherently difficult due to changes in records management. The initial design of this study involved pulling data from the last twenty years; however, incompleteness of data in DPRO and changing UICs made it too difficult to draw significant conclusions without significantly more effort in the data collection phase. The availability of digitized data and custom reporting available for state-level access in DPRO thus limits this type of study.

RECOMMENDATIONS

Action Items

01

Senior leaders should continue to evaluate the potential long-term benefits of armory relocations, recognizing there will be short-term negative impacts.

While short-term disruptions may occur, this study indicates that units often experience increased strength several years post-relocation. Leaders should therefore carefully evaluate the potential long-term benefits of armory movements in terms of recruitment, retention, and operational effectiveness before making decisions.

02

Senior leaders should develop targeted recruitment strategies tailored to geographic and demographic factors, especially in Philadelphia.

Given the influence of armory locations on recruitment and retention, leaders should adjust their recruitment efforts to target specific geographic areas and demographic groups to ensure a diverse and resilient force. This may involve enhancing engagement in urban centers such as Philadelphia to better align unit demographics with community demographics.

03

Senior leaders should address the challenges of increased commuting distances for Soldiers, especially following armory relocations.

Longer travel distances may impact soldier retention, so leaders should explore options to mitigate these challenges. This can include transportation assistance, implementing hybrid work opportunities for administrative tasks, and more lenient split unit training assembly (SUTA) policies to alleviate the burden of travel on soldiers and improve retention rates.

RECOMMENDATIONS

Future Research

01

Impact of travel distance on individual retention.

Senior leaders should conduct additional analysis on travel distance impacts on retention. Examining retention rates of individuals who consistently commute over fifty miles, the types of units that historically commute the longest, and their strength trends good places to start diving deeper.

02

Conditions surrounding armory relocations in 2017.

Senior leaders should look closer at the conditions surrounding armory movements in 2017 because that's the first year this study identified significant strength pattern correlation. Things for leaders to consider when looking deeper at those moves are 1) mobilizations that affected units involved in armory movements, 2) broader economic conditions, and 3) any other significant events occurring within the PAARNG that year.

03

Impact of mobilizations on strength trends.

This analysis does not consider mobilizations. When a unit mobilizes, their unit strength typically surges to nearly 100% on paper. Once that unit returns there is typically an exodus of unit members as people separate, retire, take promotions in other units, and other actions that were put off supporting the mobilization. Future research could A) look at how that specifically impacts strength trends and/or B) isolate mobilizing units strength anomalies and smooth the trends to get a more accurate picture of interested variables other than mobilizations.

APPENDIX 1

COMMUTE DATA ANALYSIS

VARIABLES:

- YEAR_D = AVG DISTANCE TRAVELED OF UNITS
- YEAR_S = AVG UNIT STRENGTH

DESCRIPTIVE STATISTICS

| | N | Range | Minimum | Maximum | Mean | Std. Deviation |
|--------------------|----|-------|---------|---------|------|----------------|
| 2012_D | 66 | 90.4 | 17.5 | 107.9 | 46.1 | 17.9 |
| 2013_D | 66 | 81.6 | 22.3 | 103.9 | 49.9 | 18.1 |
| 2014_D | 66 | 136.3 | 19.1 | 155.3 | 48.1 | 21.9 |
| 2015_D | 66 | 80.1 | 16.9 | 97.0 | 47.9 | 16.9 |
| 2016_D | 66 | 94.9 | 22.0 | 116.9 | 47.4 | 16.2 |
| 2017_D | 66 | 62.8 | 18.0 | 80.8 | 46.9 | 15.4 |
| 2019_D | 66 | 342.3 | 24.2 | 366.5 | 57.7 | 44.4 |
| 2020_D | 63 | 123.5 | 21.2 | 144.7 | 52.7 | 20.6 |
| 2021_D | 44 | 74.0 | 21.4 | 95.4 | 52.6 | 16.0 |
| 2022_D | 60 | 110.3 | 13.0 | 123.3 | 54.6 | 17.4 |
| 2023_D | 63 | 151.7 | 8.0 | 159.7 | 58.0 | 22.8 |
| Valid N (listwise) | 41 | | | | | |

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BIVARIATE CORRELATION TEST

| | | 2012_D | 2012_S | 2013_D | 2013_S | 2014_D | 2014_S | 2015_D | 2015_S | 2016_D | 2016_S | 2017_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2012_D | Pearson Correlation | 1 | | | | | | | | | | |
| | Sig. (2-tailed) | | | | | | | | | | | |
| | N | 66 | | | | | | | | | | |
| 2012_S | Pearson Correlation | -0.032 | 1 | | | | | | | | | |
| | Sig. (2-tailed) | 0.801 | | | | | | | | | | |
| | N | 66 | 66 | | | | | | | | | |
| 2013_D | Pearson Correlation | .614** | -0.049 | 1 | | | | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.694 | | | | | | | | | |
| | N | 66 | 66 | 66 | | | | | | | | |
| 2013_S | Pearson Correlation | 0.054 | .830** | 0.040 | 1 | | | | | | | |
| | Sig. (2-tailed) | 0.664 | 0.000 | 0.749 | | | | | | | | |
| | N | 66 | 66 | 66 | 66 | | | | | | | |
| 2014_D | Pearson Correlation | .571** | 0.002 | .522** | 0.029 | 1 | | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.987 | 0.000 | 0.815 | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | | | | |
| 2014_S | Pearson Correlation | 0.227 | .443** | 0.121 | .511** | 0.144 | 1 | | | | | |
| | Sig. (2-tailed) | 0.067 | 0.000 | 0.333 | 0.000 | 0.247 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | | | | | |
| 2015_D | Pearson Correlation | .512** | -0.033 | .504** | -0.022 | .611** | 0.127 | 1 | | | | |
| | Sig. (2-tailed) | 0.000 | 0.791 | 0.000 | 0.860 | 0.000 | 0.311 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| 2015_S | Pearson Correlation | 0.180 | .476** | 0.105 | .521** | 0.121 | .971** | 0.103 | 1 | | | |
| | Sig. (2-tailed) | 0.149 | 0.000 | 0.402 | 0.000 | 0.334 | 0.000 | 0.410 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |

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BIVARIATE CORRELATION TEST

| | | 2012_D | 2012_S | 2013_D | 2013_S | 2014_D | 2014_S | 2015_D | 2015_S | 2016_D | 2016_S | 2017_D | 2017_S | 2018_S | 2019_D | 2019_S | 2020_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2016_D | Pearson Correlation | .247* | 0.015 | .274* | -0.025 | .287* | -0.173 | .552** | -0.200 | 1 | | | | | | | |
| | Sig. (2-tailed) | 0.045 | 0.906 | 0.026 | 0.841 | 0.019 | 0.165 | 0.000 | 0.107 | | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | | | |
| 2016_S | Pearson Correlation | -0.032 | .713** | -0.141 | .531** | -0.080 | .428** | -0.050 | .510** | -0.099 | 1 | | | | | | |
| | Sig. (2-tailed) | 0.799 | 0.000 | 0.260 | 0.000 | 0.524 | 0.000 | 0.690 | 0.000 | 0.427 | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | | |
| 2017_D | Pearson Correlation | .368** | -0.028 | .336** | -0.009 | .394** | 0.095 | .589** | 0.051 | .684** | 0.026 | 1 | | | | | |
| | Sig. (2-tailed) | 0.002 | 0.821 | 0.006 | 0.945 | 0.001 | 0.446 | 0.000 | 0.684 | 0.000 | 0.834 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | |
| 2017_S | Pearson Correlation | 0.059 | .604** | -0.002 | .577** | 0.002 | .370** | -0.155 | .364** | -0.029 | .678** | 0.033 | 1 | | | | |
| | Sig. (2-tailed) | 0.636 | 0.000 | 0.989 | 0.000 | 0.987 | 0.002 | 0.215 | 0.003 | 0.817 | 0.000 | 0.793 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| 2018_S | Pearson Correlation | .282* | 0.203 | 0.113 | 0.198 | 0.042 | 0.152 | 0.005 | 0.104 | 0.082 | 0.222 | 0.087 | .482** | 1 | | | |
| | Sig. (2-tailed) | 0.022 | 0.101 | 0.364 | 0.110 | 0.740 | 0.224 | 0.970 | 0.404 | 0.511 | 0.074 | 0.489 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| 2019_D | Pearson Correlation | -0.028 | -0.012 | 0.053 | -0.011 | 0.118 | -0.034 | 0.216 | -0.049 | .275* | -0.145 | 0.059 | -0.185 | -0.039 | 1 | | |
| | Sig. (2-tailed) | 0.822 | 0.924 | 0.671 | 0.931 | 0.344 | 0.787 | 0.082 | 0.693 | 0.026 | 0.247 | 0.637 | 0.137 | 0.759 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| 2019_S | Pearson Correlation | 0.204 | 0.117 | 0.022 | 0.076 | 0.083 | 0.056 | 0.061 | -0.007 | 0.099 | 0.139 | 0.118 | .302* | .806** | 0.078 | 1 | |
| | Sig. (2-tailed) | 0.100 | 0.348 | 0.859 | 0.543 | 0.506 | 0.653 | 0.627 | 0.957 | 0.428 | 0.267 | 0.345 | 0.014 | 0.000 | 0.534 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| 2020_D | Pearson Correlation | 0.232 | 0.025 | .264* | 0.060 | .527** | -0.059 | .406** | -0.077 | .365** | -0.043 | .449** | 0.063 | -0.037 | 0.183 | -0.116 | 1 |
| | Sig. (2-tailed) | 0.068 | 0.846 | 0.036 | 0.641 | 0.000 | 0.648 | 0.001 | 0.547 | 0.003 | 0.740 | 0.000 | 0.624 | 0.774 | 0.151 | 0.364 | |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |

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VARIABLES:

- YEAR_D = AVG DISTANCE TRAVELED OF UNITS
- YEAR_S = AVG UNIT STRENGTH

BIVARIATE CORRELATION TEST

| | | 2012_D | 2012_S | 2013_D | 2013_S | 2014_D | 2014_S | 2015_D | 2015_S | 2016_D | 2016_S | 2017_D | 2017_S | 2018_S | 2019_D | 2019_S | 2020_D | 2020_S | 2021_D | 2021_S | 2022_D | 2022_S | 2023_D | 2023_S |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2020_S | Pearson Correlation | 0.186 | 0.211 | -0.042 | 0.205 | 0.052 | 0.133 | -0.038 | 0.096 | 0.004 | 0.188 | -0.065 | .346** | .765** | -0.003 | .858** | -0.203 | 1 | | | | | | |
| | Sig. (2-tailed) | 0.135 | 0.089 | 0.739 | 0.098 | 0.678 | 0.286 | 0.762 | 0.442 | 0.972 | 0.131 | 0.604 | 0.004 | 0.000 | 0.982 | 0.000 | 0.111 | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 63 | 66 | | | | | | |
| 2021_D | Pearson Correlation | 0.266 | 0.061 | 0.196 | 0.129 | 0.297 | -0.035 | .433** | -0.180 | .484** | -0.008 | .504** | -0.104 | 0.005 | 0.155 | 0.111 | .484** | -0.051 | 1 | | | | | |
| | Sig. (2-tailed) | 0.081 | 0.692 | 0.203 | 0.403 | 0.050 | 0.822 | 0.003 | 0.243 | 0.001 | 0.959 | 0.000 | 0.503 | 0.974 | 0.316 | 0.472 | 0.001 | 0.743 | | | | | | |
| | N | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | 44 | | | | |
| 2021_S | Pearson Correlation | .256* | 0.197 | 0.027 | 0.145 | 0.051 | 0.172 | 0.031 | 0.176 | 0.043 | 0.214 | 0.028 | .333** | .660** | -.287* | .713** | -0.245 | .791** | -0.025 | 1 | | | | |
| | Sig. (2-tailed) | 0.038 | 0.112 | 0.831 | 0.246 | 0.686 | 0.168 | 0.807 | 0.157 | 0.735 | 0.084 | 0.827 | 0.006 | 0.000 | 0.019 | 0.000 | 0.053 | 0.000 | 0.872 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 63 | 66 | 44 | 66 | | | | |
| 2022_D | Pearson Correlation | 0.050 | -0.063 | 0.087 | -0.132 | 0.148 | -0.138 | .331** | -0.183 | .596** | -0.092 | .469** | -0.027 | -0.031 | 0.115 | -0.044 | .403** | -0.239 | .529** | -0.204 | 1 | | | |
| | Sig. (2-tailed) | 0.702 | 0.630 | 0.509 | 0.313 | 0.259 | 0.292 | 0.010 | 0.162 | 0.000 | 0.485 | 0.000 | 0.837 | 0.815 | 0.383 | 0.740 | 0.002 | 0.066 | 0.000 | 0.119 | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 57 | 60 | 42 | 60 | 60 | | | |
| 2022_S | Pearson Correlation | .245* | 0.196 | 0.207 | .246* | 0.131 | 0.151 | 0.062 | 0.134 | 0.022 | 0.149 | 0.014 | .323** | .643** | -0.152 | .631** | -0.067 | .731** | -0.022 | .789** | -0.239 | 1 | | |
| | Sig. (2-tailed) | 0.047 | 0.115 | 0.096 | 0.046 | 0.294 | 0.226 | 0.624 | 0.283 | 0.862 | 0.233 | 0.910 | 0.008 | 0.000 | 0.223 | 0.000 | 0.604 | 0.000 | 0.886 | 0.000 | 0.066 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 63 | 66 | 44 | 66 | 60 | 66 | | |
| 2023_D | Pearson Correlation | -0.086 | 0.060 | 0.049 | 0.003 | 0.036 | -0.155 | .260* | -0.178 | .569** | -0.183 | .273* | -0.119 | -0.026 | .264* | -0.054 | .302* | -0.161 | .441** | -0.175 | .781** | -0.219 | 1 | |
| | Sig. (2-tailed) | 0.503 | 0.638 | 0.701 | 0.983 | 0.781 | 0.226 | 0.040 | 0.162 | 0.000 | 0.152 | 0.030 | 0.354 | 0.838 | 0.036 | 0.676 | 0.019 | 0.207 | 0.004 | 0.170 | 0.000 | 0.085 | | |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 60 | 63 | 41 | 63 | 59 | 63 | 63 | |
| 2023_S | Pearson Correlation | 0.054 | 0.126 | 0.089 | 0.073 | 0.157 | 0.087 | 0.007 | 0.129 | 0.049 | 0.033 | -0.117 | 0.194 | .449** | 0.067 | .468** | -0.103 | .510** | -0.221 | .659** | -.257* | .635** | -0.007 | 1 |
| | Sig. (2-tailed) | 0.664 | 0.314 | 0.475 | 0.560 | 0.208 | 0.488 | 0.953 | 0.304 | 0.698 | 0.795 | 0.349 | 0.118 | 0.000 | 0.594 | 0.000 | 0.424 | 0.000 | 0.150 | 0.000 | 0.048 | 0.000 | 0.959 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 63 | 66 | 44 | 66 | 60 | 66 | 63 | 66 |

APPENDIX 1

COMMUTE DATA ANALYSIS

VARIABLES:

- YEAR_D = AVG distance traveled by soldiers to an armory in that given year
- YEAR_L = Units that experienced an armory relocation in that given year
- YEAR_L_Number = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST

| | | 2012_L | 1_2012 | 2_2012 | 3_2012 | 2012_D | 2013_L | 1_2013 | 2_2013 | 3_2013 | 2013_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2012_D | Pearson Correlation | 0.234 | 0.073 | .318** | -0.182 | -- | | | | | |
| | Sig. (2-tailed) | 0.058 | 0.559 | 0.009 | 0.143 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | | | |
| 2014_D | Pearson Correlation | 0.107 | 0.026 | .243* | -0.048 | .571** | 0.012 | 0.107 | 0.026 | .243* | .522** |
| | Sig. (2-tailed) | 0.392 | 0.835 | 0.049 | 0.701 | 0.000 | 0.922 | 0.392 | 0.835 | 0.049 | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| | Sig. (2-tailed) | 0.553 | 0.453 | 0.397 | 0.059 | 0.002 | 0.299 | 0.553 | 0.453 | 0.397 | 0.006 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2019_D | Pearson Correlation | -0.057 | .294* | -0.048 | .869** | -0.028 | -0.071 | -0.057 | .294* | -0.048 | 0.053 |
| | Sig. (2-tailed) | 0.649 | 0.016 | 0.699 | 0.000 | 0.822 | 0.569 | 0.649 | 0.016 | 0.699 | 0.671 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_D | Pearson Correlation | 0.087 | 0.195 | 0.094 | -0.074 | 0.232 | 0.006 | 0.087 | 0.195 | 0.094 | .264* |
| | Sig. (2-tailed) | 0.497 | 0.125 | 0.465 | 0.564 | 0.068 | 0.960 | 0.497 | 0.125 | 0.465 | 0.036 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| 2022_D | Pearson Correlation | -0.084 | -0.111 | -0.011 | -0.118 | 0.050 | 0.020 | -0.084 | -0.111 | -0.011 | 0.087 |
| | Sig. (2-tailed) | 0.522 | 0.399 | 0.931 | 0.371 | 0.702 | 0.880 | 0.522 | 0.399 | 0.931 | 0.509 |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| 2023_D | Pearson Correlation | -0.118 | 0.029 | -0.037 | 0.130 | -0.086 | 0.000 | -0.118 | 0.029 | -0.037 | 0.049 |
| | Sig. (2-tailed) | 0.358 | 0.822 | 0.776 | 0.312 | 0.503 | 0.998 | 0.358 | 0.822 | 0.776 | 0.701 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |

APPENDIX 1

COMMUTE DATA ANALYSIS

VARIABLES:

- YEAR_D = AVG distance traveled by soldiers to an armory in that given year
- YEAR_L = Units that experienced an armory relocation in that given year
- YEAR_L_Number = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST

| | | 2014_L | 1_2014 | 2_2014 | 3_2014 | 2014_D | 2015_L | 1_2015 | 2_2015 | 3_2015 | 2015_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2014_D | Pearson Correlation | -0.070 | 0.012 | 0.107 | 0.026 | -- | | | | | |
| | Sig. (2-tailed) | 0.579 | 0.922 | 0.392 | 0.835 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | | | |
| | Sig. (2-tailed) | 0.825 | 0.299 | 0.553 | 0.453 | 0.001 | 0.961 | 0.825 | 0.299 | 0.553 | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2019_D | Pearson Correlation | -0.071 | -0.071 | -0.057 | .294* | 0.118 | 0.001 | -0.071 | -0.071 | -0.057 | 0.216 |
| | Sig. (2-tailed) | 0.572 | 0.569 | 0.649 | 0.016 | 0.344 | 0.993 | 0.572 | 0.569 | 0.649 | 0.082 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_D | Pearson Correlation | 0.195 | 0.006 | 0.087 | 0.195 | .527** | 0.088 | 0.195 | 0.006 | 0.087 | .406** |
| | Sig. (2-tailed) | 0.125 | 0.960 | 0.497 | 0.125 | 0.000 | 0.493 | 0.125 | 0.960 | 0.497 | 0.001 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| 2022_D | Pearson Correlation | -0.015 | 0.020 | -0.084 | -0.111 | 0.148 | 0.148 | -0.015 | 0.020 | -0.084 | .331** |
| | Sig. (2-tailed) | 0.910 | 0.880 | 0.522 | 0.399 | 0.259 | 0.259 | 0.910 | 0.880 | 0.522 | 0.010 |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| 2023_D | Pearson Correlation | -0.070 | 0.000 | -0.118 | 0.029 | 0.036 | 0.133 | -0.070 | 0.000 | -0.118 | .260* |
| | Sig. (2-tailed) | 0.583 | 0.998 | 0.358 | 0.822 | 0.781 | 0.297 | 0.583 | 0.998 | 0.358 | 0.040 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |

APPENDIX 1

COMMUTE DATA ANALYSIS

VARIABLES:

- YEAR_D = AVG distance traveled by soldiers to an armory in that given year
- YEAR_L = Units that experienced an armory relocation in that given year
- YEAR_L_Number = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST

| | | 2016_L | 1_2016 | 2_2016 | 3_2016 | 2016_D | 2017_L | 1_2017 | 2_2017 | 3_2017 | 2017_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | Sig. (2-tailed) | 0.589 | 0.961 | 0.825 | 0.299 | 0.000 | 0.374 | 0.589 | 0.961 | 0.825 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2019_D | Pearson Correlation | -0.017 | 0.001 | -0.071 | -0.071 | .275* | -0.018 | -0.017 | 0.001 | -0.071 | 0.059 |
| | Sig. (2-tailed) | 0.891 | 0.993 | 0.572 | 0.569 | 0.026 | 0.887 | 0.891 | 0.993 | 0.572 | 0.637 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_D | Pearson Correlation | 0.077 | 0.088 | 0.195 | 0.006 | .365** | .253* | 0.077 | 0.088 | 0.195 | .449** |
| | Sig. (2-tailed) | 0.550 | 0.493 | 0.125 | 0.960 | 0.003 | 0.046 | 0.550 | 0.493 | 0.125 | 0.000 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| 2022_D | Pearson Correlation | -0.054 | 0.148 | -0.015 | 0.020 | .596** | 0.153 | -0.054 | 0.148 | -0.015 | .469** |
| | Sig. (2-tailed) | 0.681 | 0.259 | 0.910 | 0.880 | 0.000 | 0.244 | 0.681 | 0.259 | 0.910 | 0.000 |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| 2023_D | Pearson Correlation | -0.033 | 0.133 | -0.070 | 0.000 | .569** | -0.008 | -0.033 | 0.133 | -0.070 | .273* |
| | Sig. (2-tailed) | 0.795 | 0.297 | 0.583 | 0.998 | 0.000 | 0.953 | 0.795 | 0.297 | 0.583 | 0.030 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |

| | | 2018_L | 1_2018 | 2_2018 | 3_2018 | 2019_L | 1_2019 | 2_2019 | 3_2019 | 2019_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2019_D | Pearson Correlation | 0.028 | -0.018 | -0.017 | 0.001 | 0.028 | 0.028 | -0.018 | -0.017 | -- |
| | Sig. (2-tailed) | 0.825 | 0.887 | 0.891 | 0.993 | 0.825 | 0.825 | 0.887 | 0.891 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_D | Pearson Correlation | 0.062 | .253* | 0.077 | 0.088 | 0.062 | 0.062 | .253* | 0.077 | 0.183 |
| | Sig. (2-tailed) | 0.630 | 0.046 | 0.550 | 0.493 | 0.630 | 0.630 | 0.046 | 0.550 | 0.151 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| 2022_D | Pearson Correlation | .368** | 0.153 | -0.054 | 0.148 | .368** | .368** | 0.153 | -0.054 | 0.115 |
| | Sig. (2-tailed) | 0.004 | 0.244 | 0.681 | 0.259 | 0.004 | 0.004 | 0.244 | 0.681 | 0.383 |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| 2023_D | Pearson Correlation | .286* | -0.008 | -0.033 | 0.133 | .286* | .286* | -0.008 | -0.033 | .264* |
| | Sig. (2-tailed) | 0.023 | 0.953 | 0.795 | 0.297 | 0.023 | 0.023 | 0.953 | 0.795 | 0.036 |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |

APPENDIX 1

COMMUTE DATA ANALYSIS

VARIABLES:

- YEAR_D = AVG distance traveled by soldiers to an armory in that given year
- YEAR_L = Units that experienced an armory relocation in that given year
- YEAR_L_Number = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST

| | | 2020_L | 1_2020 | 2_2020 | 3_2020 | 2020_D | 2021_L | 1_2021 | 2_2021 | 3_2021 | 2021_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2020_D | Pearson Correlation | .c | 0.062 | 0.062 | .253* | -- | | | | | |
| | Sig. (2-tailed) | | 0.630 | 0.630 | 0.046 | | | | | | |
| | N | 63 | 63 | 63 | 63 | 63 | | | | | |
| 2022_D | Pearson Correlation | .c | .368** | .368** | 0.153 | .403** | -0.079 | .c | .368** | .368** | .529** |
| | Sig. (2-tailed) | | 0.004 | 0.004 | 0.244 | 0.002 | 0.546 | | 0.004 | 0.004 | 0.000 |
| | N | 60 | 60 | 60 | 60 | 57 | 60 | 60 | 60 | 60 | 42 |
| 2023_D | Pearson Correlation | .c | .286* | .286* | -0.008 | .302* | -0.118 | .c | .286* | .286* | .441** |
| | Sig. (2-tailed) | | 0.023 | 0.023 | 0.953 | 0.019 | 0.358 | | 0.023 | 0.023 | 0.004 |
| | N | 63 | 63 | 63 | 63 | 60 | 63 | 63 | 63 | 63 | 41 |

| | | 2022_L | 1_2022 | 2_2022 | 3_2022 | 2022_D | 2023_L | 1_2023 | 2_2023 | 3_2023 | 2023_D |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2022_D | Pearson Correlation | -0.117 | -0.079 | .c | .368** | -- | | | | | |
| | Sig. (2-tailed) | 0.374 | 0.546 | | 0.004 | | | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | | | | | |
| 2023_D | Pearson Correlation | -0.058 | -0.118 | .c | .286* | .781** | -0.043 | -0.058 | -0.118 | .c | -- |
| | Sig. (2-tailed) | 0.650 | 0.358 | | 0.023 | 0.000 | 0.740 | 0.650 | 0.358 | | |
| | N | 63 | 63 | 63 | 63 | 59 | 63 | 63 | 63 | 63 | 63 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_W_YEAR = % of unit that is White in a given year
- RACE_W_YEAR_C = % of county that is White in a given year *

BIVARIATE CORRELATION TEST

| | | Race_W_2012 | Race_W_2012_C | Race_W_2013 | Race_W_2013_C | Race_W_2014 | Race_W_2014_C | Race_W_2015 | Race_W_2015_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_W_2012 | Pearson Correlation | -- | | | | | | | |
| | N | 66 | | | | | | | |
| | | | | | | | | | |
| Race_W_2012_C | Pearson Correlation | .759** | -- | | | | | | |
| | Sig. (2-tailed) | 0.000 | | | | | | | |
| | N | 66 | 66 | | | | | | |
| Race_W_2013 | Pearson Correlation | .936** | .700** | -- | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | | | | | | |
| | N | 66 | 66 | 66 | | | | | |
| Race_W_2013_C | Pearson Correlation | .757** | .994** | .697** | -- | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | | | | | |
| | N | 66 | 66 | 66 | 66 | | | | |
| Race_W_2014 | Pearson Correlation | .917** | .767** | .918** | .761** | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | |
| Race_W_2014_C | Pearson Correlation | .762** | .994** | .703** | 1.000** | .767** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_W_2015 | Pearson Correlation | .879** | .764** | .869** | .755** | .974** | .760** | -- | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_W_2015_C | Pearson Correlation | .758** | .983** | .694** | .990** | .757** | .990** | .752** | -- |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_W_YEAR = % of unit that is White in a given year
- RACE_W_YEAR_C = % of county that is White in a given year *

BIVARIATE CORRELATION TEST

| | | Race_W_2 012 | Race_W_2 012_C | Race_W_2 013 | Race_W_2 013_C | Race_W_2 014 | Race_W_2 014_C | Race_W_2 015 | Race_W_2 015_C | Race_W_2 016 | Race_W_2 016_C | Race_W_2 017 | Race_W_2 017_C | Race_W_2 018 | Race_W_2 018_C |
|-------------------|------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|
| Race_W_2 016 | Pearson Correlation | .816** | .786** | .822** | .781** | .886** | .786** | .903** | .777** | -- | | | | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | |
| Race_W_2 016_C | Pearson Correlation | .758** | .982** | .693** | .989** | .757** | .990** | .752** | 1.000** | .778** | -- | | | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| Race_W_2 017 | Pearson Correlation | .753** | .732** | .793** | .725** | .793** | .731** | .788** | .724** | .922** | .724** | -- | | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_W_2 017_C | Pearson Correlation | .730** | .904** | .648** | .912** | .736** | .913** | .738** | .923** | .688** | .924** | .686** | -- | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_W_2 018 | Pearson Correlation | .789** | .753** | .792** | .741** | .846** | .747** | .858** | .742** | .943** | .742** | .944** | .714** | -- | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_W_2 018_C | Pearson Correlation | .719** | .902** | .636** | .906** | .726** | .906** | .734** | .919** | .683** | .919** | .686** | .996** | .725** | -- |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_W_YEAR = % of unit that is White in a given year
- RACE_W_YEAR_C = % of county that is White in a given year *

BIVARIATE CORRELATION TEST

| | | Race_W_2012 | Race_W_2012_C | Race_W_2013 | Race_W_2013_C | Race_W_2014 | Race_W_2014_C | Race_W_2015 | Race_W_2015_C | Race_W_2016 | Race_W_2016_C | Race_W_2017 | Race_W_2017_C | Race_W_2018 | Race_W_2018_C | Race_W_2019 | Race_W_2019_C | Race_W_2020 | Race_W_2020_C | Race_W_2021 | Race_W_2021_C | Race_W_2022 | Race_W_2022_C | | |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|--|--|
| Race_W_2019 | Pearson Correlation | .743** | .662** | .749** | .652** | .783** | .659** | .808** | .659** | .886** | .658** | .904** | .659** | .960** | .672** | -- | | | | | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | | | | | |
| Race_W_2019_C | Pearson Correlation | .718** | .899** | .635** | .904** | .724** | .904** | .732** | .918** | .681** | .918** | .685** | .996** | .727** | 1.000** | .677** | -- | | | | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | | | | | | | | |
| Race_W_2020 | Pearson Correlation | .574** | .458** | .572** | .452** | .554** | .457** | .556** | .451** | .627** | .449** | .644** | .456** | .705** | .469** | .755** | .472** | -- | | | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | | | |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 63 | | | | | | | |
| Race_W_2020_C | Pearson Correlation | 0.218 | 0.083 | .282* | 0.073 | 0.199 | 0.080 | 0.193 | 0.091 | .252* | 0.091 | 0.188 | -0.040 | 0.169 | -0.047 | 0.149 | -0.047 | 0.019 | -- | | | | | | |
| | Sig. (2-tailed) | 0.080 | 0.509 | 0.023 | 0.565 | 0.112 | 0.524 | 0.124 | 0.473 | 0.043 | 0.472 | 0.134 | 0.750 | 0.178 | 0.709 | 0.237 | 0.710 | 0.883 | | | | | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 62 | 65 | | | | | | |
| Race_W_2021 | Pearson Correlation | .681** | .617** | .664** | .612** | .629** | .618** | .625** | .609** | .761** | .609** | .862** | .630** | .867** | .642** | .889** | .653** | .925** | 0.197 | -- | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.135 | | | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 60 | | | | | |
| Race_W_2021_C | Pearson Correlation | .660** | .827** | .562** | .832** | .643** | .833** | .636** | .849** | .586** | .849** | .593** | .924** | .643** | .927** | .569** | .928** | .484** | -0.056 | .657** | -- | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.661 | 0.000 | | | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 64 | 59 | 65 | | | | |
| Race_W_2022 | Pearson Correlation | .594** | .580** | .629** | .575** | .660** | .583** | .652** | .589** | .704** | .587** | .705** | .618** | .746** | .634** | .753** | .642** | .636** | 0.219 | .700** | .503** | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.096 | 0.000 | 0.000 | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 57 | 59 | 54 | 59 | 60 | | | |
| Race_W_2022_C | Pearson Correlation | .514** | .696** | .533** | .704** | .563** | .704** | .578** | .725** | .550** | .725** | .564** | .791** | .582** | .793** | .544** | .797** | .376** | -0.028 | .547** | .749** | .631** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.002 | 0.823 | 0.000 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 63 | 65 | 60 | 65 | 60 | 66 | | |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_B_YEAR = % of unit that is Black in a given year
- RACE_B_YEAR_C = % of county that is Black in a given year *

BIVARIATE CORRELATION TEST

| | | Race_B_2012 | Race_B_2012_C | Race_B_2013 | Race_B_2013_C | Race_B_2014 | Race_B_2014_C | Race_B_2015 | Race_B_2015_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_B_2012 | Pearson Correlation | -- | | | | | | | |
| | N | 66 | | | | | | | |
| Race_B_2012_C | Pearson Correlation | .667** | -- | | | | | | |
| | Sig. (2-tailed) | 0.000 | | | | | | | |
| | N | 66 | 66 | | | | | | |
| Race_B_2013 | Pearson Correlation | .912** | .627** | -- | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | | | | | | |
| | N | 66 | 66 | 66 | | | | | |
| Race_B_2013_C | Pearson Correlation | .671** | .998** | .632** | -- | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | | | | | |
| | N | 66 | 66 | 66 | 66 | | | | |
| Race_B_2014 | Pearson Correlation | .935** | .697** | .896** | .701** | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | |
| Race_B_2014_C | Pearson Correlation | .667** | .999** | .628** | 1.000** | .695** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_B_2015 | Pearson Correlation | .905** | .704** | .842** | .707** | .972** | .702** | -- | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_B_2015_C | Pearson Correlation | .659** | .991** | .611** | .992** | .680** | .992** | .687** | -- |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_B_YEAR = % of unit that is Black in a given year
- RACE_B_YEAR_C = % of county that is Black in a given year *

BIVARIATE CORRELATION TEST

| | | Race_B_20 12 | Race_B_20 12_C | Race_B_20 13 | Race_B_20 13_C | Race_B_20 14 | Race_B_20 14_C | Race_B_20 15 | Race_B_20 15_C | Race_B_20 16 | Race_B_20 16_C | Race_B_20 17 | Race_B_20 17_C | Race_B_20 18 | Race_B_20 18_C |
|-------------------|------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|
| Race_B_20 16 | Pearson Correlation | .763** | .768** | .716** | .772** | .833** | .766** | .866** | .749** | -- | | | | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | |
| Race_B_20 16_C | Pearson Correlation | .660** | .990** | .611** | .992** | .680** | .992** | .687** | 1.000** | .749** | -- | | | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| Race_B_20 17 | Pearson Correlation | .675** | .684** | .685** | .688** | .755** | .682** | .788** | .669** | .921** | .669** | -- | | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_B_20 17_C | Pearson Correlation | .614** | .912** | .549** | .914** | .642** | .914** | .660** | .922** | .642** | .922** | .647** | -- | | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_B_20 18 | Pearson Correlation | .688** | .709** | .676** | .712** | .741** | .705** | .780** | .692** | .904** | .691** | .947** | .675** | -- | |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_B_20 18_C | Pearson Correlation | .601** | .907** | .533** | .907** | .629** | .908** | .653** | .917** | .637** | .917** | .648** | .996** | .687** | -- |
| | Sig. (2- tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_B_YEAR = % of unit that is Black in a given year
- RACE_B_YEAR_C = % of county that is Black in a given year *

BIVARIATE CORRELATION TEST

| | | Race_B_2012 | Race_B_2012_C | Race_B_2013 | Race_B_2013_C | Race_B_2014 | Race_B_2014_C | Race_B_2015 | Race_B_2015_C | Race_B_2016 | Race_B_2016_C | Race_B_2017 | Race_B_2017_C | Race_B_2018 | Race_B_2018_C | Race_B_2019 | Race_B_2019_C | Race_B_2020 | Race_B_2020_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_B_2019 | Pearson Correlation | .639** | .632** | .638** | .636** | .690** | .630** | .727** | .622** | .846** | .621** | .910** | .635** | .946** | .644** | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_B_2019_C | Pearson Correlation | .599** | .906** | .531** | .906** | .630** | .907** | .652** | .916** | .635** | .916** | .647** | .996** | .685** | 1.000** | .643** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | | |
| Race_B_2020 | Pearson Correlation | .525** | .514** | .506** | .514** | .518** | .510** | .547** | .498** | .663** | .498** | .716** | .507** | .769** | .522** | .770** | .521** | -- | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 63 | |
| Race_B_2020_C | Pearson Correlation | 0.222 | 0.059 | .278* | 0.067 | 0.202 | 0.059 | 0.154 | 0.064 | 0.190 | 0.065 | 0.110 | -0.061 | 0.099 | -0.066 | 0.063 | -0.066 | 0.020 | -- |
| | Sig. (2-tailed) | 0.075 | 0.640 | 0.025 | 0.594 | 0.107 | 0.642 | 0.221 | 0.613 | 0.129 | 0.605 | 0.383 | 0.630 | 0.432 | 0.603 | 0.615 | 0.605 | 0.876 | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 62 | 65 |

| | | Race_B_2012 | Race_B_2012_C | Race_B_2013 | Race_B_2013_C | Race_B_2014 | Race_B_2014_C | Race_B_2015 | Race_B_2015_C | Race_B_2016 | Race_B_2016_C | Race_B_2017 | Race_B_2017_C | Race_B_2018 | Race_B_2018_C | Race_B_2019 | Race_B_2019_C | Race_B_2020 | Race_B_2020_C | Race_B_2021 | Race_B_2021_C | Race_B_2022 | Race_B_2022_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_B_2021 | Pearson Correlation | .614** | .588** | .602** | .596** | .631** | .590** | .651** | .578** | .757** | .577** | .851** | .623** | .900** | .633** | .935** | .636** | .961** | 0.089 | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.501 | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 60 | | | |
| Race_B_2021_C | Pearson Correlation | .548** | .823** | .472** | .823** | .553** | .823** | .571** | .834** | .556** | .834** | .564** | .911** | .610** | .915** | .554** | .915** | .682** | -0.086 | .638** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.500 | 0.000 | | -- | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 64 | 59 | 65 | | | |
| Race_B_2022 | Pearson Correlation | .495** | .322* | .270* | .324** | .491** | .321* | .538** | .320* | .516** | .320* | .366** | .339** | .385** | .343** | .424** | .343** | .304* | 0.031 | .411** | .291* | .63 | |
| | Sig. (2-tailed) | 0.000 | 0.010 | 0.032 | 0.009 | 0.000 | 0.010 | 0.000 | 0.011 | 0.000 | 0.011 | 0.003 | 0.007 | 0.002 | 0.006 | 0.001 | 0.006 | 0.018 | 0.808 | 0.001 | 0.020 | 284* | -- |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 60 | 62 | 57 | 63 | 0.024 | |
| Race_B_2022_C | Pearson Correlation | .399** | .703** | .425** | .703** | .467** | .704** | .495** | .714** | .495** | .714** | .524** | .780** | .536** | .785** | .510** | .786** | .398** | -0.052 | .497** | .711** | .63 | .66 |
| | Sig. (2-tailed) | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.001 | 0.679 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 63 | 65 | 60 | 65 | | |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_H_YEAR = % of unit that is Hispanic in a given year
- RACE_H_YEAR_C = % of county that is Hispanic in a given year *

BIVARIATE CORRELATION TEST

| | | Race_H_2012 | Race_H_2012_C | Race_H_2013 | Race_H_2013_C | Race_H_2014 | Race_H_2014_C | Race_H_2015 | Race_H_2015_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_H_2012 | Pearson Correlation | -- | | | | | | | |
| | N | 66 | | | | | | | |
| Race_H_2012_C | Pearson Correlation | .453** | -- | | | | | | |
| | Sig. (2-tailed) | 0.000 | | | | | | | |
| | N | 66 | 66 | | | | | | |
| Race_H_2013 | Pearson Correlation | .842** | .411** | -- | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.001 | | | | | | |
| | N | 66 | 66 | 66 | | | | | |
| Race_H_2013_C | Pearson Correlation | .430** | .883** | .374** | -- | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.002 | | | | | |
| | N | 66 | 66 | 66 | 66 | | | | |
| Race_H_2014 | Pearson Correlation | .823** | .422** | .881** | .416** | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.000 | 0.001 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | |
| Race_H_2014_C | Pearson Correlation | .436** | .883** | .381** | 1.000** | .423** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_H_2015 | Pearson Correlation | .743** | .368** | .852** | .361** | .903** | .367** | -- | |
| | Sig. (2-tailed) | 0.000 | 0.002 | 0.000 | 0.003 | 0.000 | 0.002 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_H_2015_C | Pearson Correlation | .456** | .864** | .406** | .978** | .442** | .979** | .397** | -- |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_H_YEAR = % of unit that is Hispanic in a given year
- RACE_H_YEAR_C = % of county that is Hispanic in a given year *

BIVARIATE CORRELATION TEST

| | | Race_H_2012 | Race_H_2012_C | Race_H_2013 | Race_H_2013_C | Race_H_2014 | Race_H_2014_C | Race_H_2015 | Race_H_2015_C | Race_H_2016 | Race_H_2016_C | Race_H_2017 | Race_H_2017_C | Race_H_2018 | Race_H_2018_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_H_2016 | Pearson Correlation | .735** | .347** | .815** | .377** | .877** | .385** | .944** | .418** | -- | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.004 | 0.000 | 0.002 | 0.000 | 0.001 | 0.000 | 0.000 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | |
| Race_H_2016_C | Pearson Correlation | .443** | .863** | .394** | .977** | .429** | .977** | .385** | .999** | .405** | -- | | | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| Race_H_2017 | Pearson Correlation | .692** | .371** | .799** | .403** | .795** | .410** | .848** | .438** | .935** | .424** | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.002 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_H_2017_C | Pearson Correlation | .432** | .812** | .377** | .933** | .421** | .934** | .390** | .958** | .415** | .961** | .415** | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.002 | 0.000 | 0.000 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_H_2018 | Pearson Correlation | .509** | .271* | .606** | .297* | .601** | .301* | .646** | .325** | .709** | .310* | .770** | .285* | -- | |
| | Sig. (2-tailed) | 0.000 | 0.028 | 0.000 | 0.015 | 0.000 | 0.014 | 0.000 | 0.008 | 0.000 | 0.011 | 0.000 | 0.020 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_H_2018_C | Pearson Correlation | .421** | .814** | .364** | .931** | .405** | .932** | .377** | .956** | .403** | .960** | .405** | .999** | .278* | -- |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.003 | 0.000 | 0.001 | 0.000 | 0.002 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.024 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_H_YEAR = % of unit that is Hispanic in a given year
- RACE_H_YEAR_C = % of county that is Hispanic in a given year *

BIVARIATE CORRELATION TEST

| | | Race_H_2012 | Race_H_2012_C | Race_H_2013 | Race_H_2013_C | Race_H_2014 | Race_H_2014_C | Race_H_2015 | Race_H_2015_C | Race_H_2016 | Race_H_2016_C | Race_H_2017 | Race_H_2017_C | Race_H_2018 | Race_H_2018_C | Race_H_2019 | Race_H_2019_C | Race_H_2020 | Race_H_2020_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_H_2019 | Pearson Correlation | .401** | 0.153 | .471** | 0.185 | .504** | 0.191 | .569** | 0.221 | .647** | 0.208 | .683** | 0.182 | .916** | 0.176 | -- | | | |
| | Sig. (2-tailed) | 0.001 | 0.221 | 0.000 | 0.136 | 0.000 | 0.125 | 0.000 | 0.075 | 0.000 | 0.093 | 0.000 | 0.145 | 0.000 | 0.158 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_H_2019_C | Pearson Correlation | .427** | .808** | .365** | .927** | .419** | .927** | .394** | .954** | .427** | .958** | .423** | .998** | .293* | .999** | 0.209 | -- | | |
| | Sig. (2-tailed) | 0.000 | 0.000 | 0.003 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.018 | 0.000 | 0.095 | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | | |
| Race_H_2020 | Pearson Correlation | .352** | 0.227 | .378** | .304* | .424** | .312* | .398** | .320* | .534** | .309* | .564** | .279* | .793** | .276* | .816** | .302* | -- | |
| | Sig. (2-tailed) | 0.005 | 0.074 | 0.002 | 0.015 | 0.001 | 0.013 | 0.001 | 0.011 | 0.000 | 0.014 | 0.000 | 0.027 | 0.000 | 0.028 | 0.000 | 0.017 | | |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 63 | |
| Race_H_2020_C | Pearson Correlation | 0.211 | 0.075 | 0.220 | 0.071 | 0.202 | 0.078 | 0.181 | 0.054 | 0.154 | 0.049 | 0.066 | -0.021 | 0.041 | -0.021 | 0.025 | -0.012 | 0.061 | -- |
| | Sig. (2-tailed) | 0.092 | 0.550 | 0.079 | 0.574 | 0.106 | 0.539 | 0.148 | 0.669 | 0.220 | 0.696 | 0.603 | 0.866 | 0.747 | 0.869 | 0.844 | 0.928 | 0.637 | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 62 | 65 | |

| | | Race_H_2012 | Race_H_2012_C | Race_H_2013 | Race_H_2013_C | Race_H_2014 | Race_H_2014_C | Race_H_2015 | Race_H_2015_C | Race_H_2016 | Race_H_2016_C | Race_H_2017 | Race_H_2017_C | Race_H_2018 | Race_H_2018_C | Race_H_2019 | Race_H_2019_C | Race_H_2020 | Race_H_2020_C | Race_H_2021 | Race_H_2021_C | Race_H_2022 | Race_H_2022_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_H_2021 | Pearson Correlation | .509** | 0.252 | .485** | .322* | .511** | .329* | .532** | .359** | .700** | .347** | .782** | .303* | .646** | .298* | .704** | .338** | .752** | 0.024 | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.052 | 0.000 | 0.012 | 0.000 | 0.010 | 0.000 | 0.005 | 0.000 | 0.007 | 0.000 | 0.018 | 0.000 | 0.021 | 0.000 | 0.009 | 0.000 | 0.859 | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 60 | | | | |
| Race_H_2021_C | Pearson Correlation | .370** | .761** | .302* | .876** | .352** | .876** | .348** | .904** | .373** | .908** | .364** | .947** | 0.244 | .950** | 0.152 | .951** | .259* | -0.027 | .338** | -- | | |
| | Sig. (2-tailed) | 0.002 | 0.000 | 0.015 | 0.000 | 0.004 | 0.000 | 0.005 | 0.000 | 0.002 | 0.000 | 0.003 | 0.000 | 0.050 | 0.000 | 0.228 | 0.000 | 0.042 | 0.834 | 0.009 | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 64 | 59 | 65 | | | |
| Race_H_2022 | Pearson Correlation | .404** | 0.108 | .414** | 0.194 | .451** | 0.203 | .447** | 0.227 | .573** | 0.214 | .597** | 0.155 | .497** | 0.145 | .562** | 0.140 | .463** | 0.059 | .764** | 0.067 | -- | |
| | Sig. (2-tailed) | 0.001 | 0.412 | 0.001 | 0.138 | 0.000 | 0.119 | 0.000 | 0.081 | 0.000 | 0.101 | 0.000 | 0.235 | 0.000 | 0.268 | 0.000 | 0.291 | 0.000 | 0.659 | 0.000 | 0.614 | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 57 | 59 | 54 | 59 | 60 | | |
| Race_H_2022_C | Pearson Correlation | .288* | .679** | .325** | .799** | .326** | .800** | .337** | .828** | .385** | .833** | .388** | .869** | .280* | .874** | 0.202 | .879** | .280* | -0.003 | .281* | .843** | 0.126 | -- |
| | Sig. (2-tailed) | 0.019 | 0.000 | 0.008 | 0.000 | 0.008 | 0.000 | 0.006 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.023 | 0.000 | 0.103 | 0.000 | 0.026 | 0.984 | 0.029 | 0.000 | 0.336 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 63 | 65 | 60 | 65 | 60 | 66 | |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_A_YEAR = % of unit that is Asian in a given year
- RACE_A_YEAR_C = % of county that is Asian in a given year *

BIVARIATE CORRELATION TEST

| | | Race_A_2012 | Race_A_2012_C | Race_A_2013 | Race_A_2013_C | Race_A_2014 | Race_A_2014_C | Race_A_2015 | Race_A_2015_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_A_2012 | Pearson Correlation | -- | | | | | | | |
| | N | 66 | | | | | | | |
| Race_A_2012_C | Pearson Correlation | 0.230 | -- | | | | | | |
| | Sig. (2-tailed) | 0.063 | | | | | | | |
| | N | 66 | 66 | | | | | | |
| Race_A_2013 | Pearson Correlation | .650** | 0.193 | -- | | | | | |
| | Sig. (2-tailed) | 0.000 | 0.120 | | | | | | |
| | N | 66 | 66 | 66 | | | | | |
| Race_A_2013_C | Pearson Correlation | 0.221 | .968** | 0.211 | -- | | | | |
| | Sig. (2-tailed) | 0.075 | 0.000 | 0.088 | | | | | |
| | N | 66 | 66 | 66 | 66 | | | | |
| Race_A_2014 | Pearson Correlation | .534** | 0.182 | .562** | 0.197 | -- | | | |
| | Sig. (2-tailed) | 0.000 | 0.144 | 0.000 | 0.112 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | |
| Race_A_2014_C | Pearson Correlation | 0.227 | .995** | 0.212 | .973** | 0.188 | -- | | |
| | Sig. (2-tailed) | 0.067 | 0.000 | 0.088 | 0.000 | 0.130 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_A_2015 | Pearson Correlation | .342** | 0.162 | 0.225 | 0.137 | .618** | 0.140 | -- | |
| | Sig. (2-tailed) | 0.005 | 0.194 | 0.070 | 0.272 | 0.000 | 0.262 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_A_2015_C | Pearson Correlation | 0.215 | .992** | 0.208 | .970** | 0.165 | .998** | 0.114 | -- |
| | Sig. (2-tailed) | 0.083 | 0.000 | 0.094 | 0.000 | 0.185 | 0.000 | 0.360 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_A_YEAR = % of unit that is Asian in a given year
- RACE_A_YEAR_C = % of county that is Asian in a given year *

BIVARIATE CORRELATION TEST

| | | Race_A_2012 | Race_A_2012_C | Race_A_2013 | Race_A_2013_C | Race_A_2014 | Race_A_2014_C | Race_A_2015 | Race_A_2015_C | Race_A_2016 | Race_A_2016_C | Race_A_2017 | Race_A_2017_C | Race_A_2018 | Race_A_2018_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_A_2016 | Pearson Correlation | .313* | 0.084 | .317** | 0.093 | .597** | 0.079 | .872** | 0.057 | -- | | | | | |
| | Sig. (2-tailed) | 0.010 | 0.504 | 0.010 | 0.460 | 0.000 | 0.530 | 0.000 | 0.651 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | |
| Race_A_2016_C | Pearson Correlation | 0.209 | .990** | 0.206 | .966** | 0.152 | .996** | 0.101 | .999** | 0.044 | -- | | | | |
| | Sig. (2-tailed) | 0.091 | 0.000 | 0.097 | 0.000 | 0.223 | 0.000 | 0.421 | 0.000 | 0.725 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| Race_A_2017 | Pearson Correlation | .289* | 0.096 | .275* | 0.125 | .423** | 0.100 | .698** | 0.087 | .663** | 0.085 | -- | | | |
| | Sig. (2-tailed) | 0.019 | 0.444 | 0.025 | 0.318 | 0.000 | 0.424 | 0.000 | 0.487 | 0.000 | 0.499 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_A_2017_C | Pearson Correlation | 0.215 | .968** | 0.216 | .943** | 0.154 | .974** | 0.073 | .976** | 0.006 | .977** | 0.039 | -- | | |
| | Sig. (2-tailed) | 0.083 | 0.000 | 0.081 | 0.000 | 0.216 | 0.000 | 0.561 | 0.000 | 0.961 | 0.000 | 0.755 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| Race_A_2018 | Pearson Correlation | 0.193 | 0.216 | 0.208 | 0.239 | .405** | 0.213 | .660** | 0.204 | .535** | 0.200 | .840** | 0.168 | -- | |
| | Sig. (2-tailed) | 0.121 | 0.081 | 0.094 | 0.054 | 0.001 | 0.087 | 0.000 | 0.100 | 0.000 | 0.107 | 0.000 | 0.178 | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | |
| Race_A_2018_C | Pearson Correlation | 0.198 | .957** | 0.204 | .933** | 0.129 | .963** | 0.046 | .966** | -0.020 | .967** | 0.015 | .992** | 0.147 | -- |
| | Sig. (2-tailed) | 0.111 | 0.000 | 0.101 | 0.000 | 0.301 | 0.000 | 0.716 | 0.000 | 0.873 | 0.000 | 0.908 | 0.000 | 0.239 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

APPENDIX 2

DEMOGRAPHIC DATA ANALYSIS

VARIABLES:

- RACE_A_YEAR = % of unit that is Asian in a given year
- RACE_A_YEAR_C = % of county that is Asian in a given year *

BIVARIATE CORRELATION TEST

| | | Race_A_2012 | Race_A_2012_C | Race_A_2013 | Race_A_2013_C | Race_A_2014 | Race_A_2014_C | Race_A_2015 | Race_A_2015_C | Race_A_2016 | Race_A_2016_C | Race_A_2017 | Race_A_2017_C | Race_A_2018 | Race_A_2018_C | Race_A_2019 | Race_A_2019_C | Race_A_2020 | Race_A_2020_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_A_2019 | Pearson Correlation | 0.221 | 0.196 | 0.093 | 0.209 | .412** | 0.186 | .613** | 0.167 | .455** | 0.156 | .479** | 0.107 | .645** | 0.086 | -- | | | |
| | Sig. (2-tailed) | 0.074 | 0.114 | 0.456 | 0.091 | 0.001 | 0.134 | 0.000 | 0.179 | 0.000 | 0.212 | 0.000 | 0.392 | 0.000 | 0.491 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | |
| Race_A_2019_C | Pearson Correlation | 0.199 | .954** | 0.195 | .928** | 0.127 | .959** | 0.043 | .963** | -0.023 | .964** | 0.014 | .990** | 0.126 | 1.000** | 0.080 | -- | | |
| | Sig. (2-tailed) | 0.112 | 0.000 | 0.119 | 0.000 | 0.315 | 0.000 | 0.735 | 0.000 | 0.856 | 0.000 | 0.910 | 0.000 | 0.316 | 0.000 | 0.524 | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | | |
| Race_A_2020 | Pearson Correlation | 0.242 | .250* | 0.121 | .248* | .366** | 0.241 | .588** | 0.218 | .476** | 0.203 | .494** | 0.209 | .672** | 0.187 | .789** | 0.182 | -- | |
| | Sig. (2-tailed) | 0.056 | 0.048 | 0.343 | 0.050 | 0.003 | 0.057 | 0.000 | 0.086 | 0.000 | 0.110 | 0.000 | 0.099 | 0.000 | 0.142 | 0.000 | 0.157 | | |
| | N | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 62 | 63 | |
| Race_A_2020_C | Pearson Correlation | -0.007 | 0.067 | -0.013 | 0.022 | 0.156 | 0.052 | .314* | 0.043 | .247* | 0.034 | 0.040 | -0.011 | 0.074 | -0.014 | .257* | -0.023 | 0.046 | -- |
| | Sig. (2-tailed) | 0.955 | 0.598 | 0.918 | 0.860 | 0.216 | 0.678 | 0.011 | 0.735 | 0.047 | 0.789 | 0.754 | 0.928 | 0.557 | 0.915 | 0.039 | 0.860 | 0.720 | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 64 | 62 | 65 |

| | | Race_A_2012 | Race_A_2012_C | Race_A_2013 | Race_A_2013_C | Race_A_2014 | Race_A_2014_C | Race_A_2015 | Race_A_2015_C | Race_A_2016 | Race_A_2016_C | Race_A_2017 | Race_A_2017_C | Race_A_2018 | Race_A_2018_C | Race_A_2019 | Race_A_2019_C | Race_A_2020 | Race_A_2020_C | Race_A_2021 | Race_A_2021_C | Race_A_2022 | Race_A_2022_C |
|---------------|---------------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|-------------|---------------|
| Race_A_2021 | Pearson Correlation | 0.235 | .278* | 0.169 | .257* | .311* | .265* | .468** | 0.245 | .372** | 0.233 | .392** | 0.246 | .598** | 0.240 | .710** | 0.229 | .930** | 0.016 | -- | | | |
| | Sig. (2-tailed) | 0.070 | 0.031 | 0.196 | 0.048 | 0.016 | 0.041 | 0.000 | 0.059 | 0.003 | 0.073 | 0.002 | 0.058 | 0.000 | 0.064 | 0.000 | 0.081 | 0.000 | 0.902 | | | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 59 | 59 | 60 | | | | |
| Race_A_2021_C | Pearson Correlation | 0.207 | .915** | 0.215 | .890** | 0.108 | .921** | 0.029 | .926** | -0.052 | .927** | -0.007 | .953** | 0.117 | .964** | 0.082 | .966** | 0.177 | 0.005 | 0.204 | -- | | |
| | Sig. (2-tailed) | 0.098 | 0.000 | 0.086 | 0.000 | 0.391 | 0.000 | 0.819 | 0.000 | 0.679 | 0.000 | 0.957 | 0.000 | 0.352 | 0.000 | 0.517 | 0.000 | 0.169 | 0.968 | 0.120 | | | |
| | N | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 62 | 64 | 59 | 65 | | | |
| Race_A_2022 | Pearson Correlation | 0.201 | 0.183 | .261* | 0.160 | .310* | 0.167 | .335** | 0.151 | .270* | 0.142 | .413** | 0.160 | .489** | 0.195 | .411** | 0.200 | .605** | 0.081 | .770** | 0.185 | -- | |
| | Sig. (2-tailed) | 0.124 | 0.161 | 0.044 | 0.221 | 0.016 | 0.203 | 0.009 | 0.249 | 0.037 | 0.278 | 0.001 | 0.221 | 0.000 | 0.136 | 0.001 | 0.129 | 0.000 | 0.543 | 0.000 | 0.160 | | |
| | N | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 59 | 57 | 59 | 54 | 59 | 60 | | |
| Race_A_2022_C | Pearson Correlation | 0.127 | .886** | 0.203 | .863** | 0.018 | .894** | -0.051 | .905** | -0.084 | .909** | -0.037 | .941** | 0.095 | .953** | -0.031 | .958** | 0.093 | -0.061 | 0.139 | .930** | 0.162 | -- |
| | Sig. (2-tailed) | 0.311 | 0.000 | 0.103 | 0.000 | 0.885 | 0.000 | 0.683 | 0.000 | 0.502 | 0.000 | 0.767 | 0.000 | 0.447 | 0.000 | 0.807 | 0.000 | 0.470 | 0.629 | 0.290 | 0.000 | 0.215 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 65 | 63 | 65 | 60 | 65 | 60 | 66 |

APPENDIX 3

STRENGTH DATA ANALYSIS

VARIABLES:

- YEAR_S = Strength of units in the given year
- YEAR_L = Units relocated in the given year
- Number_YEAR = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST*

| | | 2012_L | 1_2012 | 2_2012 | 3_2012 | 2013_L | 1_2013 | 2_2013 | 3_2013 | 2013_S |
|--------|---------------------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
| 2016_S | Pearson Correlation | .380** | -0.074 | 0.000 | -0.139 | -0.024 | .b | .b | .b | .531** |
| | Sig. (2-tailed) | 0.002 | 0.555 | 0.998 | 0.266 | 0.851 | | | | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2017_L | Pearson Correlation | -0.039 | -0.081 | -0.062 | -0.027 | 0.075 | .b | .b | .b | 0.034 |
| | Sig. (2-tailed) | 0.758 | 0.518 | 0.618 | 0.829 | 0.550 | | | | 0.788 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 1_2018 | Pearson Correlation | -0.039 | -0.081 | -0.062 | -0.027 | 0.075 | .b | .b | .b | 0.034 |
| | Sig. (2-tailed) | 0.758 | 0.518 | 0.618 | 0.829 | 0.550 | | | | 0.788 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2_2019 | Pearson Correlation | -0.039 | -0.081 | -0.062 | -0.027 | 0.075 | .b | .b | .b | 0.034 |
| | Sig. (2-tailed) | 0.758 | 0.518 | 0.618 | 0.829 | 0.550 | | | | 0.788 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2019_S | Pearson Correlation | 0.216 | -0.062 | -0.066 | 0.026 | -0.075 | .b | .b | .b | 0.076 |
| | Sig. (2-tailed) | 0.082 | 0.622 | 0.600 | 0.835 | 0.547 | | | | 0.543 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 3_2020 | Pearson Correlation | -0.039 | -0.081 | -0.062 | -0.027 | 0.075 | .b | .b | .b | 0.034 |
| | Sig. (2-tailed) | 0.758 | 0.518 | 0.618 | 0.829 | 0.550 | | | | 0.788 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_S | Pearson Correlation | 0.162 | -0.129 | -0.113 | 0.041 | -0.129 | .b | .b | .b | 0.205 |
| | Sig. (2-tailed) | 0.194 | 0.301 | 0.366 | 0.746 | 0.301 | | | | 0.098 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2021_S | Pearson Correlation | 0.189 | -.266* | 0.024 | -.316** | -0.067 | .b | .b | .b | 0.145 |
| | Sig. (2-tailed) | 0.129 | 0.031 | 0.848 | 0.010 | 0.593 | | | | 0.246 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2023_S | Pearson Correlation | 0.130 | -0.076 | 0.102 | 0.072 | -0.008 | .b | .b | .b | 0.073 |
| | Sig. (2-tailed) | 0.299 | 0.543 | 0.414 | 0.563 | 0.947 | | | | 0.560 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

*Select data showed due to quantity of results output

APPENDIX 3

STRENGTH DATA ANALYSIS

VARIABLES:

- YEAR_S = Strength of units in the given year
- YEAR_L = Units relocated in the given year
- Number_YEAR = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST*

| | | 2014_L | 1_2014 | 2_2014 | 3_2014 | 2014_S | 2015_L | 1_2015 | 2_2015 | 3_2015 | 2015_S |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 2016_S | Pearson Correlation | -0.045 | -0.024 | .b | .b | .428** | -0.068 | -0.045 | -0.024 | .b | .510** |
| | Sig. (2-tailed) | 0.719 | 0.851 | | | 0.000 | 0.586 | 0.719 | 0.851 | | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2017_L | Pearson Correlation | 0.161 | 0.075 | .b | .b | .335** | -0.055 | 0.161 | 0.075 | .b | .331** |
| | Sig. (2-tailed) | 0.196 | 0.550 | | | 0.006 | 0.658 | 0.196 | 0.550 | | 0.007 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 1_2018 | Pearson Correlation | 0.161 | 0.075 | .b | .b | .335** | -0.055 | 0.161 | 0.075 | .b | .331** |
| | Sig. (2-tailed) | 0.196 | 0.550 | | | 0.006 | 0.658 | 0.196 | 0.550 | | 0.007 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2_2019 | Pearson Correlation | 0.161 | 0.075 | .b | .b | .335** | -0.055 | 0.161 | 0.075 | .b | .331** |
| | Sig. (2-tailed) | 0.196 | 0.550 | | | 0.006 | 0.658 | 0.196 | 0.550 | | 0.007 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2019_S | Pearson Correlation | -0.046 | -0.075 | .b | .b | 0.056 | 0.202 | -0.046 | -0.075 | .b | -0.007 |
| | Sig. (2-tailed) | 0.714 | 0.547 | | | 0.653 | 0.104 | 0.714 | 0.547 | | 0.957 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 3_2020 | Pearson Correlation | 0.161 | 0.075 | .b | .b | .335** | -0.055 | 0.161 | 0.075 | .b | .331** |
| | Sig. (2-tailed) | 0.196 | 0.550 | | | 0.006 | 0.658 | 0.196 | 0.550 | | 0.007 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_S | Pearson Correlation | -0.027 | -0.129 | .b | .b | 0.133 | 0.041 | -0.027 | -0.129 | .b | 0.096 |
| | Sig. (2-tailed) | 0.832 | 0.301 | | | 0.286 | 0.746 | 0.832 | 0.301 | | 0.442 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2021_S | Pearson Correlation | -0.038 | -0.067 | .b | .b | 0.172 | 0.069 | -0.038 | -0.067 | .b | 0.176 |
| | Sig. (2-tailed) | 0.762 | 0.593 | | | 0.168 | 0.583 | 0.762 | 0.593 | | 0.157 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2023_S | Pearson Correlation | 0.071 | -0.008 | .b | .b | 0.087 | -0.039 | 0.071 | -0.008 | .b | 0.129 |
| | Sig. (2-tailed) | 0.572 | 0.947 | | | 0.488 | 0.757 | 0.572 | 0.947 | | 0.304 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

*Select data showed due to quantity of results output

APPENDIX 3

STRENGTH DATA ANALYSIS

VARIABLES:

- YEAR_S = Strength of units in the given year
- YEAR_L = Units relocated in the given year
- Number_YEAR = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST*

| | | 2016_L | 1_2016 | 2_2016 | 3_2016 | 2016_S | 2017_L | 1_2017 | 2_2017 | 3_2017 | 2017_S |
|--------|---------------------|--------|--------|--------|--------|--------|---------|--------|--------|--------|--------|
| 2016_S | Pearson Correlation | 0.055 | -0.068 | -0.045 | -0.024 | -- | | | | | |
| | Sig. (2-tailed) | 0.660 | 0.586 | 0.719 | 0.851 | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | | | |
| 2017_L | Pearson Correlation | -0.048 | -0.055 | 0.161 | 0.075 | -0.073 | -- | | | | |
| | Sig. (2-tailed) | 0.704 | 0.658 | 0.196 | 0.550 | 0.558 | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | | | | |
| 1_2018 | Pearson Correlation | -0.048 | -0.055 | 0.161 | 0.075 | -0.073 | 1.000** | -0.048 | -0.055 | 0.161 | -0.083 |
| | Sig. (2-tailed) | 0.704 | 0.658 | 0.196 | 0.550 | 0.558 | 0.000 | 0.704 | 0.658 | 0.196 | 0.510 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2_2019 | Pearson Correlation | -0.048 | -0.055 | 0.161 | 0.075 | -0.073 | 1.000** | -0.048 | -0.055 | 0.161 | -0.083 |
| | Sig. (2-tailed) | 0.704 | 0.658 | 0.196 | 0.550 | 0.558 | 0.000 | 0.704 | 0.658 | 0.196 | 0.510 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2019_S | Pearson Correlation | 0.014 | 0.202 | -0.046 | -0.075 | 0.139 | -.252* | 0.014 | 0.202 | -0.046 | .302* |
| | Sig. (2-tailed) | 0.910 | 0.104 | 0.714 | 0.547 | 0.267 | 0.041 | 0.910 | 0.104 | 0.714 | 0.014 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 3_2020 | Pearson Correlation | -0.048 | -0.055 | 0.161 | 0.075 | -0.073 | 1.000** | -0.048 | -0.055 | 0.161 | -0.083 |
| | Sig. (2-tailed) | 0.704 | 0.658 | 0.196 | 0.550 | 0.558 | 0.000 | 0.704 | 0.658 | 0.196 | 0.510 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_S | Pearson Correlation | 0.086 | 0.041 | -0.027 | -0.129 | 0.188 | -.250* | 0.086 | 0.041 | -0.027 | .346** |
| | Sig. (2-tailed) | 0.494 | 0.746 | 0.832 | 0.301 | 0.131 | 0.043 | 0.494 | 0.746 | 0.832 | 0.004 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2021_S | Pearson Correlation | 0.153 | 0.069 | -0.038 | -0.067 | 0.214 | -.251* | 0.153 | 0.069 | -0.038 | .333** |
| | Sig. (2-tailed) | 0.219 | 0.583 | 0.762 | 0.593 | 0.084 | 0.042 | 0.219 | 0.583 | 0.762 | 0.006 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2023_S | Pearson Correlation | .242* | -0.039 | 0.071 | -0.008 | 0.033 | -0.127 | .242* | -0.039 | 0.071 | 0.194 |
| | Sig. (2-tailed) | 0.050 | 0.757 | 0.572 | 0.947 | 0.795 | 0.311 | 0.050 | 0.757 | 0.572 | 0.118 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

*Select data showed due to quantity of results output

APPENDIX 3

STRENGTH DATA ANALYSIS

VARIABLES:

- YEAR_S = Strength of units in the given year
- YEAR_L = Units relocated in the given year
- Number_YEAR = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST*

| | | 2018_L | 1_2018 | 2_2018 | 3_2018 | 2018_S | 2019_L | 1_2019 | 2_2019 | 3_2019 | 2019_S |
|--------|---------------------|--------|---------|--------|--------|--------|--------|--------|---------|--------|--------|
| 1_2018 | Pearson Correlation | 0.161 | -- | | | | | | | | |
| | Sig. (2-tailed) | 0.196 | | | | | | | | | |
| | N | 66 | 66 | | | | | | | | |
| 2_2019 | Pearson Correlation | 0.161 | 1.000** | -0.048 | -0.055 | -0.159 | 0.161 | 0.161 | -- | | |
| | Sig. (2-tailed) | 0.196 | 0.000 | 0.704 | 0.658 | 0.201 | 0.196 | 0.196 | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | |
| 2019_S | Pearson Correlation | 0.001 | -.252* | 0.014 | 0.202 | .806** | 0.001 | 0.001 | -.252* | 0.014 | -- |
| | Sig. (2-tailed) | 0.992 | 0.041 | 0.910 | 0.104 | 0.000 | 0.992 | 0.992 | 0.041 | 0.910 | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 3_2020 | Pearson Correlation | 0.161 | 1.000** | -0.048 | -0.055 | -0.159 | 0.161 | 0.161 | 1.000** | -0.048 | -.252* |
| | Sig. (2-tailed) | 0.196 | 0.000 | 0.704 | 0.658 | 0.201 | 0.196 | 0.196 | 0.000 | 0.704 | 0.041 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2020_S | Pearson Correlation | -0.066 | -.250* | 0.086 | 0.041 | .765** | -0.066 | -0.066 | -.250* | 0.086 | .858** |
| | Sig. (2-tailed) | 0.598 | 0.043 | 0.494 | 0.746 | 0.000 | 0.598 | 0.598 | 0.043 | 0.494 | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2021_S | Pearson Correlation | -0.014 | -.251* | 0.153 | 0.069 | .660** | -0.014 | -0.014 | -.251* | 0.153 | .713** |
| | Sig. (2-tailed) | 0.912 | 0.042 | 0.219 | 0.583 | 0.000 | 0.912 | 0.912 | 0.042 | 0.219 | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| 2023_S | Pearson Correlation | -0.129 | -0.127 | .242* | -0.039 | .449** | -0.129 | -0.129 | -0.127 | .242* | .468** |
| | Sig. (2-tailed) | 0.301 | 0.311 | 0.050 | 0.757 | 0.000 | 0.301 | 0.301 | 0.311 | 0.050 | 0.000 |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

*Select data showed due to quantity of results output

APPENDIX 3

STRENGTH DATA ANALYSIS

VARIABLES:

- YEAR_S = Strength of units in the given year
- YEAR_L = Units relocated in the given year
- Number_YEAR = Units that experienced an armory relocation 1, 2, or 3 years removed in that given year

BIVARIATE CORRELATION TEST*

| | | 2020_L | 1_2020 | 2_2020 | 3_2020 | 2020_S | 2021_L | 1_2021 | 2_2021 | 3_2021 | 2021_S | 2022_L | 1_2022 | 2_2022 | 3_2022 | 2022_S | 2023_L | 1_2023 | 2_2023 | 3_2023 | 2023_S | | |
|--------|---------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----|----|
| 3_2020 | Pearson Correlation | .b | 0.161 | 0.161 | -- | | | | | | | | | | | | | | | | | | |
| | Sig. (2-tailed) | | 0.196 | 0.196 | | | | | | | | | | | | | | | | | | | |
| | N | 66 | 66 | 66 | 66 | | | | | | | | | | | | | | | | | | |
| 2020_S | Pearson Correlation | .b | -0.066 | -0.066 | -.250* | -- | | | | | | | | | | | | | | | | | |
| | Sig. (2-tailed) | | 0.598 | 0.598 | 0.043 | | | | | | | | | | | | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | | | | | | | | | | | | | | | | | |
| 2021_S | Pearson Correlation | .b | -0.014 | -0.014 | -.251* | .791** | 0.114 | .b | -0.014 | -0.014 | -- | | | | | | | | | | | | |
| | Sig. (2-tailed) | | 0.912 | 0.912 | 0.042 | 0.000 | 0.364 | | 0.912 | 0.912 | | | | | | | | | | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | | | | | | | | | | | | |
| 2023_S | Pearson Correlation | .b | -0.129 | -0.129 | -0.127 | .510** | 0.076 | .b | -0.129 | -0.129 | .659** | 0.067 | 0.076 | .b | -0.129 | .635** | 0.076 | 0.067 | 0.076 | .b | -- | | |
| | Sig. (2-tailed) | | 0.301 | 0.301 | 0.311 | 0.000 | 0.546 | | 0.301 | 0.301 | 0.000 | 0.592 | 0.546 | | 0.301 | 0.000 | 0.542 | 0.592 | 0.546 | | | | |
| | N | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |

*Select data showed due to quantity of results output

APPENDIX 4

SAMPLE SUMMARY

UICs:

(66)

| | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|
| P25A0 | PGFAA | PGRT0 | PJNB0 | TU1C0 | TU4T0 | ZFYA0 |
| P25B0 | PGNA0 | PGUA0 | PJNC0 | TU1D0 | UASA0 | ZFYB0 |
| P25C0 | PGNB0 | PGUB0 | PJNT0 | TU1T0 | UASB0 | ZFYC0 |
| P25T0 | PGQA0 | PGUC0 | PVYAA | TU2A0 | UASE0 | ZFYE0 |
| PCNAA | PGQB0 | PGUT0 | QEGAA | TU2B0 | UAST0 | ZFYG0 |
| PG0A0 | PGQT0 | PGWA0 | QHYAA | TU2C0 | VSEAA | ZFYT0 |
| PG0B0 | PGRA0 | PGWB0 | QUZAA | TU2T0 | ZFXA0 | |
| PG0C0 | PGRB0 | PGWC0 | TG2AA | TU4A0 | ZFXB0 | |
| PG0T0 | PGRCO | PGWT0 | TU1A0 | TU4B0 | ZFXC0 | |
| PG1AA | PGRD0 | PH7AA | TU1B0 | TU4C0 | ZFXT0 | |

Types of Units

(11)

| Branch | % of Sample |
|-----------------|-------------|
| Infantry | 52% |
| Artillery | 14% |
| Quartermaster | 12% |
| Aviation | 5% |
| Transportation | 5% |
| Finance | 3% |
| JAG | 3% |
| Medical | 3% |
| AG | 2% |
| Chemical | 2% |
| Military Police | 2% |

