



MORGAN STATE UNIVERSITY™

Aerial Investigation Research Pilot Program Report

A Case Study of Baltimore, Maryland

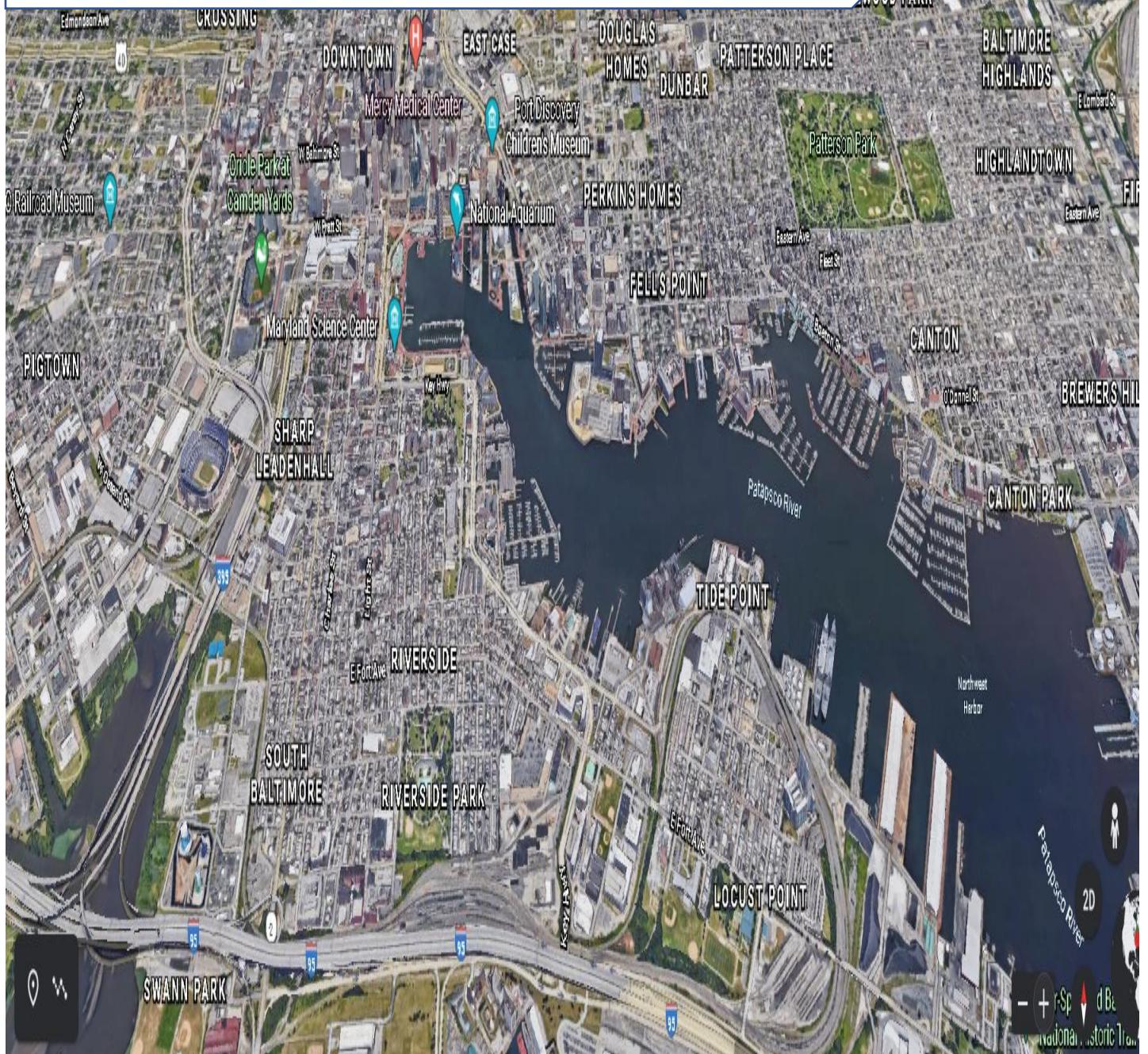
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Executive Summary

City officials, the community at large, and police departments in urban cities are struggling with strategies to reduce crime. Crime is defined by the Merriam-Webster dictionary as “*an act or the commission of an act that is forbidden or the omission of a duty that is commanded by a public law and that makes the offender liable to punishment by that law; especially: a gross violation of law*”. A legal definition of crime would be: “*a violation of a law that involves injury to the public or a member of the public and a term in jail or prison, and/or a fine as possible penalty. There is some sentiment for excluding from the "crime" category crimes without victims, such as consensual acts, or violations in which only the perpetrator is hurt or is involved in something such as the personal use of illegal drugs.*”

With a crime rate of 71 per one thousand residents, Baltimore has one of the highest crime rates in America compared to all communities of all sizes from the smallest towns to the very largest cities. One's chance of becoming a victim of either violent or property crime here is one in 14. As a result of the high crime rate in Baltimore, City officials, the community, and the Baltimore City Police (BCP) Department are searching for strategies to reduce inner city crime rates. The Aerial Surveillance Program was a pilot program that was initiated as a critical crime prevention tool that was used by BCP detectives. The project was a strategy to “thread the needle” amongst other technologies used by the BCP to bring about crime prevention, awareness, and crime investigations.

Arguably, COVID-19 has had an impact on crime in Baltimore, to varying degrees; but to determine whether actual cases were closed due to the aerial surveillance or COVID-19 is indeterminable at this time. Although the research was limited by time and the scope of the Aerial Surveillance Program that employed, quantitative and qualitative methodologies. The guiding research question to be answered was how the aerial surveillance would affect the crime in Baltimore City. A summary of quantitative and qualitative results included

Quantitative summary:

- Overall, the community disagreed with the umbrella construct: The AIR (Aerial Investigative Research) would have a negative impact on the community”. There was a racial division: Black residents disagreed with the construct and White residents agreed that the program would have a negative impact on their community.
- Most residents in the sample disagreed that the Aerial Surveillance would decrease major crimes such as murder, nonfatal shootings, armed robberies, carjacking.
- Overwhelming, residents in all socio-demographic groups and police districts disagreed with the umbrella construct that Aerial Surveillance would reduce crime and have a positive impact on the police, and their personal privacy. In addition, there was a racial divide: White residents disagreed at a stronger level than Blacks. On average, persons in all police districts also disagreed that the ASP would reduce crime.
- Overall, the community disagreed with the umbrella construct “AIR and negative impact on the community”. There was a racial division: Black residents disagreed with the construct and White residents agreed that the program would have a negative impact on their community.

- Specific questions indicated that most residents did not have positive feelings regarding the ASP looking down on them. Most residents were concerned that the aerial surveillance project will violate their privacy.
- The community disagreed that there was a “positive relationship with the police”. On average, there was disagreement with the umbrella construct that “police treated individuals equally.” Overall agreement that individuals or family have been “negatively impacted by the police and crime”. Racial division was also found: Black residents agreed with this umbrella construct and White residents disagreed.
- Of note: the residents in the sample agreed that they would “assist the police” to solve crimes (even though there was not a positive relationship with the police).
- Specific questions “I am concerned about the crime in Baltimore City” and “I am concerned about the violence in Baltimore City’ where 97.2% (N=1029) and 98.2% (N=1059), respectively, indicated their concern.
- There was agreement to the umbrella construct “negative impact of police and crime”. There was also a racial divide: Black residents agreed, and White residents disagreed with construct.
- On average, all socio-demographic groups and police districts agreed with the umbrella construct that there was “general community violence”.
- The community agreed that they would “assist police in solving crime”.

The key emergent themes from the focus group analysis that agree with the above quantitative findings included:

- “I’m against it”
- “It seems to not be beneficial”
- “It’s an absolute invasion of everybody’s privacy”
- “I think that the relationship between the police and the community is...it's horrible...”
- “I feel that the crime...is just gotten out of hand”
- “Crime is a response to a lack of a community”

Lastly, the key informant interviews obtained from Baltimore Police Detectives and Administration, including interviews with AIR Analysts regarding the aerial imaging and its potential impact on crime and prevention:

- Overall, the consensus between the analysts and Baltimore police department is that the AIR program serves a vital role in “threading the needle” among other technologies to help fight crime.
- The AIR surveillance technology has no effect on violating privacy issues as it is significantly less intrusive than CityWatch camera, Google Street View, private cameras, License Plate Reader, cell phones, or other technologies used in crime prevention.
- The need for a more robust timeframe to test out the overall impact of the AIR program to help with case closure rates. Five (5) months is not enough time to determine effectiveness.
- Most prosecutors would benefit significantly from the AIR program if they spent more time learning how to use it in court.

Introduction

Baltimore City experiences some of the nation's highest rates of crime and violence per capita in the country. According to the June 2019, Crime Reduction and Departmental Transformation Plan, the Baltimore City Police Department seeks to: Improve Response Times; Improve Solve Rate for Open Cases; Maximize Available Police Resources; Deter or Prevent Criminal Activity; Encourage Witness Participation; Leverage Community Support; Reduce Officer Burden; and Improve Officer Morale. Baltimore has also enjoyed the use of technology through CityWatch Ground-based Camera Integration, Computer Aided Dispatch, Shot Detection System, and the License Plate Readers, among other technology. These technologies have been used to help solve crimes and, in theory, reduce the risk of crime and violence through Opportunity Reduction Strategies. However, with the advent of aerial surveillance (and drone technology), cameras have become commonplace to pixelate neighborhoods through aerial imaging.

As a result of civil rights and privacy concerns, municipalities throughout the U.S. have been hesitant to fully operationalize and employ aerial surveillance as a tool for crime detection, reduction, intervention, and analysis. Baltimore has a historic legacy of civil rights violations as reflected in the April 2017 DOJ Consent Decree assigned to the Baltimore Police Department. This in addition to the ACLU expressing through testimony to the Baltimore City Council Public Safety Committee, its concerns with the potential persistent surveillance systems.

Rationale

The purpose of this program evaluation was to provide an objective, evidence-based evaluation analysis of the use of aerial surveillance as a tool to reduce crime and violence in Baltimore City. This evaluation provides a theoretical framework that helped to structure its analysis so as to not discount public health, civil liberty, and psycho-social concerns to include policing behavior.

In addition, the purpose of this evaluation analysis was to bring forth input from community members and police officers that are likely to be impacted through this technology. The Morgan State University team followed a participatory process method to receive input in collecting selected data while, at the same time, analyzing qualitative, quantitative, and imaging data outcomes.

To ensure that the public's health was considered in the evaluation analysis -- to include ensuring that policing behaviors are also accounted for -- the MSU team utilized an established *Epidemiological Criminology "EpiCrim"* theoretical model. The evaluation model incorporated the *EpiCrim* biomedical and behavioral disparities framework to allow for comparative analysis across targeted grid patterns of aerial imaging by neighborhoods, streets, and various environmental structures (i.e., high crime and low crime communities).

Lastly, the purpose of this evaluation was to exceed conventional evaluation models by considering the bio-psycho-social- and environmental risk factors of each “pixelated” neighborhood image. This method provides a more robust and purposeful analysis when considering issues around disparities that can impact residents and communities due to actual or perceived violations of civil rights and other risk factors.

The rationale of this program evaluation was to provide an objective, evidence-based evaluation analysis to gather baseline data as to the effectiveness of the use of aerial surveillance technology in support of crime and violence reduction in Baltimore City. As such, the Morgan State University, School of Social Work conducted an independent evaluation to investigate how the aerial surveillance technology utilized in the Baltimore Police Department’s Aerial Surveillance Investigation Research (AIR) Pilot Program, conducted May 1, 2020 - October 31, 2020, will affect violent crime reduction in Baltimore City.

The evaluation was also conducted to gain insight into Baltimore citizens’ sentiment regarding the Baltimore Police Department and its use of the technology for policing. The evaluation’s goal was to address the effectiveness of the technology and measurable changes in the Baltimore Police Department’s case closure rates, and overall reduction in the crime categories, murder, non-fatal shooting, armed robberies, and car jackings. In order to accomplish the above, there was a series of focus groups facilitated virtually with participants from the nine police districts located within Baltimore City. This was in addition to distributing surveys, both electronically and in-person surveys, citywide to examine Baltimore citizens’ knowledge, attitudes, and beliefs toward the Baltimore Police Department and its use of the aerial technology.

Lastly, this evaluation considered the bio-psycho-social- and environmental risk factors of each neighborhood surveilled. This method provided for a more robust and purposeful analysis when considering issues around disparities that can impact residents and communities due to actual or perceived violations of civil rights and other risk factors.

Methodology

The Morgan State University (MSU) Aerial Surveillance Independent Study project used a mixed-methods, triangulation (quantitative, qualitative, and imaging analysis) research design to analyze self-reported data from community residents, Baltimore police detectives and senior administrators, and the Aerial Investigation Research Pilot Program (AIR) analysts. Over the course of 6-months this study evaluated their knowledge, attitudes, and beliefs toward the AIR program that began May 1, 2020 and ended October 31, 2020.

More specifically, during the AIR program, the MSU team also endeavored to examine the incidents of crimes where the aerial technology was used as a tool to help police detectives in solving crimes. Additionally, the AIR program also served, arguably, as an intervention to determine whether the number of violent crime incidents in the areas of murder, nonfatal shootings, armed robbery and car jackings were reduced during the time period the AIR program was being implemented. As mentioned, to help determine whether the AIR program had an impact in either scenario, the MSU team employed a mixed-method, triangulation approach to obtain a more comprehensive picture of crime in Baltimore and to better understand how the community felt and responded, to include the Baltimore police department.

The overall guiding research question to be answered was how the aerial surveillance would affect the crime in Baltimore City. In that, would there be a positive trajectory toward healthy behavior, meaning lowering crime; would there be no effect, meaning the crime rate remained the same; or would there be a negative trajectory, meaning an increase in crime.

The following are sub categorical research questions designed to explore the above mentioned:

- 1) *Does aerial surveillance assist in case clearance and case closure rates?*
 - 2) *Does aerial surveillance assist in crime suppression (reduction)?*
 - 3) *What are the data trends in the following areas of analysis?*
 - Murder
 - Nonfatal shootings
 - Armed robbery
 - Carjacking
 - Case clearance rates,
 - Case closure rate
 - Crime suppression (reduction)
4. *What are the correlations between the following independent variables murder, non-fatal shootings, car jackings; and clearance and case closure rates?*
5. *How will the aerial surveillance (depending on the aerial pixilation per foot standard) impact the civil liberties of the residents of Baltimore:*
- What is the rate of evidence packets triggered by BCPD for high crime communities (micro-zones)?
 - What is the rate of evidence packets triggered by BCPD for low crime communities (micro-zones)?
 - What is the case clearance rate, case closure rate, and overall crime suppression for high crime communities and low crime communities respectively?
6. *How does the correlations among the independent variables i.e., murder, non-fatal shootings, car jackings, and the identified areas of analysis affect the beliefs and attitudes of the communities of Baltimore City regarding aerial surveillance?*

Survey

Community Self-Reported Data Collection

The MSU AIR team administered a survey to collect self-reported data regarding community members' sentiment toward the AIR program. The survey was administered to city residents that lived in the nine (9) police districts that are also called by Baltimoreans the White L and the Black Butterfly. Brown (2016) characterizes these communities as structural divisions between the affluent, predominantly White L-shaped neighborhood cluster near downtown and the mainly impoverished Black Butterfly-shaped district map flanking that L. Additionally, focus groups were held to identify qualitative elements. These elements served as anecdotal data to inform the survey data by capturing and understanding people's stories and perspectives based on their lived experience and personal accounts shared in the same areas of analysis as the survey. This data was non-quantifiable and there was no attempt at interrater reliability.

Snowball sampling was used to reach a specific population, meaning the residents of Baltimore City, especially those who were more likely to live in the Black Butterfly communities and stood to be most affected by the proposed use of the aerial technology; as such, an oversampling was also done in the Black Butterfly communities to ensure representation. Different variations of snowball sampling can be applied in the development of community-based information, dissemination efforts related to health education programs, and research studies. These methods can be effectively used to choose samples from fragile populations or people under specialized care (Naderifar, Goli, & Ghaljaei, 2017, p. 3). The original sample was 1,075 of which 1,062 were eligible residents from Baltimore City. Eligible residents to take the survey where 18 years of age or older

and had to live in the City of Baltimore. Of the eligible residents 133 were participants in the 14 focus groups held.

The Ministers Conference of Baltimore and Vicinity (MCBV) was partnered with to identify the abovementioned residents. MCBV has been serving churches, communities, and preachers, throughout the Baltimore Metropolitan Region for more than 113 years and has a long history of being at the forefront of local, state, and national civil rights movements and social justice advocacy. MCBV has coalesced 151 churches within the City of Baltimore and surrounding areas to form its first economic development and community empowerment strategy which resulted in the “*And the Church Shall Lead Community Economic Development Plan.*”

This plan was developed and is currently being implemented through its faith-based economic development hubs located in central points of communities throughout Baltimore City. These hubs are community anchors in trusted institutions (i.e., churches, mosques, community centers, etc.) that serve to ensure the community is an integral part of the current transformative work being done to recreate Baltimore in the areas of public safety, health, education, and workforce and economic development. More specifically, as a part of its strategic plan and the Baltimore City’s redevelopment framework, MCBV has as one of its high priorities to increase community engagement with the Baltimore Police Department (BPD).

To that end, it has been playing a key role in bridging the gap between the BPD and the community and via its relationship with Morgan State University. The Project Director was able to work with the community and faith-based leaders from the respective hubs to schedule information sessions, focus groups, and administer surveys at their respective facilities. The following process was implemented once potential participants were identified:

- The community or faith-based leader (Hub Site Coordinator) forwarded a list of potential participants’ contact information to the Project Director.
- The Project Director contacted the potential participant via phone.
- The Project Director reviewed the study with the potential participant and after he or she agreed to participate in the study, a registration email was sent.
- A reminder email was sent to the participant two days prior.

Because of COVID-19 the focus groups were virtual; however, to ensure that the most vulnerable residents (those who resided in the Black Butterfly) were included in the study, the survey was administered in person in addition to electronically. As such, all staff, students and faculty were given personal protective equipment (PPE) and engaged in social distancing. At the facilities a triage table was located at the entrance of the facility. Before entrance to the facility was allowed, all persons were required to have their temperatures taken and to sign the facility’s COVID Assessment and Referral Form. Once everyone’s temperature was checked and the facility’s COVID-19 Assessment and Referral Form was completed, individuals were allowed to enter the facility. Everyone engaged in social distancing after entering the facility. The informational was conducted first followed by the administering of the survey. To ensure social distancing protocol, two six (6) foot tables were placed as a station to complete the survey with two (2) people completing the survey on the far ends of the table. There was a third person standing where the tables met in the middle, allowing for groupings of three (3) people at a time to complete the survey.

As the designated *preeminent public urban research university for the State of Maryland*, the MSU team decided it would be socially irresponsible to engage in recruitment of participants for an informational, survey, and focus group without taking into consideration the profound needs of the community due to the current COVID-19 pandemic; especially, the food insecurity needs. As such, the Project Director, and the administrative staff worked with the hub assigned Coordinator to organize with community associations and organizations, municipalities, and community residents in each police district to provide hot meals and free groceries. This was

in addition to providing COVID-19 testing, self-care, and referral information; and much needed personal protective equipment (PPE). After taking the surveys, the participant was led to the area where these activities were taking place. Although the residents were solicited to take the survey, it was made clear to all who presented a need for the additional resources that they were not being distributed contingent on the completion of the survey. After the surveys were collected by the administrative staff, they were forwarded to the analysts and research assistant on a weekly basis and a status report was generated weekly.

Focus Groups

The following protocol was engaged:

- An informational and question and answer period was conducted prior to the focus group off camera.
- Prior to the recording, the participants were asked off camera for their permission to record and to respond by typing “I agree to be recorded” in the chat box if they elected to be recorded. Those who did not sign out of the Zoom focus group meeting.

This process was repeated once the recording began to obtain verbal permission as well.

- After verifying all participants written permission, participants were given the option to show their likeness or turn their cameras off. Once permissions were verified and it was confirmed with participants whether they had their cameras on or off, the recording began.
- Then as stated above, the same agreement to record process was conducted on camera followed by the reading of the Informed Consent.
- After reading the Informed Consent and verifying each participants’ consent, the participants were assigned numbers as identifiers and instructed to say the numbers they were given after being recognized to speak.
- After the abovementioned took place, the focus group commenced.
- Once the focus group ended, the facilitator thanked the participants and then the administrative staff informed them that the electronic survey had been sent to their emails and requested that they complete the survey immediately.
- The session ended and the recording stopped.
- A sociogram was completed and sent to the analysis with the recording of the focus group.

The focus groups were coordinated with the Project Director, administrative staff, and the Coordinators of each hub and held according to the co-developed schedules, and each session lasted approximately 90 minutes to 2 hours. This time-period included the time to conduct the informational.

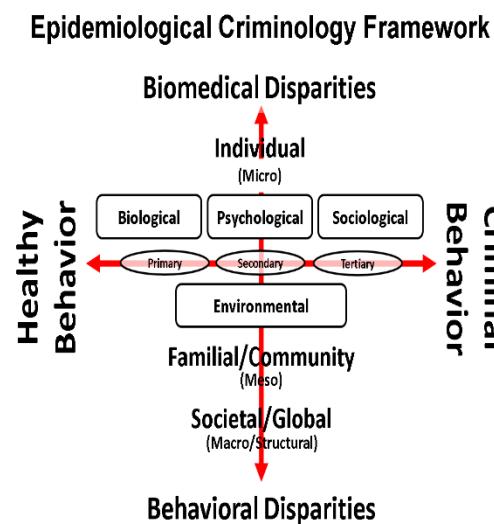
Key Informants: AIR Program Analysts and Baltimore Police Detectives and Administrators

This report further employed the use of key informants from the rank and file of Baltimore Police Department and the AIR analysts. This method of data collection from key informants (e.g., subject matter experts) most knowledgeable of the AIR program and its strength and weaknesses. The method employed to collect the key informant data that began on September 16, 2020 and ended on December 17, 2020. Approximately twenty-four (24) interviews were conducted with aerial surveillance operations and analyst staff, Baltimore police detectives, and senior Baltimore administration.

Structured and unstructured interview questions were developed, and recordings were taken (and subsequently destroyed afterwards, to protect privacy). The interviews were transcribed and validated by two

interviewers who, together, conducted ALL key informant interviews. The recorded interviews were transcribed verbatim and each key informant transcription was read, analyzed, contextualized, and validated. Afterwards, the recordings were destroyed. Additionally, after preliminary analysis of contextual factors were extricated from each transcript, the team used a Qualitative Analytical tool that extracted the corpus of ALL texts, provided contextualization, and graphic representation of the data for thematic extraction and analysis. The tool used was accessed at www.voyant-tools.org, available online.

Theoretical Framework



As alluded to earlier, to address the above questions, the MSU team had to design the study to allow for the collection of diverse data from diverse data sources. Through the process of designing this study, the MSU team began determining that certain data sources, such as data on case closure rate, clearance rate, and overall crime impact, would be a function of how actively the aerial surveillance aircraft was used daily. With the advent of COVID-19 in the middle of this study, any reduction in crime or case closure rates would be scientifically questionable at best and suspect at worse. Unlike an interrupted time-series analysis, where the team could have examined trend data over time and compared against the time-period when the aerial surveillance planes was flying, the entire AIR program was impacted by COVID-19.

However, in anticipation of the potential confounding nature between the aerial surveillance program and COVID-19, the team framed the data collection around elements of the *Epidemiological Criminology* theoretical framework (Akers and Lanier, 2009; Akers, Potter, Hill, 2012). Conceptually, the team theorized and broadly hypothesized that the aerial surveillance program would have little or no effect on actual crime (null hypothesis). However, to address this hypothesis, the team employed this comprehensive theoretical framework that considered the *perceived* health and crime of the community due to the aerial surveillance program.

As shown in the *Epidemiological Criminology* (e.g., EpiCrim) framework, there are various constructs (e.g., biological, psychological, sociological, and environmental factors) that can be used to understand the “*tipping point*” between the health and criminal behavior of a community. In other words, what factors helped tip the community in its perceptions around aerial surveillance. For example, in applying the “*EpiCrim*” framework, questions around factors that could impact how residents and the community perceived the AIR program were examined. From the perspective of AIR analysts and Baltimore police detectives, no biological characteristics could be determined through aerial imaging. However, police and analysts used psychological factors to help guide them to their analysis by examining 1) how suspects fled crime scenes, 2) how the community interacted after a crime occurred, and 3) how the environment played a part in helping to solve a crime. These brief descriptions help to understand how the model was applied to the aerial surveillance project.

To further illustrate, questions in the survey, focus groups, and key informant interviews examined individual behavior, family and community behavior, and larger policy questions for the city of Baltimore. For example, the *EpiCrim* model also considers “behavioral disparities”. This report shares differences of opinion between police and residents and within their rank and file as well as across neighborhoods.

This study sought to answer the following questions:

- ✓ What are the characteristics of the sample in terms of socio-demographics and police districts?
- ✓ What are the characteristics of the sample in terms of aerial surveillance and attitudes toward crime?
- ✓ What are the characteristics of the sample in terms of police relationships and interaction?
- ✓ What are the associations among aerial surveillance and socio-demographics and police districts?
- ✓ What is the impact of aerial surveillance on the individual and the community?
- ✓ What are the associations among aerial surveillance, police relationships, and health status?

The following null hypotheses were tested for the quantitative analysis:

1. The diversity of opinion about the impact of the Aerial Surveillance Project (ASP) was the same within all socio-demographic groups and among police districts; and
2. Police interactions would not have a significant relationship with diversity of opinion about the Aerial Surveillance and crime.

The response rates of the sample:

Tables 1 and 2 address the item response rates. The rates varied from 66.6% (N=706) completion for 43 attitudes toward aerial surveillance, police, and health questions and 99.7% (N=1059) completed the CRIME question. The analyses are presented in three sections: 1) the description of the sample in terms of the demographic characteristic and overall AIR, crime, police, and health (ACPH) responses for the total sample (N=1,062) and 2) ACPH related constructs for the sub-sample who completed all ACPH questions (N=706). The inter-relationships among the constructs and socio-demographic characteristics and police districts are also presented in this section. Section three addresses the joint relationships between the socio-demographic characteristics and the constructs after adjusting for other respective variables. This section considered the subsample of persons who in addition to responding to the ACPH questions identified their race as Black or white, and their gender as male or female, and had known ages (N=598).

Table 1

Number and Percent of Persons who Responded to Selected Questions for the Total Sample (N=1062)

Demographic/crime/violence questions	Code name	Baltimore City adult residents (N = 1062)
Which police district do you live in?	DISTRICT	Residence & survey site intermingled 72.1% (n=766)
What is your race/ethnicity?	RACE	92.3% (n=980)
How do you identify?	GENDER	99.2 (n=1053)
What community do you live in?	COMMUNITY	Residence & survey site intermingled
What year were you born?	YEAR	96.4% (n=1024)
I am concerned about the crime in Baltimore City	CRIME	99.7 % (n=1059)
I am concerned about the violence in Baltimore City	VIOLENCE	99.0% (n=1051)

Table 2

Number and Percent of Persons who Responded to Questions by Rubric (N=1062)

Rubric 1	Rubric 2	Total
Attitudes Towards Aerial Surveillance (Q1a thru Q11) 83.1% (n=882) All of these survey questions were completed.	Attitudes Towards Police related + health questions (Q12a thru Q36) 73.5% (n=781) All of these survey questions were completed.	Rubrics 1 & 2(Q1a thru Q36). 66.6% (N=706) All of these survey questions were completed.

Section I Description of the Sample

The sample for these analyses is based on 1,062 Baltimore City Adult Residents.

Socio-demographic characteristics

Table 3 shows that Black persons were 79.6% (N=780) of the sample, White/Caucasian persons were 16% (N=157), and persons of other races were 4.4 % (N=43) of the sample. Over 50% (N=532) of the persons were male, 48.4% (N=510) were female and 1% (N=11) were of other gender. The mean was 51 years (SD=15.6). Most of the persons were over 44 years old; the largest age group was 55 to 64 years old ((N=250, 24.4%) and the smallest age group was 18 to 24 years (N=41, 4%). Most of the residents lived or completed the survey in the Western police district (%=17.8, N=136) with the fewest residents associated with the Southern police district (%=3.8, N=29) (Table 4).

Table 3

Socio-demographic Characteristics of the Sample

Socio-demographic characteristic	N	Percent (%)
Race		
0—White	157	16.0
1—Black	780	79.6
2—Other Race	43	4.4
<i>Total*</i>	980	100.0
Gender		
0—Male	532	50.5
1—Female	510	48.4
2—Other	11	1.0
<i>Total</i>	1053	100.0
Age group		
1—18-24	41	4.0
2—25-34	153	14.9
3—35-44	154	15.0
4—45-54	220	21.5
5—55-64	250	24.4
6—65 or older	206	20.1
<i>Mean age 51 years (SD=15.6)</i>		
Total	1024	100.0

Note. Totals in each socio-demographic group do not add to the total sample (N=1,062) because of missing/unknown values.

Table 4*Number and Percent of People in Each Police District*

Police District	N
1 Central	87
2 Southeastern	83
3 Eastern	110
4 Northeastern	112
5 Northern	81
6 Northwestern	67
7 Western	136
8 Southwestern	61
9 Southern	29
Total	766

Note. Total do not add to the total sample (N=1,062) because of missing/unknown values.

Responses to ALL ACPH Questions (Air, Crime, Police, and Health)

Except for two questions—"I am concerned about the crime in Baltimore City" and "I am concerned about the violence in Baltimore City" where 97.2% (N=1029) and 98.2% (N=1059), respectively, indicated their concern (yes) versus they were not concerned (no). The other scores or diversity of opinion for the 43 ACPH related questions ranged from 0 (strongly disagree) to 5 (strongly agree). Table 5 shows the overall disagreement with aerial surveillance related ACPH questions Q1a thru Q11. See Appendix A for overall disagreement with attitudes towards police and health related ACPH questions. Percentages greater than 50% indicated that more persons disagreed with the statement than persons who agreed with the statement. For example, 61.1% (N=1,016) of the persons disagreed that the "ASP was more likely to decrease murder" and 38.9% (100%-61.1%) agreed that the "ASP would decrease murder". Table A2 in the Appendix shows the levels of disagreement/agreement that varies from "strongly disagree" to "strongly agree" for all the ACPH questions.

Table 5*Percent of Persons who Disagreed (Number) with Aerial Surveillance Related Questions (N=1,062)*

Question	Question valid responses (N)	% Disagree ^{1,2} (0-2)
The aerial surveillance project is more likely to decrease:		
• Murder	Q1a (1016)	61.1
• Nonfatal shootings	Q1b (959)	60.4
• Armed robberies	Q1c (983)	60.0
• Car Jacking	Q1d (982)	57.1
• Rapes	Q1e (977)	63.2
• Family and friends are likely to be negatively impacted by the aerial surveillance project	Q2 (1020)	53.3
• The community is likely to respond positively to the police department because of the aerial surveillance project	Q3 (1017)	65.7
• I have positive feelings regarding the aerial surveillance project looking down on me	Q4 (1022)	59.3
• The aerial surveillance project is likely to decrease the crime rate in my community	Q5 (1029)	58.1

Table 5*Percent of Persons who Disagreed (Number) with Aerial Surveillance Related Questions (N=1,062)*

Question	Question valid responses (N)	% Disagree ^{1,2} (0-2)
• I think the aerial surveillance project will have a negative effect on how I live in my community	Q6 (1031)	56.6
• The community will be negatively impacted by the aerial surveillance project	Q7 (1030)	51.7
• The aerial surveillance project will alter or affect community life for the friends and family	Q8 (1031)	52.5
• If I support the aerial surveillance project, it will negatively affect my relationships with my family and friends	Q9 (1029)	75.3
• I will view the police department positively because of the aerial surveillance project	Q10 (1030)	64.6
• The aerial surveillance project will increase police abuse	Q11 (1026)	54.9

Section II Quantitative Analysis: Description of AIR, crime, police, and health (ACPH) related constructs

The sub-sample for these analyses is based on 706 persons who responded to all 43 ACPH questions. Exploratory factor analysis delineated eight factors. The items and the factor loadings are shown in Table 6.

Table 6*Summary of Items and Factor Loadings N=706*

No.	Item	Factor
Factor 1 – Air crime reduction and other positive outcomes		
1.	Decrease armed robberies (Q1c)	0.931
2.	Decrease nonfatal shootings (Q1b)	0.916
3.	Decrease murder (Q1a)	0.909
4.	Decrease car Jackings (Q1d)	0.899
5.	Decrease rapes (Q1e)	0.740
6.	The aerial surveillance project is likely to decrease the crime rate in my community (Q5)	0.675
7.	The community is likely to respond positively to the police department because of the aerial surveillance project (Q3)	0.659
8.	I have positive feelings regarding the aerial surveillance project looking down on me (Q4)	0.608
9.	I will view the police department positively because of the aerial surveillance project (Q10)	0.831
Factor 2- Police and positive relationships		
1.	I agree with many of the values and rules that define what the police stand for (Q26)	0.821
2.	My own feelings about what is right and wrong usually agree with the laws that are enforced by police (Q25)	

3. My own feelings about what is right and wrong usually agree with police rules and policies (Q24)	0.808
4. I respect police (Q19)	0.665
5. I am proud of my police district (Q22)	0.674
6. I have confidence that the police will show up when called for an emergency (Q21)	0.645
7. I have a great deal of confidence in the police (Q23)	0.650
8. I trust the police (Q20)	0.648
9. Generally, police are polite when dealing with people (Q18)	0.570

Factor 3 – AIR and negative impact on community

1. The community will be negatively impacted by the aerial surveillance project (Q7)	0.861
2. I think the aerial surveillance project will have a negative effect on how I live in my community (Q6)	0.829
3. The aerial surveillance project will alter or affect community life for the friends and family (Q8)	0.818
4. Family and friends are likely to be negatively impacted by the aerial surveillance project (Q2)	0.754

Table 6. (Cont.)

No. Item	Factor
5. I am concerned that the aerial surveillance project will violate my privacy (Q13)	0.706
6. The aerial surveillance project will increase police abuse (Q11)	0.688
7. If I support the aerial surveillance project, it will negatively affect my relationships with my family and friends (Q9)	0.619
8. The community is more likely to view the police department negatively because of the aerial surveillance project (Q28)	0.587

Factor 4- Police and equal treatment of individuals

10. Police treat everyone fairly (Q14)	0.802
11. Police treat everyone equally (Q15)	0.791
12. Police treat people with dignity and respect (Q16)	0.711
13. Police listen to people before making decisions (Q17)	0.702

Factor 5-Assistance to police

1. Help the police to find someone suspected of committing a crime by providing them with information (Q12b)	0.861
2. Report dangerous or suspicious activities to the police (Q12c)	0.849
3. Willingly assist the police if asked (Q12d)	0.822
4. Call the police to report a crime (Q12a)	0.813

Factor 6-Negative impact of police and crime

1. I have been negatively impacted by police (Q33)	0.792
2. My family has been negatively impacted by the police (Q32)	0.770
3. My family has experienced a criminal act against it (Q34)	0.770

4. I have experienced violence against me (Q35)	0.729
Factor 7 –General community violence	
1. Violence in my neighborhood is bad (Q30)	0.893
2. Crime in my neighborhood is bad (Q29)	0.889
Factor 8- Good personal health status	
1. My overall physical health is good (Q31)	0.875
2. My overall mental health is good (Q36)	0.829

The means for the eight factors ranged from 1.23 ($SD = 1.22$) for Factor 4-Police and equal treatment of individuals to 3.93 ($SD = 1.09$) for Factor 8-Personal health status (Table 7). Cronbach alphas were 79% or above, indicating that the eight factors were reliable. Means less than 2.5 suggested that persons disagreed with the factor. These are factors 1 thru factor 4. Conversely, on average persons agreed with factors 5 thru factor 8.

Table 7
Descriptive Statistics for the Eight Factors (N = 706)

Factor	Mean	Std. Deviation	Median	Cronbach alpha	# items
1 Air and crime reduction	1.84	1.35	1.56	0.96	9
2 Police and positive relationships	2.23	1.13	2.22	0.93	9
3 AIR and negative impact on community	2.41	1.20	2.25	0.89	8
4 Police and equal treatment of individuals	1.23	1.22	1.00	0.94	4
5 Assistance to police	2.98	1.43	3.25	0.94	4
6 Negative impact of police and crime	2.50	1.40	2.50	0.85	4
7 General community violence	3.06	1.44	3.00	0.94	2
8 Good personal health status	3.93	1.09	4.00	0.79	2

Relationship among constructs and socio-demographic characteristics

Figure 1 summarizes the Pearson's correlations (See Appendix A for all correlations) although some of the correlations were significantly different from zero (p -values $<.05$), we only site the significant correlations that were moderate to strong ($r \ge .30$) negatively or positively. For examples, Factor 1- AIR and crime reduction was significantly correlated with Factor 2- police and positive relationships; 4-Police and equal treatment of individuals, and 5-Assistance to police; coefficients (r 's) were .444, .519, and .352, respectively. Factor 3-Air and negative community impact was only significantly correlated with factor 6-Negative impact of police and crime ($r=.315$). Factor 8- Good personal health was not significantly correlated with any other factor.

Figure 1

Intercorrelations between the factors, N = 706

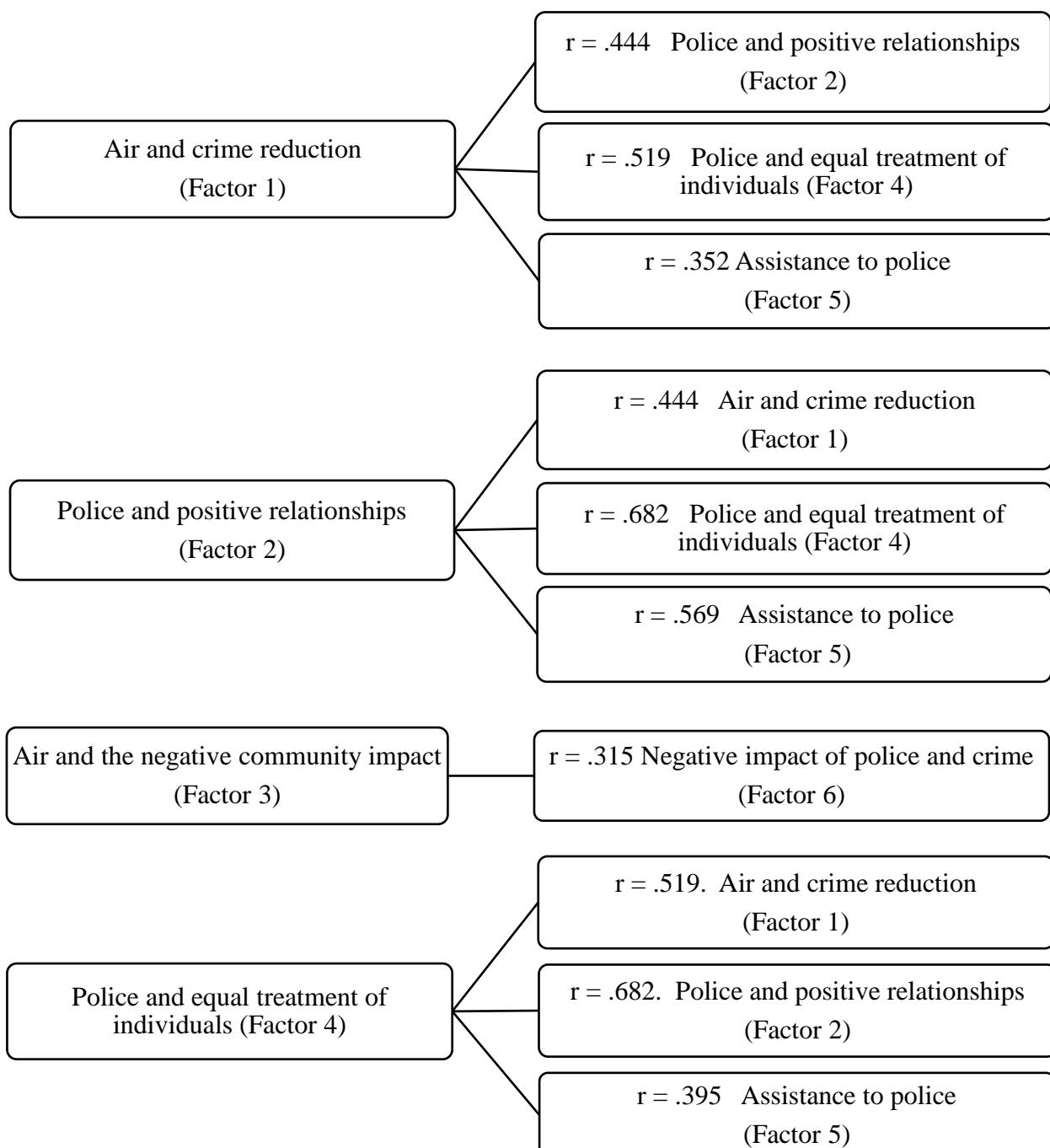


Figure 1
Continued Intercorrelations between the factors, N = 706

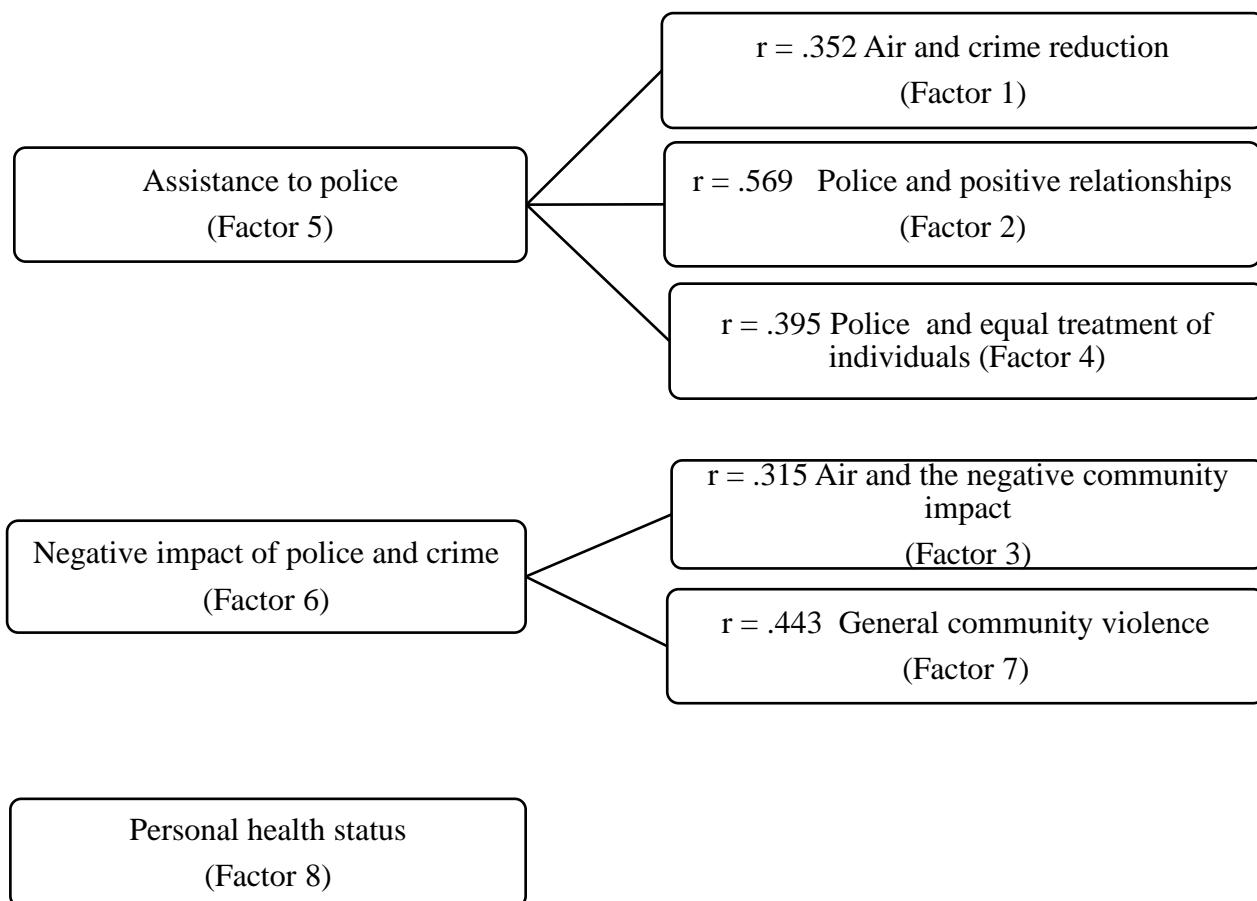


Table 8, a one-way ANOVA shows that, except for Factor 4-Police treatment of individuals, there was a significant diversity of opinion between the racial groups (p -value's $< .01$). The diversity of opinion was in the same direction; however, the degree/level of agreement or disagreement differed. For example, all racial groups disagreed with Factor 1-Air and crime reduction, with White people having more disagreement ($M=1.33$, $STD=1.39$) than Blacks ($M=1.98$, $STD=1.29$). With respect to Factor 6-Negative impact police and crime, White residents disagreed ($M=1.98$, $STD=1.18$) and their counterparts agreed (means $>$ than 2.5). All racial groups agreed with Factor 5-Assistance to police, Factor 7-General community violence and Factor 8-Personal health status, but the strength of the agreement was significant.

Table 8

ANOVA for Eight Factors and Race

Factor	Race	N	Mean	SD	p-value
Factor 1-Air and crime reduction	1 Black	498	1.98	1.29	<0.001
	2 Other race	34	1.83	1.16	
	3 White	126	1.33	1.39	
	Total	658	1.85	1.33	
Factor 2-Police and positive relationships	1 Black	498	2.11	1.10	0.001
	2 Other race	34	2.47	1.07	
	3 White	126	2.49	1.13	
	Total	658	2.21	1.12	
Factor 3-AIR and negative impact on the community	1 Black	498	2.27	1.07	<0.001
	2 Other race	34	2.48	0.91	
	3 White	126	2.80	1.47	
	Total	658	2.38	1.17	
Factor 4-Police equal treatment of individuals	1 Black	498	1.21	1.23	0.734
	2 Other race	34	1.14	1.13	
	3 White	126	1.29	1.11	
	Total	658	1.22	1.20	
Factor 5-Assistance to police	1 Black	498	2.80	1.44	<0.001
	2 Other race	34	2.59	1.45	
	3 White	126	3.52	1.27	
	Total	658	2.92	1.44	
Factor 6-Negative impact of police and crime	1 Black	498	2.67	1.40	<0.001
	2 Other race	34	2.58	1.33	
	3 White	126	1.98	1.18	
	Total	658	2.53	1.38	
Factor 7-General community violence	1 Black	498	3.24	1.47	<0.001
	2 Other race	34	2.97	1.05	
	3 White	126	2.50	1.25	
	Total	658	3.09	1.44	
Factor 8-Good personal health status	1 Black	498	3.86	1.16	0.007
	2 Other race	34	4.28	0.85	
	3 White	126	4.12	0.77	
	Total	658	3.93	1.09	

Table 9 shows that there was a significant diversity of opinion between males and females for Factor 1-Air and crime reduction, Factor 5-Assistance to police, Factor 6-Negative impact of police and crime, Factor 8-Personal health status (p-values <.03).

With regards to factor 1, males disagreed more strongly than females, 1.72 vs 1.99, respectively (although both groups disagreed with the factor). Both gender groups agreed with factors 5, 7, and 8—females had significantly higher level of agreement on factors 5 and 8. With respect to factor 6, females disagreed ($M=2.34$, $STD=1.37$) and males agreed ($(M=2.67$, $STD=1.38)$, means $>$ than 2.5). There was not a significant diversity of opinion between males and females for factors 2, 3, 4, and 7.

Both groups disagreed that there was general violence in the community, except for the latter factor 7 where both groups agreed that there was general violence in the community (p -values >0.46).

Table 9

T-Tests for Eight Factors and Gender

Factor	Gender	Mean	SD	p-value
Factor 1-Air and crime reduction	0 Male	1.72	1.28	0.009
	1 Female	1.99	1.40	
Factor 2-Police and positive relationships	0 Male	2.22	1.17	0.651
	1 Female	2.25	1.08	
Factor 3-AIR and negative impact on the community	0 Male	2.40	1.18	0.990
	1 Female	2.40	1.22	
	0 Male	1.27	1.23	
Factor 4-Police equal treatment of individuals	1 Female	1.21	1.21	
	0 Male	2.80	1.52	
Factor 5-Assistance to police	1 Female	3.15	1.31	0.001
	0 Male	2.67	1.38	
Factor 6-Negative impact of police and crime	1 Female	2.34	1.37	0.002
	0 Male	3.04	1.47	
Factor 7-General community violence	1 Female	3.07	1.43	0.811
	0 Male	3.84	1.18	
Factor 8-Personal health status	1 Female	4.02	0.97	0.029
	0 Male			

Note. Other gender was excluded because of small sample size

Table 10. The significant diversity of opinion between age groups was also dependent upon the particular factor under consideration. For examples, all age groups disagreed with Factor 1-Air and crime reduction and Factor 4-Police treatment of individuals although there were significant differences in the level of disagreement (p -values $<.03$). Persons 65 and over agreed with Factor 2-Police and positive relationships ($M=2.62$, $SD=1.03$) while their counterparts disagreed with the construct.

With respect to Factor 3-AIR and the community, Factor 5-Assistance to police, and Factor 6-Negative impact of police and crime, younger ages agreed with factor 3 and factor 6 and their counterparts disagreed. An opposite relationship was found for factor 5, persons in the youngest age group disagreed with this factor and persons 35 and over agreed with this construct. There was not significant diversity of opinion among the age groups for Factor 7-General community violence 7 and Factor 8-Good personal health status; all age groups agreed with these factors (p -values >0.38).

Table 10*ANOVA for Eight Factors and Age Groups*

Factor	Age Group	N	Mean	SD	p-value
Factor 1-Air and crime reduction	2 18-34	132	1.95	1.36	0.026
	3 35-44	113	1.51	1.19	
	4 45-54	156	1.82	1.29	
	5 55-64	160	1.84	1.36	
	6 65 and over	127	2.05	1.44	
	Total	688	1.84	1.34	
Factor 2-Police and positive relationships	2 18-34	132	1.79	1.11	<0.001
	3 35-44	113	2.07	1.08	
	4 45-54	156	2.24	1.16	
	5 55-64	160	2.40	1.03	
	6 65 and over	127	2.62	1.03	
	Total	688	2.23	1.12	
Factor 3-AIR and negative impact on the community	2 18-34	132	2.65	1.05	<0.001
	3 35-44	113	2.63	1.12	
	4 45-54	156	2.33	1.17	
	5 55-64	160	2.38	1.22	
	6 65 and over	127	2.06	1.31	
	Total	688	2.40	1.19	
Factor 4-Police and equal treatment of individuals	2 18-34	132	1.09	1.20	0.016
	3 35-44	113	1.00	1.12	
	4 45-54	156	1.21	1.23	
	5 55-64	160	1.30	1.21	
	6 65 and over	127	1.48	1.21	
	Total	688	1.22	1.21	
Factor 5-Assistance to police	2 18-34	132	2.47	1.37	<0.001
	3 35-44	113	2.73	1.45	
	4 45-54	156	2.76	1.53	
	5 55-64	160	3.22	1.29	
	6 65 and over	127	3.74	1.09	
	Total	688	2.99	1.42	
Factor 6-Negative impact of police and crime	2 18-34	132	2.94	1.31	<0.001
	3 35-44	113	2.65	1.36	
	4 45-54	156	2.75	1.47	
	5 55-64	160	2.23	1.31	
	6 65 and over	127	1.94	1.26	
	Total	688	2.50	1.39	
Factor 7-General community violence	2 18-34	132	3.12	1.48	
	3 35-44	113	3.07	1.39	
Factor	Age Group	N	Mean	SD	p-value
	4 45-54	156	3.10	1.46	

	5 55-64	160	3.07	1.42	
	6 65 and over	127	2.92	1.44	
	Total	688	3.06	1.44	
Factor 8-Good personal health status	2 18-34	132	3.88	1.05	0.382
	3 35-44	113	4.09	1.16	
	4 45-54	156	3.93	1.15	
	5 55-64	160	3.93	1.08	
	6 65 and over	127	3.81	1.03	
	Total	688	3.92	1.09	

Table 11. There was significant diversity of opinion among people in the police districts for all factors, except for Factor 4-Police and equal treatment of individuals and factors 8 –Good personal health status. All police districts registered disagreement with Factor 1-Air and crime reduction and Factor 4-Police and equal treatment of individuals. The opposite relationship (agreement) was found for Factor 5-Assistance to police and Factor 8-Good personal health status.

With respect to Factor 2-Police and positive relationships and Factor 3-AIR and the community, all the districts registered disagreement except for the northern district which agreed. The Eastern and Western districts agreed with Factor 6-Negative impact of police. Their counterparts disagreed with these factors. All police districts agreed with factor 7- General community violence except Northeastern which disagreed.

Table 11
ANOVA for Eight Factors by Police Districts

Factor	Police District	N	Mean	SD	p-value
Factor 1-Air and crime reduction	1 Central	63	2.23	1.40	<0.001
	2 Southeastern	63	1.48	1.18	
	3 Eastern	88	1.41	1.18	
	4 Northeastern	89	1.90	1.28	
	5 Northern	66	1.46	1.43	
	6 Northwestern	46	1.85	1.38	
	7 Western	89	1.94	1.33	
	8 Southwestern	41	1.76	1.31	
	Total	562	1.77	1.32	
Factor 2-Police and positive relationships	1 Central	63	2.45	1.08	
	2 Southeastern	63	2.20	1.16	
	3 Eastern	88	1.88	1.05	
	4 Northeastern	89	2.30	0.94	
	5 Northern	66	2.51	1.29	
	6 Northwestern	46	2.44	0.99	0.001
	7 Western	89	1.96	1.16	
	8 Southwestern	41	2.34	1.10	
	Total	562	2.23	1.11	
Factor 3-AIR and the negative impact on community	1 Central	63	2.07	1.33	.02
	2 Southeastern	63	2.29	1.24	
	3 Eastern	88	2.44	0.94	
	4 Northeastern	89	2.18	1.03	

Table 11
ANOVA for Eight Factors by Police Districts

Factor	Police District	N	Mean	SD	p-value
	5 Northern	66	2.85	1.41	
	6 Northwestern	46	2.36	1.34	
	7 Western	89	2.48	1.11	
	8 Southwestern	41	2.48	1.19	
	Total	562	2.39	1.19	
Factor 4-Police and equal treatment of individuals	1 Central	63	1.60	1.30	.097
	2 Southeastern	63	1.03	1.05	
	3 Eastern	88	1.01	1.06	
	4 Northeastern	89	1.21	1.06	
	5 Northern	66	1.28	1.27	
	6 Northwestern	46	1.10	1.19	
	7 Western	89	1.13	1.35	
	8 Southwestern	41	1.28	1.04	
	Total	562	1.19	1.17	
Factor 5-Assistance to police	1 Central	63	3.18	1.26	<0.001
	2 Southeastern	63	2.88	1.52	
	3 Eastern	88	2.60	1.54	
	4 Northeastern	89	3.25	1.22	
	5 Northern	66	3.39	1.42	
	6 Northwestern	46	3.19	1.22	
	7 Western	89	2.58	1.50	
	8 Southwestern	41	3.29	1.33	
	Total	562	3.02	1.41	
Factor 6-Negative impact police/crime	1 Central	63	1.96	1.24	<0.001
	2 Southeastern	63	2.28	1.28	
	3 Eastern	88	2.76	1.44	
	4 Northeastern	89	2.18	1.35	
	5 Northern	66	2.35	1.41	
	6 Northwestern	46	1.97	1.11	
	7 Western	89	3.24	1.34	
	8 Southwestern	41	2.44	1.24	
	Total	562	2.46	1.37	
Factor 7-General community violence	1 Central	63	2.84	1.36	
	2 Southeastern	63	2.79	1.12	
	3 Eastern	88	3.30	1.20	<0.001
	4 Northeastern	89	2.41	1.52	
	5 Northern	66	2.65	1.28	
	6 Northwestern	46	3.07	1.38	
	7 Western	89	3.95	1.21	
	8 Southwestern	41	2.99	1.35	
	Total	562	3.03	1.39	

Table 11
ANOVA for Eight Factors by Police Districts

Factor	Police District	N	Mean	SD	p-value
Factor 8-Good personal health status	1 Central	63	4.14	0.89	0.167
	2 Southeastern	63	4.09	0.96	
	3 Eastern	88	3.98	0.98	
	4 Northeastern	89	3.69	1.37	
	5 Northern	66	4.04	1.13	
	6 Northwestern	46	4.03	1.10	
	7 Western	89	3.88	1.03	
	8 Southwestern	41	4.11	0.61	
	Total	562	3.98	1.05	

Note. Totals do not add to the total sample (N=706) because of missing/unknown values. District 9 (N=17) was excluded because of too few cases.

Section III (Quantitative)

This section considered the subsample of 598 persons who in addition to responding to all ACPH questions, identified their race as Black or White, their gender as male or female, and had known ages. Other race and other gender were excluded because there were too few people in these categories. The models in this section adjusted jointly for socio-demographic characteristics and the factors that were correlated with each factor under consideration (dependent variable). Detail General Linear Model (GLM) tables can be found in the Appendix.

Accompanying figures illustrate the differences/non-differences within the socio-demographic group. Asterisks identify statistically significant differences (*p<.05, **p<0.01, and ***p<0.001) and differences that are not statistically significant are flagged “n.s.” on the graphs. All means less than 2.5 indicate disagreement and means 2.5 or higher indicated agreement.

There was significant diversity of opinions for Air and Crime Reduction (factor 1) between white and Black people; male and female gender groups; and age groups. White residents disagreed more strongly than Blacks (Figure 2); males disagreed more strongly than females (Figure 3); and diversity of opinion varied from 1.45 for residents in the 35 to 44 age group to 1.95 for residents in the 18 to 34 age group (Figure 4).

Figure 2. Adjusted means for diversity of opinion Factor 1-Air and crime reduction by race



Figure 3. Adjusted means for diversity of opinion Factor 1-Air and crime reduction by gender

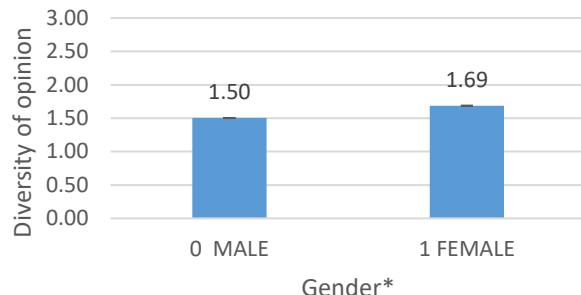
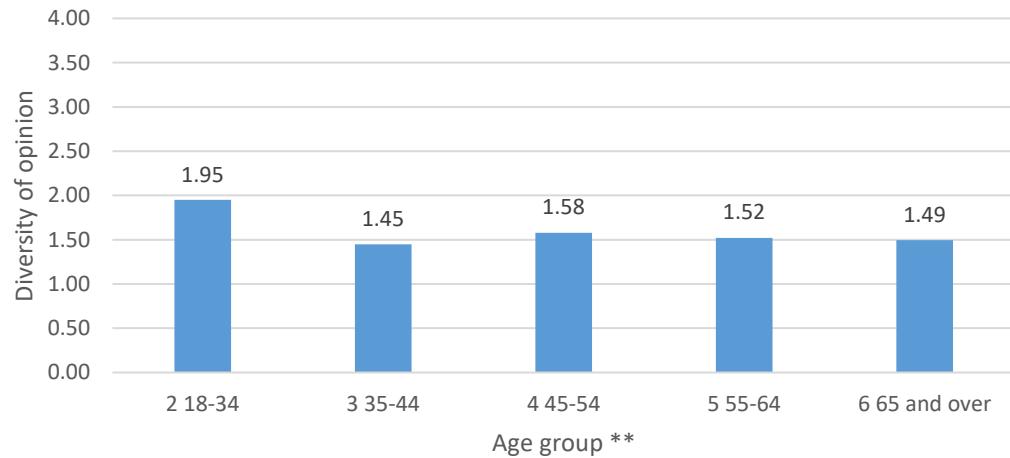


Figure 4. Adjusted Means diversity of opinion for Factor 1-Air and crime reduction by age group



Further explorations of AIR and decrease crime (factor 1) show that increased agreements about the following factors: positive relations with police (factor 2), equal treatment by police (factor 4), and assistance to police (factor 5) were associated with increased agreement with factor 1--AIR will decrease crime (Figures 5 thru 7; GLM table in the Appendix).

Figure 5
Mean of Factor 1 and Crime Reduction by Factor 2- Police and Positive Relationships

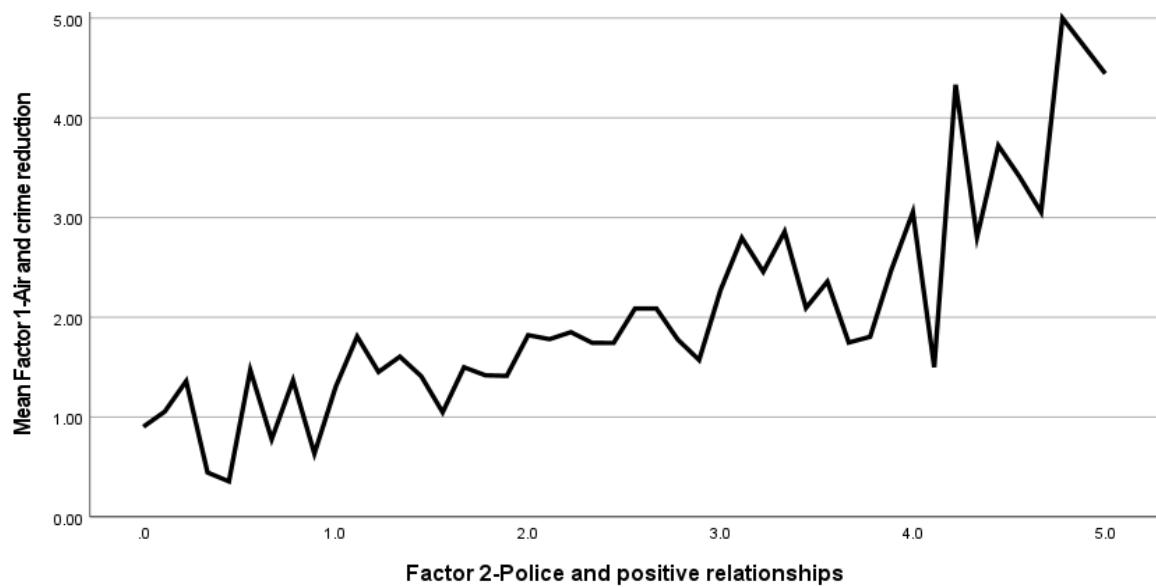


Figure 6
Mean of Factor 1 and Crime Reduction by Factor 4- Police and Equal Treatment of Individuals

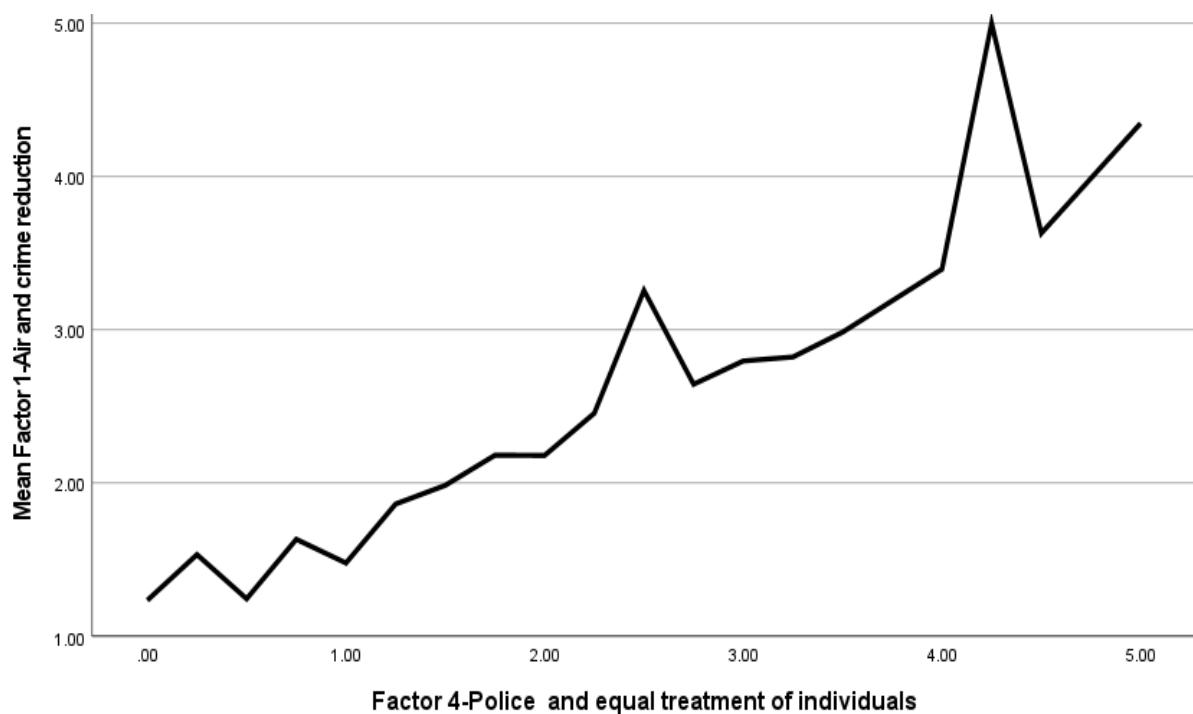


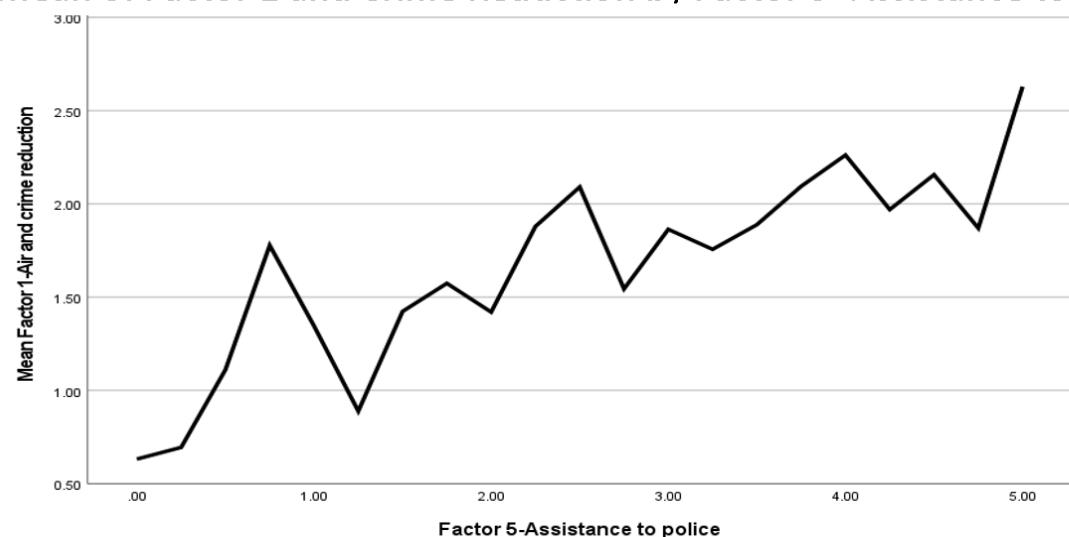
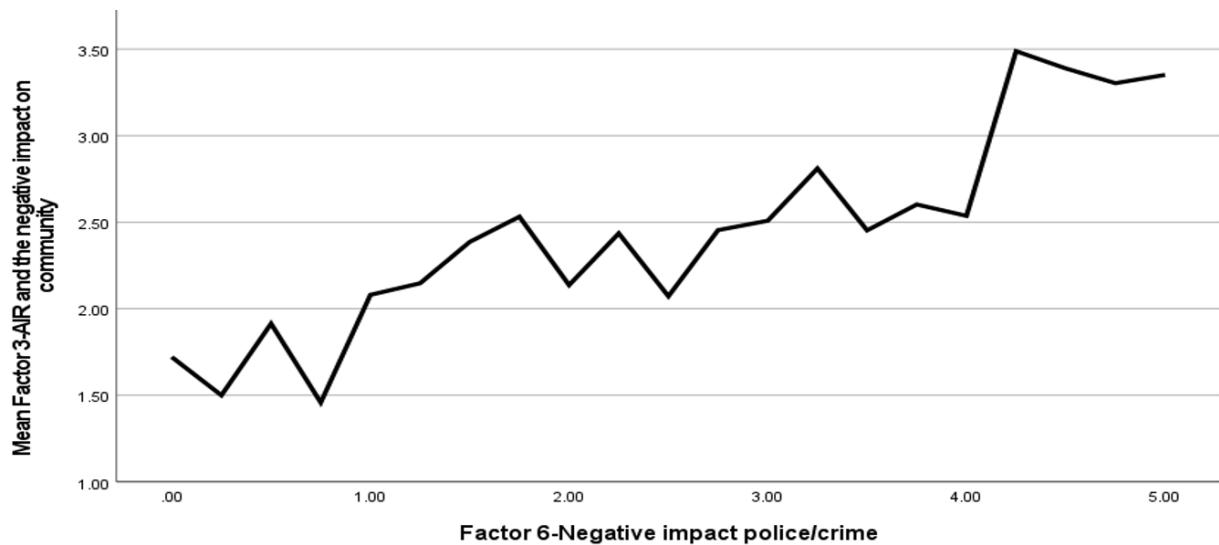
Figure 7**Mean of Factor 1 and Crime Reduction by Factor 5- Assistance to Police**

Figure 8 shows that increased agreement with factor 6- (personal and family) negative impact of police and crime was significantly correlated with factor 3- AIR and negative impact on the community.

Figure 8**Mean of Factor 3-AIR and the Negative Impact on Community by Factor 6-Negatice Police/Crime**

There was significant diversity of opinions for Police and positive relationships (factor 2) between White and Black people and age groups. Blacks disagreed more strongly than White people (Figure 9) and diversity of opinion varied from 1.98 for people in the 18 to 34 age group to 2.4 for people in the 45-54 age group (Figure 11).

Figure 9. Adjusted means for diversity of opinion
Factor 2-Police and positive relationships by race

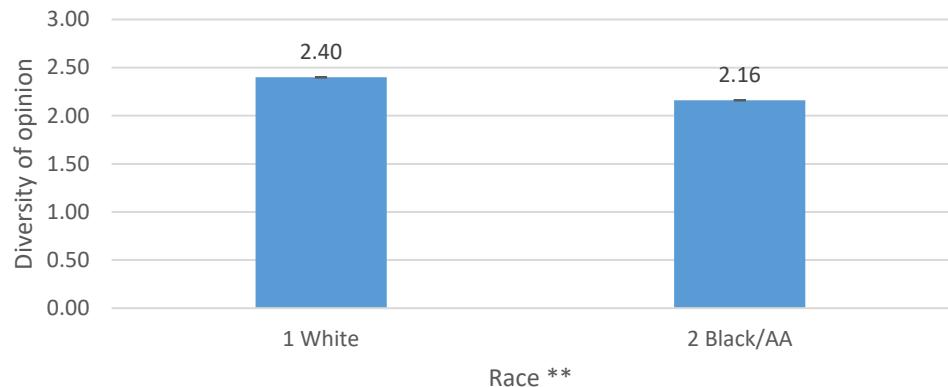


Figure 10. Adjusted means for diversity of opinion
Factor 2-Police and positive relationships by gender

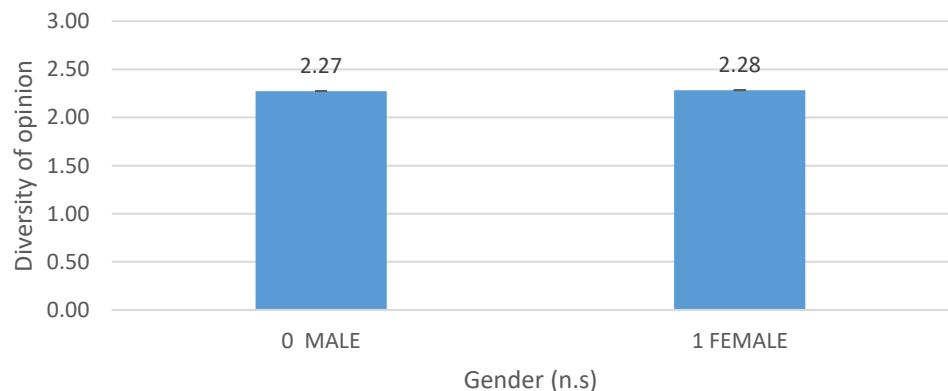


Figure 11. Adjusted means for diversity of opinion
Factor 2-Police and positive relationships by age group

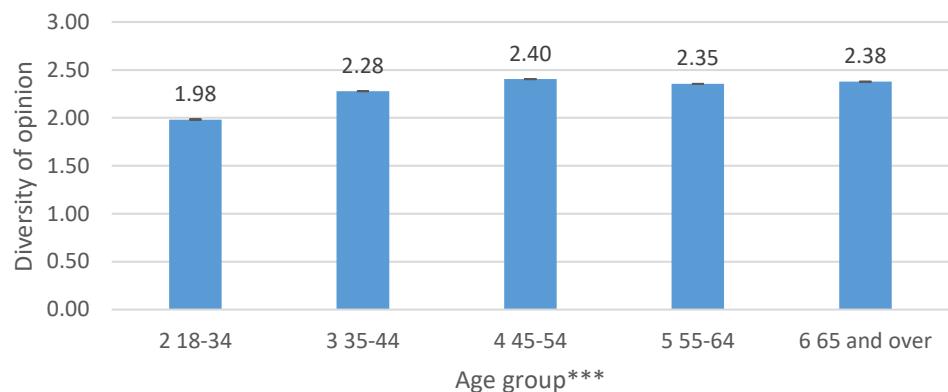


Figure 12. shows that there was a significant diversity of opinion between Black and White people with respect to AIR and negative community impact (factor 3). White people agreed that AIR would have a negative impact on their community while Blacks disagreed with this construct. Figures 13 and 14 shows that there was not a significant diversity of opinion between males and females (both gender groups disagreed) and age groups, although there was agreement and disagreement with the construct among the people in the age groups.

Figure 12. Adjusted means for diversity of opinion Factor 3-AIR and negative community impact by race

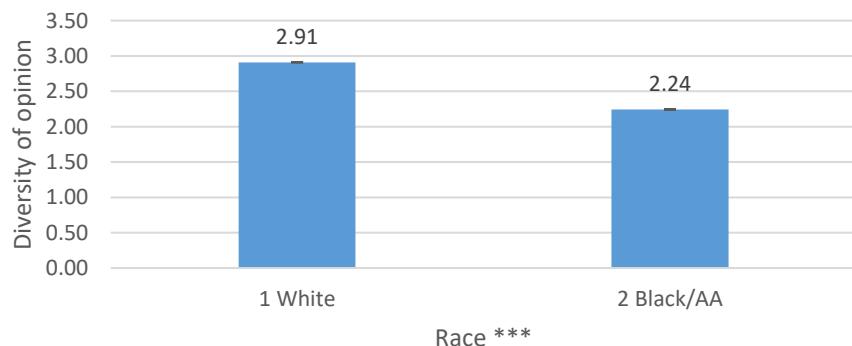


Figure 13. Adjusted means for diversity of opinion Factor 3-AIR and negative community impact by gender

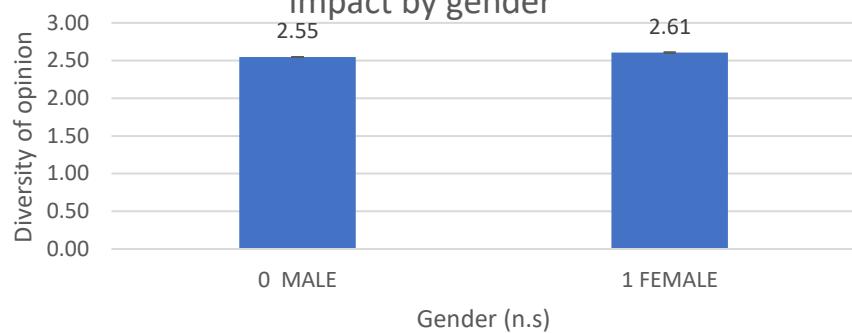


Figure 14. Adjusted means for diversity of opinion Factor 3-AIR and the negative community impact by age group

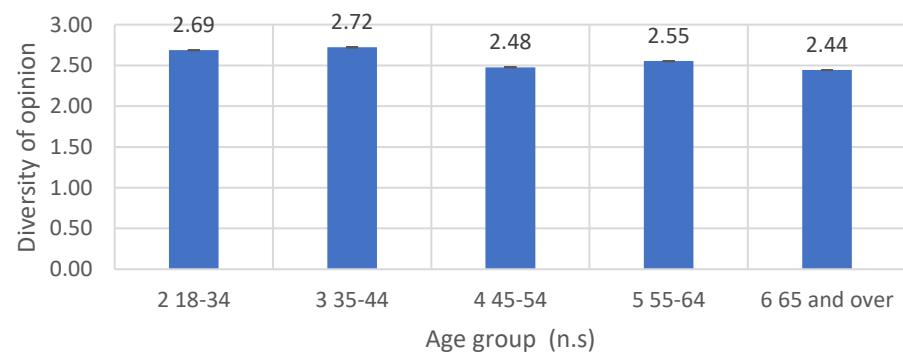


Figure 15 shows that there was a significant diversity of opinion between males and females with respect to Police and equal treatment of individuals (factor 4). Females disagree more strongly than males. In addition, both racial groups and all age groups disagreed with the construct, figure 15 and figure 17, respectively.

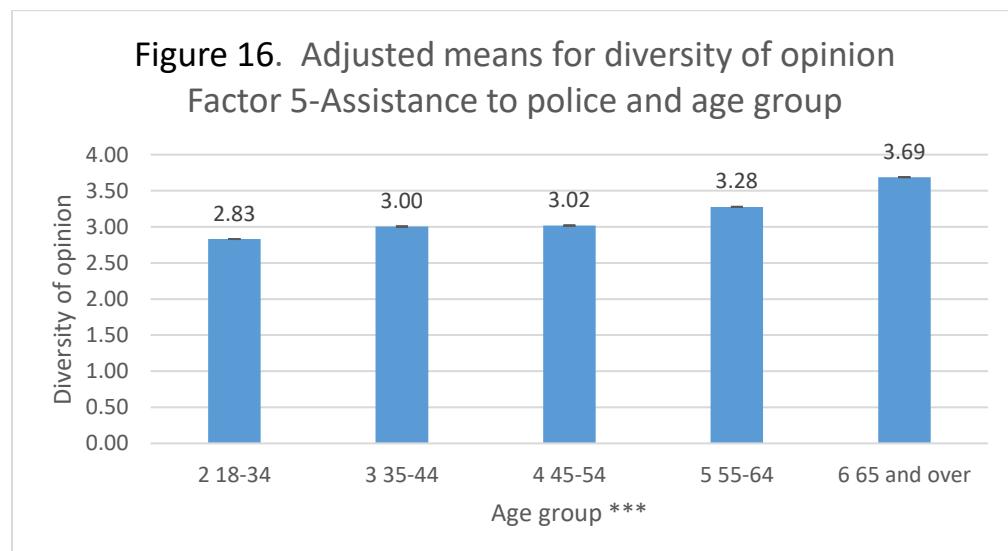
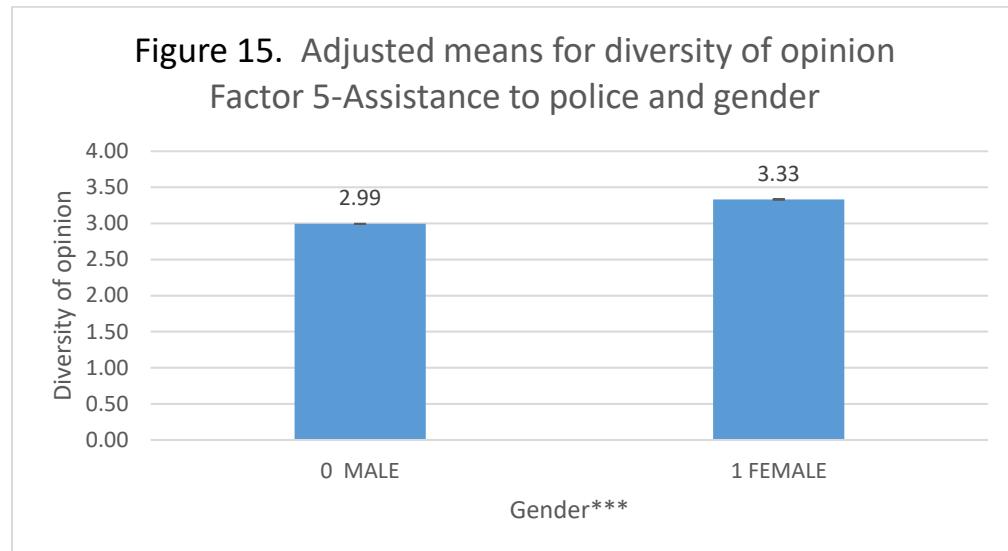
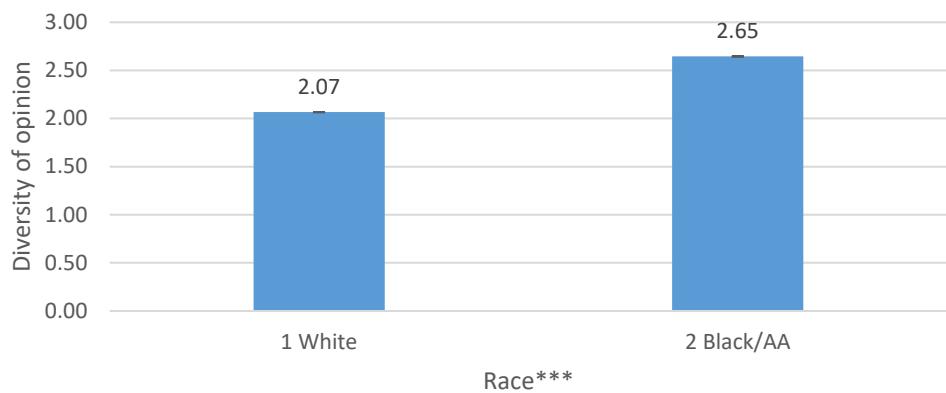


Figure 17. Adjusted means for diversity of opinion
Factor 6-Negative impact police and crime by race



There was significant diversity of opinions among all socio-demographic groups with respect to assistance to police (factor 5). All socio-demographic groups agreed that they would assist the police to solve crime; however, the strength of the agreement varied between/among the groups (figures 18 thru figure 20).

Figure 18. Adjusted means for diversity of opinion
Factor 5-Assistance to police and race

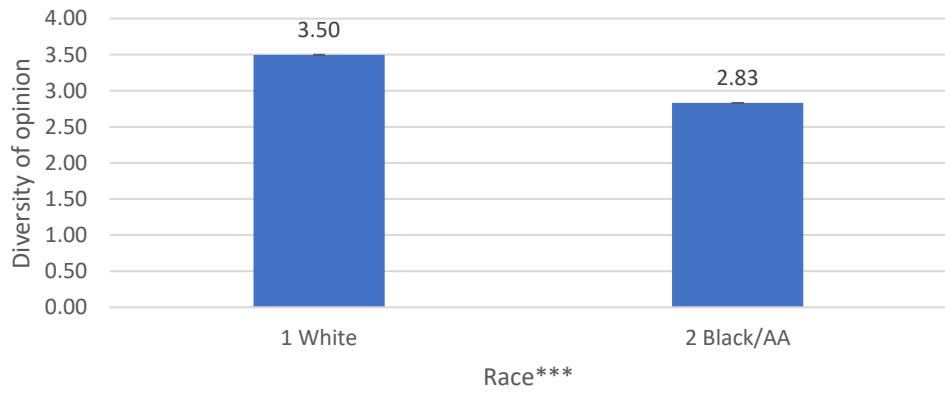


Figure 19. Adjusted means for diversity of opinion
Factor 5-Assistance to police and gender

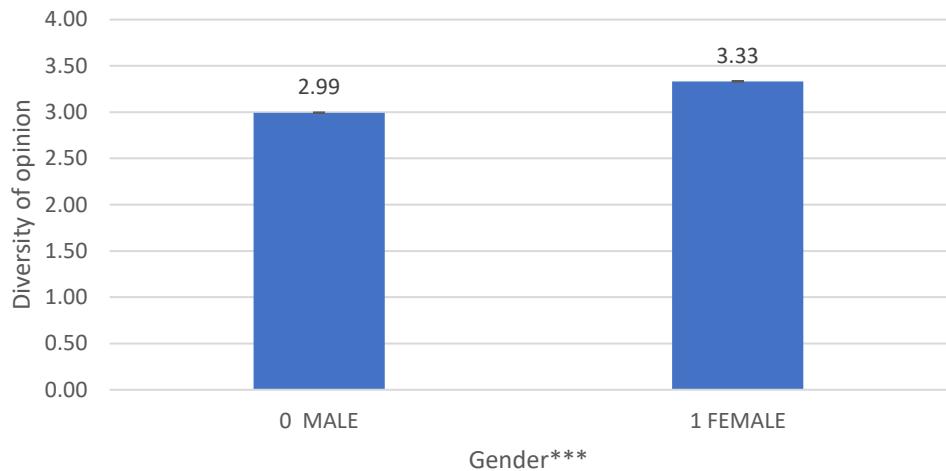
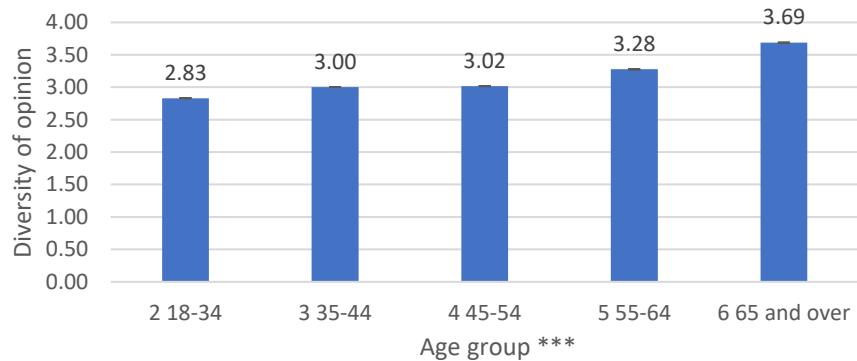
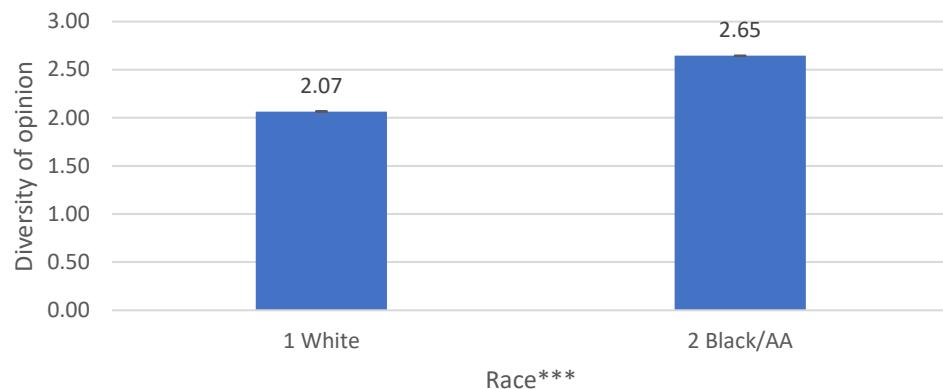


Figure 20. Adjusted means for diversity of opinion Factor 5-Assistance to police and age group

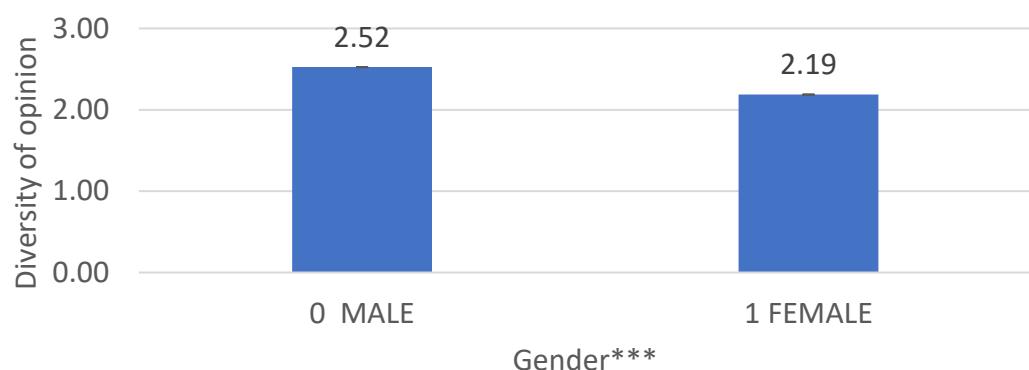


Figures 21 thru 23 show that there was significant diversity of opinions among residents in all socio-demographic groups for the construct- negative impact of police and crime (factor 6). White residents and females disagreed while their counterparts agreed. The age group opinions varied. Again, all means less than 2.5 indicated disagreement and means greater than or equal 2.5 indicate agreement with the construct.

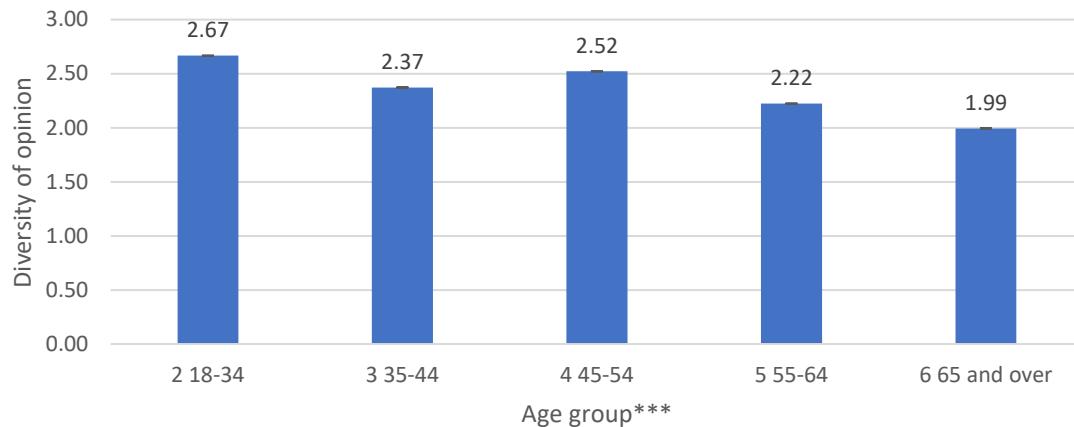
**Figure 21. Adjusted means for diversity of opinion
Factor 6-Negative impact police and crime by race**



**Figure 22. Adjusted means for diversity of opinion
Factor 6-Negative impact police and crime and gender**



**Figure 23. Adjusted means for diversity of opinion Factor
6-Negative impact police and crime and age group**



There was a significant diversity of opinion between Black and White people with regards to the construct -general community violence (factor 7). All socio-demographic groups agreed with the construct; however, Blacks agreed more stronger than White residents. The specific differences are illustrated in figures 24 thru 26.

**Figure 24. Adjusted means for diversity of opinion
Factor 7-General community violence by race**

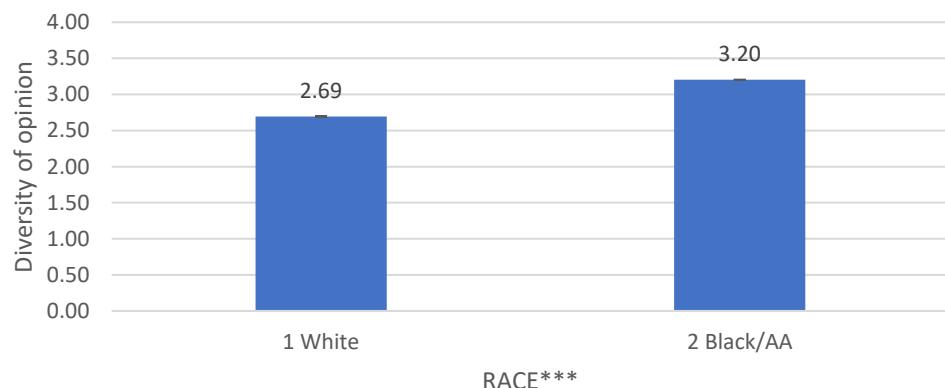


Figure 25. Adjusted means for diversity of opinion
Factor 7-General community violence by race

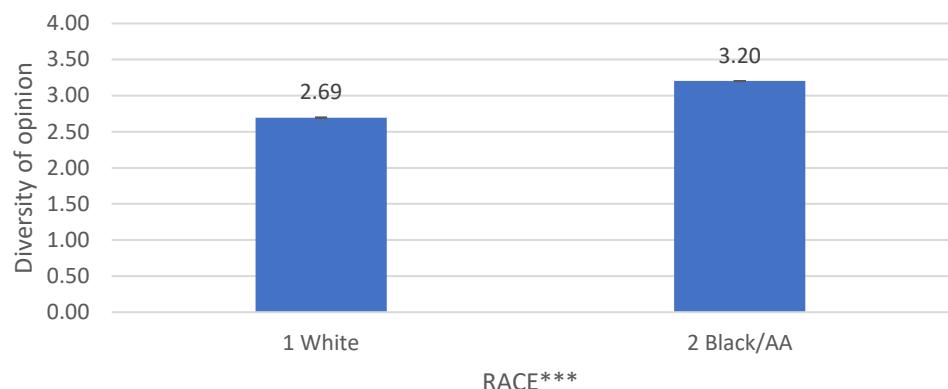
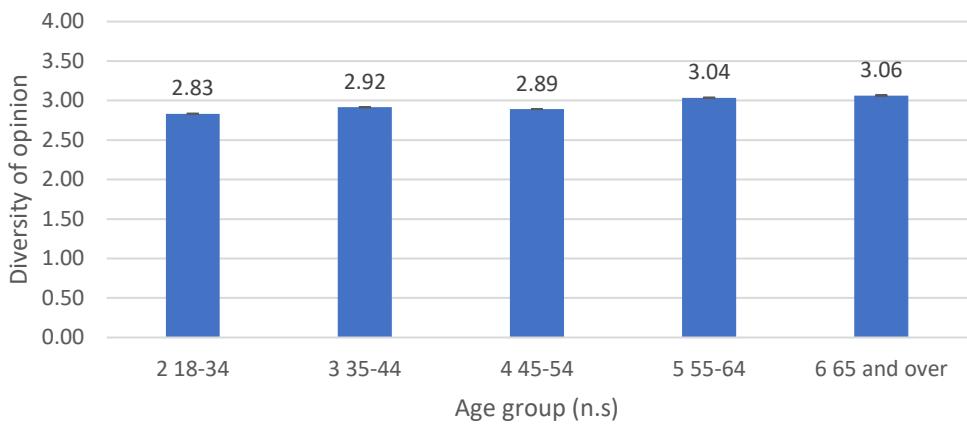


Figure 26. Adjusted means for diversity of opinion
Factor 7-General community violence by age group



Residents in all the socio-demographic groups agreed that they were in good health (factor 8). Significant diversity of opinions was observed between racial and gender groups. White residents and females' agreements were stronger than their counterparts (figures 27 thru 29).

Figure 27. Adjusted means for diversity of opinion
Factor 8-Good personal health status by race

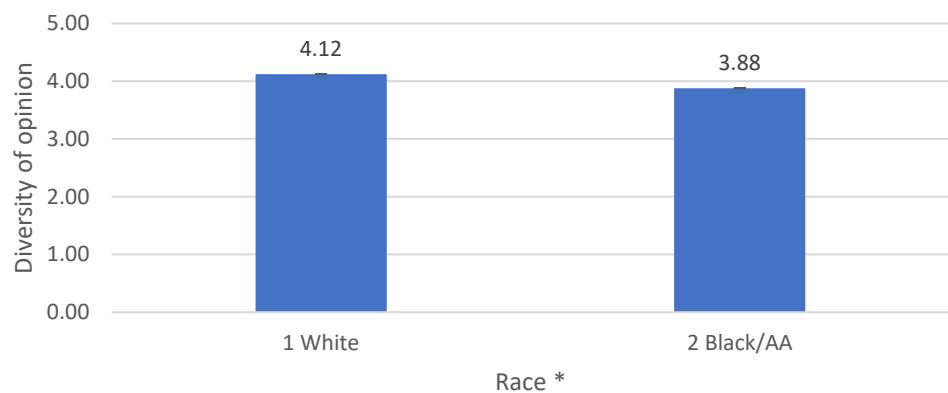


Figure 28. Adjusted means for diversity of opinion
Factor 8-Good personal health status by gender

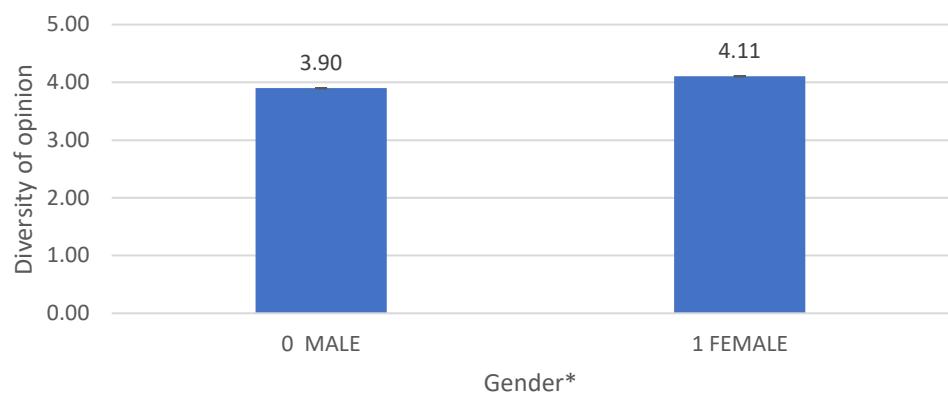
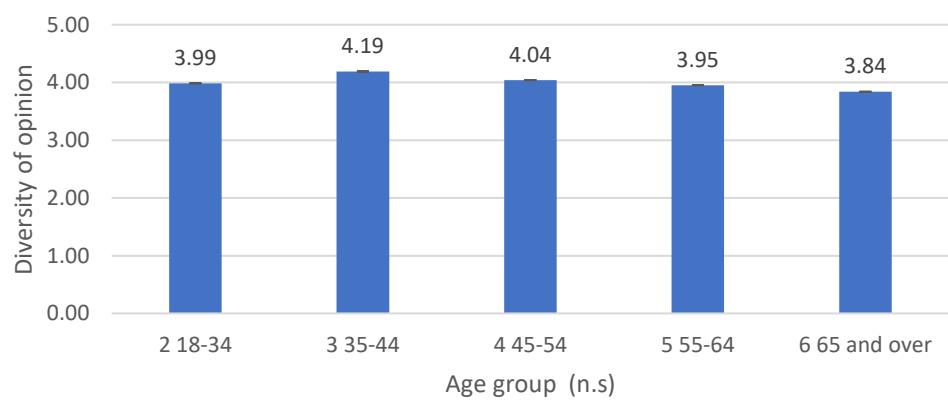


Figure 29. Adjusted means for diversity of opinion
Factor 8-Personal health status



Summary of Quantitative Findings

Table 12 shows that there was a consistent pattern of disagreement in diversity of opinion for Factor 1-Air and crime reduction, Factor 2-Police and positive relationships, and Factor 4-Police treatment of individuals. All socio-demographic groups did not agree with these constructs. An opposite consistent pattern of agreement in the diversity of opinion was found for factor 5- assistance to police, Factor 7-General community violence and Factor 8-Good personal health status. All socio-demographic groups agreed with these constructs. A discordant diversity of opinion was found between racial and gender groups. For examples, Whites agreed, and Blacks disagreed with “AIR and negative community impact (Factor 3)” ($p<0.001$) and Whites and females disagreed, and Blacks and males agreed with “Negative impact of police and crime (Factor 6)” ($p<0.001$). Note that asterisks on agreements/disagreement in the same direction refers to the extent of the agreement/disagreement.

Table 12
Summary of adjusted diversity of opinion about eight constructs by socio-demographic characteristics

Socio-demographic characteristic	AIR and crime reduction (Factor 1)	Police and positive relationships (Factor 2)	AIR and negative community impact (Factor 3)	Police and equal treatment of individuals (Factor 4)	Assist police (Factor 5)	Negative impact of police and crime (Factor 6)	General community violence (Factor 7)	Good personal health (Factor 8)
Race	***	**	***	n. s.	***	***	***	*
Black/African American	2.04	2.16	2.24	1.27	2.83	2.65	3.20	3.88
White	1.15	2.40	2.91	1.03	3.50	2.07	2.68	4.12
Gender	*	n. s.	n. s.	*	***	***	n. s.	*
Male	1.50	2.27	2.55	1.22	2.99	2.52	2.86	3.90
Female	1.69	2.28	2.61	1.09	3.33	2.19	3.03	4.18
Age groups	**	***	n. s.	n.s.	***	***	n. s.	n. s.
18-34	1.95	1.98	2.69	1.39	2.85	2.67	2.83	3.99
35-44	1.45	2.28	2.72	1.08	3.00	2.37	2.92	4.19
45-54	1.58	2.40	2.48	1.09	3.02	2.52	2.89	4.04
55-64	1.52	2.35	2.55	1.16	3.28	2.22	3.04	3.95
65+	1.47	2.38	2.44	1.06	3.69	1.99	3.06	3.84

Note. Disagree with construct-- Diversity of opinion < 2.5. Agree with construct --Diversity of opinion ≥ 2.5

Quantitative Discussion

Summary of findings with respect to the adjusted diversity of opinion (GLM models) and the null hypotheses:

Hypothesis 1: The diversity of opinion about the impact of the Aerial Surveillance Project (ASP) was the same within all socio-demographic groups and among police districts.

Socio-demographic groups disagreed with Factor 1-Air and crime reduction, Factor 2-Police and positive relationships, Factor 4-Police treatment of individuals. Conversely, all socio-demographic groups agreed with factor 5- assistance to police, Factor 7-General community violence and Factor 8-Good personal health status.

These findings suggest that the general null hypothesis in terms of the direction of diversity of opinion (agreement vs disagreement) should not be rejected; however, the analyses indicated that there were significant variations in the extent/level of agreement or disagreement. In that context the null hypotheses should be rejected.

There was a significant difference of opinion with respect to factor 3- AIR and negative impact on the community, Black/Americans disagreed, and White people agreed. This was a significant difference of opinion. Among the age groups, three age groups agreed with the construct (18-34, 35-44, and 55-64). Conversely, persons in age groups 45-54 and persons 65 years old or older disagreed with this construct. Blacks and males agreed with Factor 6- negative impact of police and crime and White people and females disagreed – both were statistically significant differences of opinion. Age groups had mixed responses. For examples, person 18-34 and 45-64 agreed and their counterparts disagreed; moreover, the differences of opinions were statistically significant. The findings suggest that the null hypothesis should be rejected.

Hypothesis 2: Police interactions would not have a significant relationship with diversity of opinion about the ASP and crime.

There were significant correlations between factor 1- air and crime reduction and the following factors: factor 2-police and positive relationships, factor 4-police and equal treatments of individuals and factor 5-assistance to police. These findings suggest that the null hypothesis should be rejected.

In some cases, significant differences were not “practical” significances. A case in point, the observed difference between males and females for Factor 1-Air and crime reduction was statistically significant; the statistical test delineated the strength of the disagreement (1.23 vs 1.45) however, the more important point is that both groups were within the bounds of disagreement (e.g., disagreed with factor 1). In fact, all groups where there was disagreement or the agreement within the socio-demographic group and statistically significant the result delineated the strength of the disagreement/agreement.

Quantitative Discussion, Cont.

Variations between/among diversity of opinions were dependent on (1) which of the eight factors was under considerations (2) the particular socio-demographic group studied. A major component of the Air Surveillance program (ASP) was crime reduction. Overwhelming, all socio-demographic groups disagreed this objective would be realized. All socio-demographic groups disagreed that ASP would decrease the crime with White residents disagreeing much stronger than Blacks (scale ranged from 0, strongly disagree to 5, strongly agree).

Significant correlations between the eight factors were also dependent upon the particular factor under consideration. For examples, police interactions (e.g., factor 4- differential treatment of individuals in the community) and disagreement that the ASP could decrease crime were significantly correlated. Negative impact of police and crime (factor 6) and both, ASP and the negative impact on the community (factor 3) and general community violence (factor 7) were significantly correlated.

Qualitative: Focus Groups and Key Informants

According to Patton (2015) the use of qualitative data contributes to research by capturing people's stories to understand their perspectives, explaining how systems work in people's lives, understanding the context of an issue and why it matters to people, outlining unanticipated consequences or issues and finally making case comparisons to understand patterns and themes (pp.12-13).

Padgett (2016) writes it is the insider rather than the outsider perspective that makes qualitative research different from quantitative research. She states qualitative research is person centered, holistic, contextual, privileges depth over breadth, and inductive rather than deductive. Use of qualitative data in this instance represents an effort to capture the experiences and meaning making of the impact of the Aerial Investigation Research program of the Baltimore Police Department on the residents of Baltimore City. Such research should consider and include "particular attention to the needs and empowerment" of marginalized populations (National Association of Social Workers Code of Ethics, 2021, pp 1-2). And to the lived experiences and voices of those the National Association of Social Workers Code of Ethics calls "vulnerable, oppressed, and living in poverty."

While there are many qualitative approaches, the one used in this analysis is interpretive phenomenological analysis or an approach that attempts to "understand what it is like, from the point of view of the participants, to take their side" (Smith & Osborn, 2007). It is a step-by-step process that involves the immersion of the researcher in the reading and re-reading of the original data while checking for accuracy against the audio/video recordings, making notations, identifying emergent themes, searching for connections across emergent themes, then moving to the next case and finally looking for themes across all cases (Smith & Osborn, 2007, pp. 67-75).

Attitudes about Crime

The results of the analysis of fourteen focus groups across the domain of attitude about crime in the respondents' neighborhoods and the city presented with a yield that spanned from a major concern about crime to a mention of specific types of crime. The theme that emerged across all fourteen groups was that crime is a major issue or "I feel that the crime...is just gotten out of hand." Across thirteen groups respondents felt that psychosocial factors including addiction, economic deprivation, and poor parenting skills were important. That opinion is labeled "Crime is a response to a lack of a community." In four groups crime was not a significant issue. The theme that emerged in those groups was captured by the phrase "I don't have a problem outside my door" (See Appendix B).

Relationships with Police

Across thirteen focus groups, participants reported poor relationships with the police. Seven groups discussed positive interaction with the police. Six focus groups described the community/police relationship as neutral. Three major themes emerged. They are "I think that the relationship between the police and the community is...it's horrible..." "I have met some, um, people in uniform who are... mindful of the community ..." and "I think it's neutral. But I think it could be so much better".

The Aerial Investigation Research program

The major themes that emerged in the analysis of the Baltimore Police Department's Aerial Investigation Research program included a variety of responses including specific opposition, questions about potential benefits, concerns about abuse of the system, concerns about invasion of privacy, questions about data usage, noise of the equipment and support for the program. The themes were "I'm against it," "It seems to not be beneficial," "It's an absolute invasion of everybody's privacy," "Where is the data going?" "I feel disrespected..." The potential for mistakes is serious' and, " It could be a good tool".

Table 1.

Domain	Emergent Themes from Focus Groups	Quantitative data analyses from Separate Population Survey
Aerial Investigation Research Program	"I'm against it"	<ul style="list-style-type: none">Overall, the community disagreed with the umbrella construct "AIR and negative impact on the community". There was a racial division: Black/African American residents disagreed with the construct and White residents agreed that the program would have a negative impact on their community.
	"It seems too not be beneficial"	<ul style="list-style-type: none">Many of the residents in the sample disagreed that the Aerial Surveillance would decrease major crimes such as murder, nonfatal shootings, armed robberies, carjacking, and rapes.Overwhelming, residents in all socio-demographic groups and police districts disagreed with the umbrella construct that Aerial Surveillance would reduce crime and have a positive impact on the police, and their personal privacy. In addition, there was a racial divide: White residents disagreed at a stronger level than Black/African Americans. On average, persons in all police districts also disagreed that the ASP would reduce crime.
	"It's an absolute invasion of everybody's privacy"	<ul style="list-style-type: none">Specific questions indicated that many residents did not have positive feelings regarding the ASP looking down on them. Many residents were concerned that the aerial surveillance project will violate their privacy.
Relationship with Police	"I think that the relationship between the police and the community is...it's horrible..."	<ul style="list-style-type: none">The community disagreed that there was a "positive relationship with the police". On average, there was disagreement with the umbrella construct that "police treated individuals equally." Overall agreement that individuals or family have been "negatively impacted by the police and crime". Racial division was also found: Black/African American residents agreed with this umbrella construct and White residents disagreed.Of note: the residents in the sample agreed that they would "assist the police" to solve crimes (even though there was not a positive relationship with the police)
Attitudes about Crime	"I feel that the crime...is just gotten out of hand"	<ul style="list-style-type: none">Specific questions "I am concerned about the crime in Baltimore City" and "I am concerned about the violence in Baltimore City" where 97.2% (N=1029) and 98.2% (N=1059), respectively, indicated their concern.There was agreement to the umbrella construct "negative impact of police and crime". There was also a racial divide: Black/African American residents agreed, and White residents disagreed with construct.On average, all socio-demographic groups and police districts agreed with the umbrella construct that there was "general community violence".
	Crime is a response to a lack of a community	<ul style="list-style-type: none">The community agreed that they would "assist police in solving crime"

Quantitative Limitations of the Study

The participants included in this study may not be considered representative of the adult population in Baltimore City. Convenience sampling was used, a type of non-probability sampling, which limits generalizing to the larger population. When possible, we compared the sample to the over the eighteen-year (18) population in Baltimore City with the American Community Survey (ACS) data (planning.maryland.gov, 2019). The wording that describes race in the ACS was different from our open-ended race question on our survey precluded a direct comparison. Our sample had a higher percentage of Blacks/African Americans and a lower percentage of White residents. Regarding gender, a higher percentage of men than women (the ACS estimated the reverse percentages—a higher percentage of women). In addition to sampling biases, there may be response biases in either direction. For examples, residents who participated may have been totally against the aerial surveillance and more incline to voice their opinion by responding to the survey or on the other hand, the residents may not

have participated because they had no interest in the topic and/or felt that their opinions would not have made a difference in reducing crime or violence.

The study design was also limited by the emergence of the COVID-19 global pandemic. The protocol had to be modified due to the increased numbers of COVID-19 cases in both Baltimore City and the State of Maryland, and as the result of the governor's mandates. The focus groups were held virtually; however, to ensure that the most vulnerable residents were included in the study, the survey was administered in person with Personal Protective Equipment (PPE) and social distancing in addition to electronically. Some residents may not have had the technology to respond to on-line surveys or to participate in the focus groups. Although limitations have been identified, consistent findings from this survey will help to develop other initiatives that will address crime, violence, and police interactions in Baltimore City with significant community engagement before an intervention is implemented.

Qualitative Limitations of the Focus Group Study

The limitations of the data collected in the focus groups center around the ability to access or use the appropriate technology, familiarity with the Zoom platform and the opportunity to participate in the focus groups. Zoom is easily available for respondents who own Smartphones or computers or laptops but not for respondents who do not own that technology. According to the Pew Research Center, overall American smartphone ownership in 2019 was at 81% and three quarters of Americans own desktop or laptops (The Pew Research Center, n.d.) Smartphone ownership for Americans who make less than fifty thousand dollars per annum was at 78% while the saturation rate for Americans with an annual income of over 75-thousand dollars was 95%. The U.S. Census Bureau places the Baltimore City median income at around fifty thousand dollars (United States Census Bureau, n.d.) Thus, Zoom focus groups put significant constraints on gathering data from low-income respondents with limited or no access to technology that permits access to the Zoom platform.

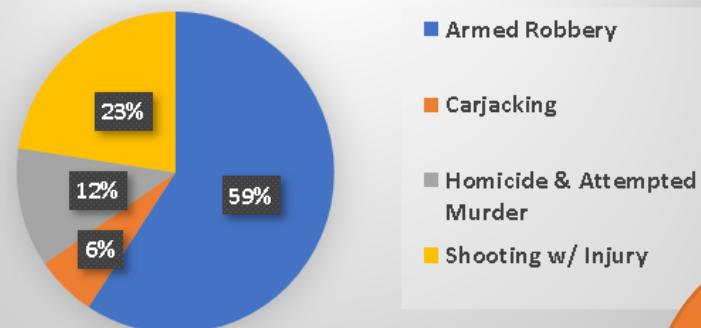
Aerial Investigation Request Data Summary

The aerial surveillance aircraft were equipped with 12 cameras, with each camera having a 16 million pixelation rate, in which one plane had a total of 192 million pixelation capacity for image production. During one flight cycle for each plane, the cameras were able to capture up to 18,000 images. These images were stored in files on the plane's computer and were generally uploaded at the end of 24 hours into the iView software. In an extreme case, the flight data may have been requested as soon as the flight cycle ended and uploaded to assist in surveillance efforts for a crime. Once the flight data were uploaded to iView, the analysts had access to the data images.

The pie charts below were from May 1 – October 30, 2020 where AIR requests were submitted for the selected crime categories for this pilot. The charts provide the overall number of requests and investigations that were used and supported through the AIR program.

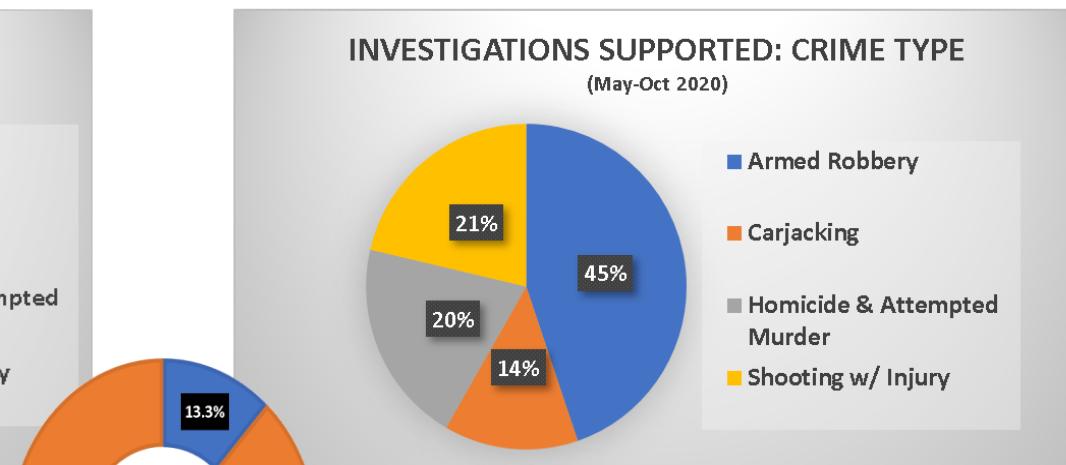
TOTAL AIR REQUESTS: CRIME TYPE

(May-Oct 2020)



INVESTIGATIONS SUPPORTED: CRIME TYPE

(May-Oct 2020)



Row Labels	Count of Type of Crime
Armed Robbery	854
Carjacking	89
Homicide & Attempted Murder	173
Shooting w/ Injury	326
Grand Total AIR REQUEST	1442

Row Labels	Count of Type of Crime
Armed Robbery	86
Carjacking	26
Homicide & Attempted Murder	39
Shooting w/ Injury	41
Grand Total AIR OBSERVED	192

Methodology

The method employed to collect the key informant data started on September 16 and ended on December 17, 2020. Approximately twenty-four (24) interviews were conducted with aerial surveillance operations and analyst staff, Baltimore police detectives, and senior Baltimore administration. (See adjacent diagram)

Structured and unstructured interview questions were developed, and recordings were taken (and subsequently destroyed afterwards, to protect privacy). The interviews were validated by two independent interviewers who, together, conducted ALL key informant interviews.

Analysis of the key informant transcriptions (also subsequently destroyed after analysis) comprised using a Qualitative Analytical tool that extracted the corpus of ALL texts, provided contextualization, and graphic representation of the data for thematic extraction and analysis. The tool used was accessed at www.voyant-tools.org, available online.



Key Informant Interviews: Emerging Themes

Approximately twenty-four (24) Key informant interviews were conducted with the aerial surveillance program operations and analyst staff. In addition, four separate and distinct detective crime units, consisting of homicide, robbery, nonfatal shootings, and carjackings were also conducted, which further included Baltimore police administrative officials. To maintain the integrity of the project and confidentiality, specific crime detective units are not being identified with respect to their perspectives.

1. **Analysts** – The aerial surveillance analysts provided detail analysis, time, and worked as teams to provide individualized investigation packages to detectives. The analysts worked in teams of 6 across three separate teams. Total 18.
2. **Analytics** – The AIR program provided the needed analytics for synchronized stitching of images for comprehensive analysis for investigation packages.
3. **Explain** – Explanations are critically important when utilizing AIR request and receiving analytical results. Detailed explanations are needed to help teach police, prosecutors, and defense how this technology can charge or exonerate.
4. **Invasive** – There appeared to be two perspectives around “invasive”. 1) the group that felt citizens perceived the AIR program to violate their privacy, and 2) the other group that indicated ground cameras, cell phones, and other technologies are significantly more invasive.
5. **Narrow** – The AIR program can help to narrow the focus of cost saving, investigations, and narrow down the benefits of the AIR program impact.
6. **Needle** – The analogy of “threading the needle” where the AIR program can stitch other technologies to maximize their utility for prevention.
7. **Person** – A major theme raised was can a person be identified. The pixels are too small for any discernible characteristics to identify a person or any of their characteristics. It is not possible with the AIR program technology.
8. **Picture** – The common theme around pictures emerged as analysts send to detectives' pictures of areas where suspect(s) have traveled, stopped, etc. Additionally, pictures of individuals are pixelated as a dot with no discernable image quality. However, the dot can be tracked. Additionally, each picture is viewed very second on each frame while tracking suspects.
9. **Pixel** – Pixels and pixilation was a common thematic topic. They ranged from technical discussions, describing 1 pixel = 1 meter, or $\frac{1}{2}$ pixel represents a person, to how pixelated or granular is the image to protect privacy.
10. **Prosecutors** – A theme that emerged during the interviews consistently was the interviews were the need to train prosecutors about the AIR program. Prosecutors have shown lack of interest in learning by-and-large and find it too difficult to explain in court. Detectives, in turn, are reluctant to use as evidence when building a case because of probable cause limitations without other evidence, such as eyewitness, etc.
11. **Public** – The public is concerned about civil rights and civil liberty issues. The need for more public safety and the importance of having access to public and private cameras, as well as greater public safety has been a priority, as shared.
12. **Relationship** – The importance of relationship building between detectives and analysts. This relationship has enabled both parties to better understand the technical needs of one another, e.g., time (to the second/minute), location, etc. Building relationships between the AIR program and prosecution is critical.
13. **Saving** – Cost and time saves was discussed consistently throughout key informant interviews. Issues as to cost of fuel versus other cost that could be redirected. Where is the cost saving? Time and cost, such as overtime, etc.
14. **Software** – The iVIEW 3.0 software is the latest. There are no hidden commands. The software tracks all routes and where analyst look. All analysts are thoroughly trained in the software and all searches are timestamped and saved.
15. **Subjective** – The analysts do not provide any subjective comments, opinions, or theories. They can be subjective when determining likely suspect vehicle based on various factors, such as speed, etc.
16. **Success** – Success and success rate are sometimes subjective. This theme raised how exoneration can be defined as success just like conviction. Also, success is difficult when multiple pieces of evidence are used to close a case.
17. **Video** – The iVIEW is best when shown as a video and not only as an evidence packet. More realistic, convincing, easier to explain when you can see movement.

Aerial Operations and Analysis

Key informant interviews were conducted with the Aerial Investigation Research (AIR) program team that included operations staff and analysts. The below are perceived strengths and weaknesses of the program as expressed. However, some of the limitations are a byproduct of the agreement between the city and vendor.

 PERCEIVED STRENGTHS	AIR OPERATIONS	 ANALYSTS
	<ul style="list-style-type: none">Support criminal investigationsProvide imagery to detectives for evidence supportAssist with solving violent crimesProvides additional crime fighting tool and deterrent for criminalsProvide investigative support and evidence for court casesAbility to quickly help with solving a crimeStaff of highly trained analysts who are committed to AIR programBelief it is cost effective in the long run with the support of reducing crimeCollaborative relationship/trust building with Baltimore Police Department and CommunityThrough experience the AIR program analysts can begin learning about the psychology of behavior (e.g., witness run to a crime while suspects tend to run away; vehicles drive fast after a crime can help to focus on a vehicle, etc.)iVIEW 3.0 integrates video, pictures, maps, and text to provide a comprehensive picture of the suspect for Baltimore Police detectives.Detectives and analysts work very closely together for investigation packages	<ul style="list-style-type: none">Diverse Analysts are from Baltimore and reflect Baltimore demographicsNo civil rights issues.No discernible characteristics, only dots. No biological identifiers from iVIEW aerial imagesAdditional crime fighting tool for BPDHelps to make Baltimore saferDeterrent for criminals to commit crimes out in the openStrengthened relationships with BPD in addressing crimeThe training received and level of interaction with AIR program provided confidence with being able to use the iVIEW softwareGround camera are used about 50% of the time to back up AIR imagesThe airplane less invasive than other imaging technologies (e.g., Citywatch cameras, Google Images, smartphones, License Plate Readers, etc.)Multiple teams and six (6) team members per team for each individual case. Helps to address perceived bias thru layers of checks and balances
PERCEIVED WEAKNESSES	<ul style="list-style-type: none">Limitation on how the two (2) planes can fly to collect dataWeather limitations for planes to fly and collect dataTime restraints for planes to fly to collect data (Limitations of Agreements)Plane is not able to fly at night to collect data during some peak crime times (Limitations of Agreement)Plane is not operable at times when crimes appears to be at its highest due to existing agreementsLimitations with imagery that impacts the analysts from being able to clearly track potential subjects	<ul style="list-style-type: none">Plane inability to fly and collect data every dayPotential privacy issues with the members of the communityPerspective perceived as potentially skewed to fit agendaImagery is not as clear as they would like to get better tracking

Crime Unit 1 & 2: Detectives

Key informant interviews were conducted with four separate and distinct detective crime units, consisting of homicide, robbery, nonfatal shootings, carjacking and other Baltimore police officials. To maintain the integrity of the project and confidentiality, specific crime detective units are not being identified with respect to their perspectives.

PERCEIVED STRENGTHS	Crime Unit 1	Crime Unit 2
PERCEIVED WEAKNESSES		
	<ul style="list-style-type: none">• Good to have an additional tool for crime fighting• When plane is flying and can offer imagery, the coordination is beneficial• Aerial surveillance data helps to follow movements and contact points (street level cameras (City Watch), businesses with cameras, license plate readers, speed cameras, and red-light cameras) of potential suspects• When AIR program provides crucial assistance with coordinating with other ground level resources, and the detectives can gather a timeline or series of events, this strengthens their presentation of evidence when questioning a suspect• Can track suspect's travel back for weeks• Time saving and can lead an investigation to a narrower scope• Being able to clear/exonerate a suspect is also a success of the AIR program• Using AIR analysts based on their detail skills in analyzing the images• Cost saving as it has reduced time for investigation	<ul style="list-style-type: none">• Good to have an additional tool for crime fighting• When plane is flying and can offer imagery, the coordination is beneficial• AIR data helps to follow movements and contact points (street level cameras (City Watch), businesses with cameras, license plate readers (LPR), speed cameras, and red-light cameras) of potential suspects• When AIR provides crucial assistance with coordinating with other ground level resources, and the detectives can gather a timeline or series of events, this strengthens their presentation of evidence when questioning a suspect• Links well with LRP when integrated to show likely path of suspect vehicle(s)
	<ul style="list-style-type: none">• Plane is not flying a lot and mostly during times of high crime• Low case assistance for closure• Must put in a request for aerial surveillance even if they know the plane was not flying at the time• Mandatory AIR request that must be done if assistance was provided from aerial surveillance or not• Do not understand the entire AIR process to be able to fluently explain it to a prosecutor• No in-depth training at rollout of the AIR program, especially for prosecutors• Plane needs to be in the air longer• Need to get States Attorney on-board as a tool for closing cases• Getting detectives competent in using the AIR reports as case briefs• The passive approach, at times, because they are a separate entity	<ul style="list-style-type: none">• AIR requirements to submit request daily• If you do not know what you're looking at, all you see is dots. (More training)• Most prosecutors have no idea what they're looking at when presented• No video. Only power-point. Video may be more convincing• The plane may not be up at the time when needed

Crime Unit 3 & 4: Detectives

Key informant interviews were conducted with four separate and distinct detective crime units, consisting of homicide, robbery, nonfatal shootings, carjacking and other Baltimore police officials. To maintain the integrity of the project and confidentiality, specific crime detective units are not being identified with respect to their perspectives.

PERCEIVED STRENGTHS	Crime Unit 3	Crime Unit 4
PERCEIVED WEAKNESSES		
	<ul style="list-style-type: none">• Colleagues have used AIR program and proved to be extremely helpful• No real privacy concerns because all shown are dots on the map. No discernable details whatsoever• More detail provided to the AIR analysts, the quicker and the more detail analysis• The AIR program team has been incredibly open in explaining technical issues• Training was conducted and beneficial.• The AIR team is very professional. They are also engaging by attending roll call• The AIR program gave repeated invitations to states attorneys• The AIR program has been very beneficial when a suspect indicated they were at a location but the AIR program shows there were no one at the location• The program needs to be running longer to have a fighting chance to show its effectiveness	 <ul style="list-style-type: none">• The training was acceptable• Privacy issues are no major concern because Citywatch cameras citizens already know about• The analysts for the AIR program also serve as a tool to help with the investigation• The aerial view and sequenced with the ground camera that is very beneficia• The AIR program appears to be cost effective because it cuts down time in investigation
	<ul style="list-style-type: none">• Need more broad coverage of the entire city• Need more planes up during the day• Some cases show poor success rate with the program• Need to understand what was told how AIR worked versus in reality• If the technology worked the way it's said to work the prosecutors would see a value• Political. Line prosecutors are not overtly political and would love to have this technology as a tool for more evidence• A lot of pushback and pressure on the program from citizens of the city. Prosecutors are political and they listen to some of the citizens• Only a handful of States Attorneys came to understand the technology• Pulled the program too soon	 <ul style="list-style-type: none">• When needed the plane was either out of range or down for some reason such as weather or service• Might not be as cost effective, but give us better equipment, technology, or something that has 4k images to zoom in• No expectations when they put in an AIR request

Baltimore Police Administration

Key informant interviews were conducted with four separate and distinct detective crime units, consisting of homicide, robbery, nonfatal shootings, carjacking and other Baltimore police officials. To maintain the integrity of the project and confidentiality, specific crime detective units are not being identified with respect to their perspectives.

PERCEIVED STRENGTHS



Baltimore Police Administration

- Supports Baltimore Police Department in reducing crime
- Additional crime fighting technology
- AIR program “Threads the Needle” of all the surveillance options from air to ground cameras
- When utilized correctly, can strengthen community trust with Baltimore Police Department
- ROI (Return On Investment) is a benefit in the long term
- The AIR program is like a “comprehensive multidose prevention”
- No demographics, characteristics, or any physical attribute is identifiable in the AIR program
- AIR program is like “blue lights”; it is a deterrent
- AIR program helps detectives see the intersection among shootings, carjackings, etc.
- Analytics are extremely beneficial
- Strategic planning....looking down the road for 20 years
- AIR program is holistic, innovative, and out of the box because it is not intrusive, and it provides the services that Baltimore city deserves

PERCEIVED WEAKNESSES

- All the various technologies/cameras are NOT synced up – but not attributable to the AIR program. When power goes out, times change, etc.
- Detectives experience with AIR include a lot of knowledge, little knowledge, and no knowledge
- Plane is not flying during specific times and certain weather events which prohibit the plane's ability to gather aerial surveillance imagery
- Not enough training of officers about the AIR program
- The AIR program might not have enough time in operation to show the longitudinal impact on crime reduction
- Community member's perceptions of privacy and civil liberties being discarded

“The more resilient we are for public safety, the less risk for Homeland security.”

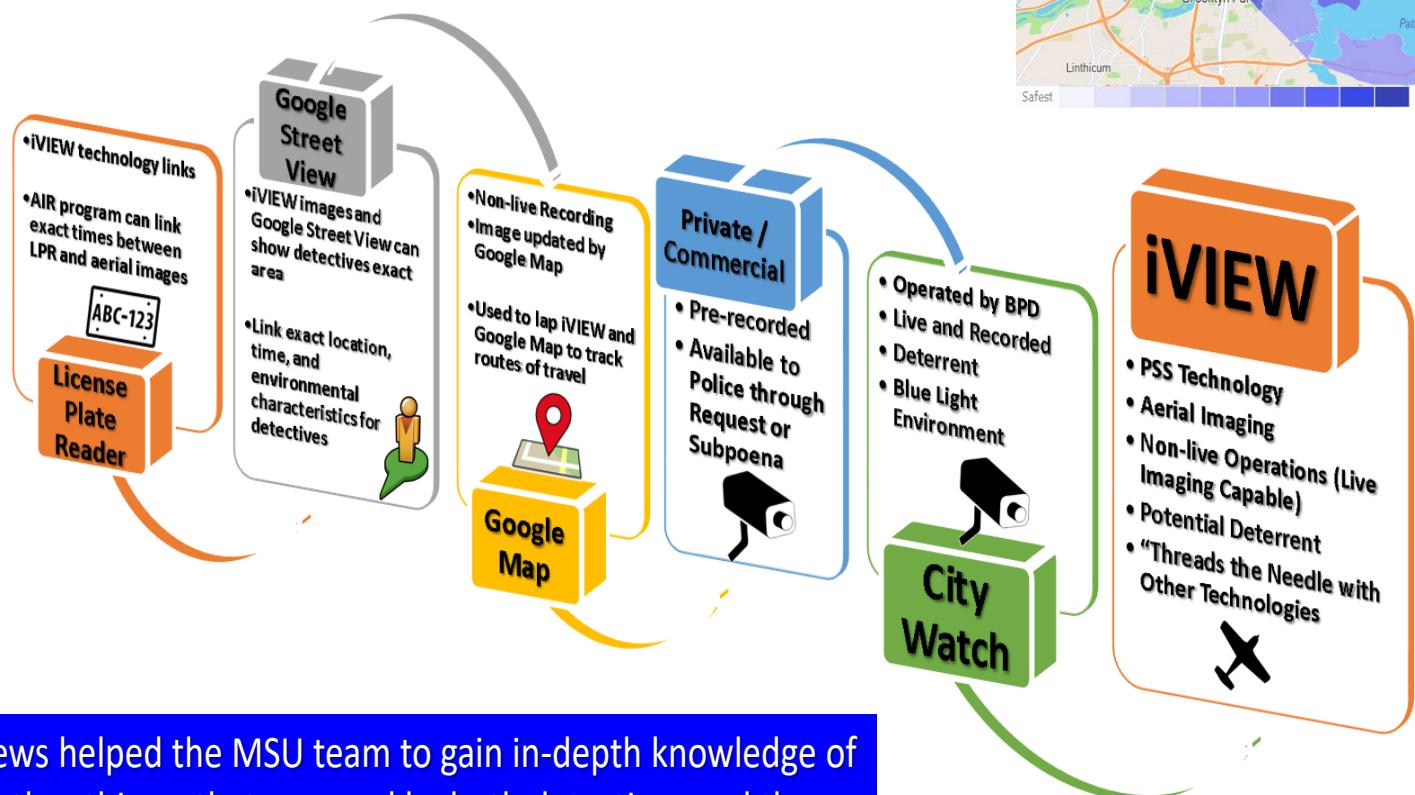
“The aerial program helped close case. Component that significantly augmented the aerial investigation by being able to track the suspect while also with secondary sources, such as CityWatch camera, business cameras, and ring doorbell. We were able to track to location.”

“We're trying to think out of the box and innovative, holistic way to not be intrusive, to provide the service that Baltimore city deserves”

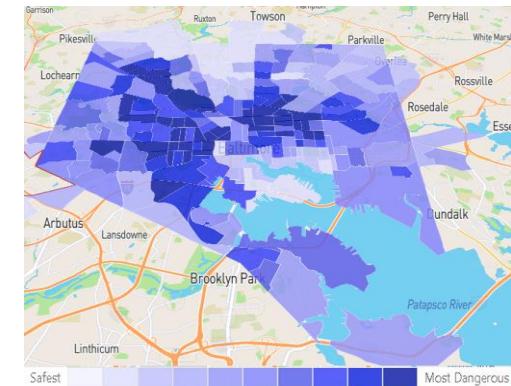
“This is strategic planning. I'm looking 20 years down the road”

Baltimore Police Administration

“THREADING THE NEEDLE”



The key informant interviews helped the MSU team to gain in-depth knowledge of the various tools, among other things, that are used by both detectives and the AIR program to develop an investigation package. According to each individual case, the AIR analysts link, e.g., “stitch”, together data from various sources to develop a track that traces the pathway, the route, of suspects to known crimes.



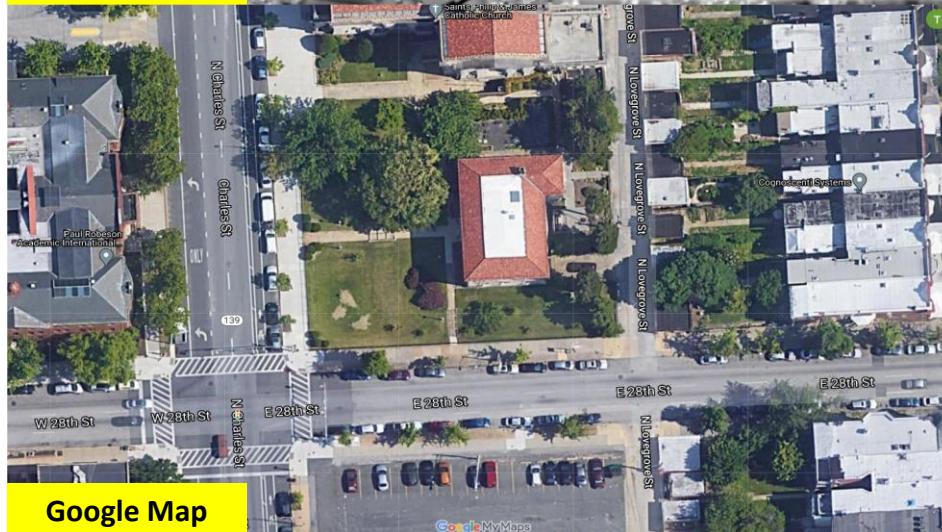


FBI Drone File –
Freddie Gray
Civil Unrest

Image Comparison



Google Street
View



Google Map

Aerial Image
from AIR
Program

Discussion/Conclusion

As Charles Dickens, a 19th century writer, described in his novel A Tale of Two Cities, Baltimore City is experiencing a period of growth marked by both crisis and opportunity. The future of Baltimore City families is optimistic for some, and tragic for others. It is as Dickens stated, “the best of times and the worst of times”. Baltimore experiences some of the nation’s highest rates of crime and violence per capita. Various types of policing interventions have been employed to address the high rates of crime and violence. From a personnel allocation perspective, such actions have included deploying police officers to high-risk areas, targeted policing, and zero tolerance policies historically, among others.

In 2020, the Baltimore City Police Department contracted with a private company, Persistent Surveillance Systems (PSS), to pilot the Aerial Investigation Research (AIR) program. PSS’ high-resolution, camera-equipped planes will fly over the entire city of Baltimore at least 40 hours a week. The cameras create a slow frame rate video record of everywhere that anyone goes, allowing police to retroactively track a person’s movements from any place or time. This surveillance technology combined with the existing ground cameras, license plate readers and other sensors tie data together and provide highly detailed information that the police and prosecutors can use to solve criminal investigations. This surveillance program focused on specific crime categories: including murder, non-fatal shootings, armed robberies and car-jackings.

Morgan State University’s research team conducted a comprehensive evidence-based evaluation to determine if the use of the aerial surveillance program as a tool to reduce crime and violence in Baltimore City. The research team followed a participatory process method that sought to receive input in collecting selected data while, at the same time, analyzing qualitative, quantitative, and imaging data outcomes.

Quantitative Conclusions

- Overall, the community disagreed with the umbrella construct: The AIR (Aerial Investigative Research) would have a negative impact on the community”. There was a racial division: Black residents disagreed with the construct and White residents agreed that the program would have a negative impact on their community.
- Most residents in the sample disagreed that the Aerial Surveillance would decrease major crimes such as murder, nonfatal shootings, armed robberies, carjacking, and rapes.
- Overwhelming, residents in all socio-demographic groups and police districts disagreed with the umbrella construct that Aerial Surveillance would reduce crime and have a positive impact on the police, and their personal privacy. In addition, there was a racial divide: White residents disagreed at a stronger level than Blacks. On average, persons in all police districts also disagreed that the ASP would reduce crime.
- Overall, the community disagreed with the umbrella construct “AIR and negative impact on the community”. There was a racial division: Black residents disagreed with the construct and White residents agreed that the program would have a negative impact on their community.
- Specific questions indicated that most residents did not have positive feelings regarding the ASP looking down on them. Most residents were concerned that the aerial surveillance project will violate their privacy.
- The community disagreed that there was a “positive relationship with the police”. On average, there was disagreement with the umbrella construct that “police treated individuals equally.” Overall agreement that individuals or family have been “negatively impacted by the police and crime”. Racial division was also found: Black residents agreed with this umbrella construct and White residents disagreed.

- Of note: the residents in the sample agreed that they would “assist the police” to solve crimes (even though there was not a positive relationship with the police)
- Specific questions “I am concerned about the crime in Baltimore City” and “I am concerned about the violence in Baltimore City’ where 97.2% (N=1029) and 98.2% (N=1059), respectively, indicated their concern.
- There was agreement to the umbrella construct “negative impact of police and crime”. There was also a racial divide: Black residents agreed, and White residents disagreed with construct.
- On average, all socio-demographic groups and police districts agreed with the umbrella construct that there was “general community violence”.
- The community agreed that they would “assist police in solving crime
- Qualitative Emerging Themes

The conclusion of the focus groups from residents suggested that they were against the AIR feeling: that it would not benefit the community and it was an invasion of privacy. In addition, residents felt strongly that there was not a good relationship between the police and the community and that crime in the City has gotten out of hand.

The focus group emerging themes include the following:

- “I’m against it”
- “It seems to not be beneficial”
- “It’s an absolute invasion of everybody’s privacy”
- “I think that the relationship between the police and the community is...it’s horrible...”
- “I feel that the crime...is just gotten out of hand”
- “Crime is a response to a lack of a community”

Other qualitative emerging themes concerning the Aerial Research Program:

- “Where is the data going?”
- “I feel disrespected”
- “The problem of mistakes is serious”
- “It makes too much noise”
- “It could be a good tool”

Other qualitative emerging themes concerning the relationship with police:

- “I think that the relationship between the police and the community is...it’s horrible...”
- “I have met some, um, people in uniform who are... mindful of the community ...”
- “I think it’s neutral. But I think it could be so much better...”
- Other qualitative emerging theme concerning attitudes about crime
- “I don’t have a problem outside my door”
- Aerial Investigation Research Analysis Summary: Key Informants Interviews

Other findings, in summary, provided through the key informant, qualitative data collection:

- Overall, the consensus between the analysts and Baltimore police department is that the AIR program serves a vital role in “threading the needle” among other technologies to help fight crime.

- The AIR surveillance technology has no effect on violating privacy issues as it is significantly less intrusive than CityWatch camera, Google Street View, private cameras, License Plate Reader, or other technologies used in crime prevention.
- The need for a more robust timeframe to test out the overall impact of the AIR program to help with case closure rates. Five (5) months is not enough time to determine effectiveness.
- Most prosecutors would benefit significantly from the AIR program if they spent more time learning how to use it in court.

Our findings are clear, but not surprising. Essentially, the community was against the Aerial Surveillance program and did not think it would be beneficial. Further, our research revealed that residents felt that the relationship between the police and the community was “horrible”. In fact, the community disagreed with the umbrella construct *“AIR and negative impact on the community”*. There was a racial division: Black residents disagreed that the program would have a negative impact while the White residents agreed that the program would have a negative impact on their community.

Although the perception of crime and violence in Baltimore is a grave concern, many residents agreed that they would assist the police in solving crime. The interviews with key informants revealed yet a different story. According to the analysts and Baltimore police detectives, some perceived that the strengths of the program would ultimately make Baltimore safer and assist in solving crimes. On the other hand, the weaknesses include limitation due to inclement weather, time restrictions on flying and imagery not clear as they would like it to be. The detectives felt that the surveillance program was just another tool used in crime fighting and felt this can be used to narrow their scope (clear a suspect). According to interviews with detectives a few perceived weaknesses of the program was that planes did not fly enough during peak high crime times. In addition, there was no video recordings.

Finally, this report served as a foundation for a much more robust research report. The AIR findings are inconclusive due to the time factor and extent of the overall all research. COVID 19 had an impact on data collecting procedures in the community at large where some residents did not have access to computers. However, the data was clear in response to how residents felt concerning the AIR project.

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