Investigative Outcomes of CODIS Matches in Previously Untested Sexual Assault Kits

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Introduction

In the early 2000s, The United States Department of Justice began providing funding to assess the number of criminal cases with untested forensic evidence in US police departments. The investigators found that "[t]he backlog of unsolved rapes and homicides in the U.S. is massive," (Lovrich et al., 2004, p. 2) with approximately 48,000 homicides and 155,000 rapes with DNA evidence sitting untested (Pratt et al., 2006). Since that time, national funds have been earmarked to assist with the testing of previously unsubmitted sexual assault kits (SAKs), and state and local laws have been enacted to clear the backlogs and ensure universal testing of these kits.

A number of factors have contributed to low submission rates of SAKs. Police investigators argue that there is no benefit to submitting some SAKs for DNA analysis. These include cases in which the police believed the victim was an unreliable or uncooperative witness, was unable to be located, the suspect claimed the sexual contact was consensual, or the suspect had already taken a plea agreement. (Campbell & Fehler-Cabral, 2018; Campbell et al., 2015; Campbell, Shaw, & Fehler-Cabral, 2015). Lack of resources (e.g., money, staff) has also been cited as a reason for not testing all SAKs (e.g., Campbell & Fehler-Cabral, 2018; (Lovrich et al., 2004; Strom & Hickman, 2010).

Advocates across the country argued that SAKs that law enforcement agencies decided not to submit for DNA testing might, if now tested, lead to arrest and prosecution of offenders, and especially those offenders who had committed multiple crimes. Comparing samples from these untested kits to samples in state and federal DNA databases would expose such offenders who would otherwise have remained hidden. Testing and upload of forensic evidence to the Combined DNA Index System (CODIS), a computer system that links DNA databases containing offender profiles across the nation (United States Department of Justice, 2002), was expected to assist in the identification of serial sexual offenders, bring previously unidentified offenders to justice, and exonerate innocent suspects (Campbell et al., 2017a; Lovell, Yang, & Klingenstein, 2018).

Recent research has begun to examine the benefits as well as the costs of submitting previously untested SAKs for DNA analysis. The present study capitalizes on a 2011 Texas law that, for the first time, required universal testing of SAKs as well as identification and DNA analysis of previously untested kits in the possession of local law enforcement agencies. Because the statute affected the entire state, the numbers of untested SAKs identified was large (over 18,000), offering an unusual opportunity to examine the benefits and costs of DNA analysis of previously untested SAKs in a large sample of cases.

Review of the Relevant Literature

Estimates have placed the number of unsubmitted SAKs upward of two hundred thousand (Campbell et al., 2017a; Lovrich et al., 2004; Strom & Hickman, 2010). In 2015, the Bureau of Justice Assistance (BJA) launched the Sexual Assault Kit Initiative (SAKI) to provide financial assistance and technical support to jurisdictions addressing the problem of unsubmitted SAKs (BJA, n.d.). Overall, the Sexual Assault Kit Initiative assisted in inventorying nearly 65,000 kits as of December 2018 (SAKI, 2019). Of those inventoried, 47,216 were sent for testing, and 46,907 were tested to completion. This testing resulted in close to 15,000 DNA profiles being uploaded into CODIS and just over 7,000 CODIS hits, which led to 900 charges filed, representing 2% of the kits tested or 12% of CODIS hits. There have been 104 convictions and 444 plea agreements in the three years the program has been in operation (SAKI, 2019).

The National Institute of Justice funded three large-scale action research projects that have analyzed untested sexual assault kits and assessed the results. The Detroit Sexual Assault Kit Action Research Project identified 8,717 sexual assault kits in police custody in Wayne County, Michigan that had never been submitted for testing (Campbell et al., 2017b; Campbell et al., 2015). Researchers with the Cuyahoga County SAK Task Force identified nearly 5,000 unsubmitted SAKs, and the Houston Action Research Project found 6,571 cases with associated SAKs sitting in police storage (Lovell et al., 2018; Wells, Campbell, & Franklin, 2016).

In Detroit, 1,595 kits were randomly selected for DNA testing; of those, 785 (49 percent) yielded DNA evidence that was eligible for CODIS upload. Nearly 60 percent of uploads (29 percent of the total sample; n = 455) resulted in a CODIS hit (Campbell et al., 2015). Upload and hit rates were similar in Houston and Cuyahoga County. Of 491 kits screened in Houston, 213 (43 percent) were uploaded into CODIS. Matches were obtained in 49 percent (n = 104) of uploaded cases (21 percent of the total sample) (Wells et al., 2016). Nearly five thousand kits were tested in Cuyahoga County (n = 4,966) resulting in 2,934 DNA profiles uploaded into CODIS (59 percent) and 1,935 DNA hits (66 percent of uploads; 39 percent of total sample) (Lovell et al., 2018). All told across these sites, approximately 50 percent or more of DNA profile uploads in the three samples yielded hits to profiles already in CODIS (Campbell et al., 2015; Lovell et al., 2018; Wells, Campbell, & Franklin, 2016).

CODIS hits take two forms: uploaded DNA profiles can either match to a known individual (also known as an "offender hit") or to a sample in a case with an unknown individual (a "forensic hit"). Hits to an offender that identify an individual not previously linked to the case are the most fruitful type of matches since they may lead to an imminent arrest. However, case to case hits are also viewed by advocates as valuable because they uncover the existence of serial offenders who have been linked to more than one sexual assault incident. Approximately 20 percent of hits in Cuyahoga County and 28 percent of hits in Detroit were to other sexual assault cases (Campbell et al., 2015; Lovell et al., 2018). In cold case work in San Francisco and New Orleans four and 10 percent of hits were to other sexual assaults, respectively (Gabriel, Boland, & Holt, 2010; Nelson, 2013). Nationally, the District Attorney of New York (DANY) grants have produced 640 case-to-case hits (Office of Manhattan District Attorney, 2019).

Investigative Outcomes of Cold Case CODIS Matches

An obvious question in the process of submitting previously untested sexual assault kits for DNA analysis is whether doing so results in the arrest of a significant number of offenders who would otherwise have gone undetected and, if so, what is the cost of those arrests? A number of studies have addressed the first part of that question (see Table 1). At one extreme, Davis and Wells (2019) reported that 57% of a sample of 97 Denver CODIS hits among previously untested kits resulted in an arrest and court filing. Gabriel, et. al. (2010) reported a 30% conviction rate. Findings from most of the other studies displayed in the table fell within a much narrower range. SInger and colleagues (2016) analyzed outcomes of nearly 5,000 untested SAKs identified from the Cuyahoga County project that resulted in more than 1,715 CODIS hits and 124 convictions (approximately 7 percent of the recently tested kits). The DANY-funded projects together reported that 2% of CODIS hit cases ended in a prosecution. Other studies were similar: Nelson (2013) reported a 7% conviction rate; Wells, et. al. (2016) reported a 2%

prosecution rate; Multnomah County, OR reported a 1% conviction rate; and Peterson, et. al. reported that no new arrests were made out of 347 CODIS matches.[1]

Table 1: Investigative Outcomes of CODIS Matches from Previously Untested Kits

Study	**Sample Size (CODIS Hits)**	**Identification of Serial Rapists**	**Criminal Justice Outcomes**
Gabriel et al. (2010)	110 cases	11 case-case hits	Convictions in 30% of cases
Campbell et al. (2015)	455 cases	127 case-case hits	Not reported
Davis & Wells (2019)	97 cases	Not reported	Arrests and court filings in 57% of cases
Singer, et al. (2016)	1,715 cases	Not reported	124 convictions
Manhattan County (NY) District Attorney (2019)	9,228 cases from 32 jurisdictions	640 case-case hits	186 arrests, 165 prosecutions, 64 convictions
Multnomah County (OR) District Attorney (2019)	448 cases	Not reported	6 arrests 7 prosecutions 6 convictions
Nelson (2013)	83 cases	4 case-case hits	24 arrests, 6 convictions
Peterson et al. (2012)	347 cases	Not reported	147 arrest confirmations; no new arrests made
Wells et al. (2016)	58 cases	Not reported	1 prosecution; 7 under investigation

What accounts for the wide range in court filing/conviction rates from 57% (Davis and Wells, 2019) to 0% (Peterson, et. al. 2012). Much of the reason for variation between samples is likely due to a double selection bias. The first is the law enforcement agency's policy in deciding when the crime report is made initially which cases to test and which not to test: In agencies that test a higher percentage of new cases, the pool of untested kits will likely contain fewer prosecutable cases. The second selection bias comes when the decision is made about which untested kits are to be sent for

[1] While the outcome measures reported in these studies range from arrest and court filing to conviction, there is, in practice, little difference between court filings, prosecutions, and convictions since a great majority of filings in sexual assault cases result in convictions.

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laboratory analysis. For example, Davis and Wells (2019) report that police in Denver identified 1,200 cases with testable DNA samples. The authors note that:

> These cases were then prioritized based on whether the DNA evidence would most likely be probative. Higher priority cases were identified as being cases with either very young or very old victims, cases with extremely violent offenders, homicide cases involving direct contact between victim and perpetrator, cases occurring in inside locations, cases where the sexual assault or homicide was part of a robbery or burglary, and cases in which the commonly-used consent defense could be most easily overcome (i.e., those not involving prostitutes and/or drug users) (2019:6).

Finally, in some of the reported research, investigations and prosecutions were still ongoing, so there likely will be additional arrests and convictions that result.

There have been many reasons cited for instances in which CODIS suspect hits occur, yet no arrest or conviction results. Many of the cases tested in these projects were beyond the statute of limitations (SOL). While only six percent of completed investigations in the Cuyahoga County project were closed due to an expired SOL, the SOL was the most frequent reason cases were closed (44.2 percent) following a CODIS hit in Houston (Lovell et al., 2018; Wells et al, 2016). Other oft-cited reasons for closing cases following a CODIS hit were related to the victim: either the police were unable to locate or contact a victim (12.5 percent of cases in Houston; 7% of cases in Denver), or the victim was deemed uncooperative or unreliable (12.5 percent of cases in Houston; 36 percent of cases in Denver) (Davis & Wells, 2019; Wells et al., 2016). The age of the cases may also be a factor: Campbell et al. (2018) noted that victim interest in prosecution declined with time since the complaint was made.

Cost Considerations

The testing of SAKs is a labor intensive and financially expensive venture, where costs have been approximated between $800 to $1,500 (Leahy, 2002). Given the expense associated with testing SAKs, research has examined the cost and benefits associated with testing these forensic samples. For example, Davis & Wells (2019) estimated that each conviction cost $16,000 in testing, investigation, and criminal justice costs. Scholars have argued, however, that the financial cost to the criminal justice system pales in comparison to the price (physically, mentally, emotionally, and monetarily) shouldered by sexual assault victims (Miller, Cohen, & Wiersema, 1996).

Lovell, Yang, & Klingenstein (2016) conducted a cost-benefit analysis that compared the cost of DNA analysis and investigation of cases with sexual assault kits that had been previously untested against the costs incurred by victims of sexual assaults. The authors estimated the costs of testing kits and investigating the cases that generated CODIS hits at $2,205 per case against a cost of $50,942 to each victim. Assuming that every four convictions saved an additional sexual assault, the authors claimed that DNA analysis of untested sexual assault kits saved the community $39 million. The estimate is somewhat optimistic since it was based on 947 *expected* convictions rather than the 124 documented convictions at the time of their cost benefit analysis. Moreover, they did not include prosecution and court costs in calculating the costs of the DNA testing program.

Universal Testing of SAKs in Texas: State Bill 1636

Texas was one of the first states to enact legislation mandating universal testing of sexual assault kits. Authored by former state senator Wendy Davis in 2011, Texas Senate Bill1636 represented a fundamental change for sexual assault victims in the state. Victims no longer had to wonder if forensic evidence was being evaluated and exploited to its maximum potential. Advocates of the bill anticipated that there would be an increase in arrests, prosecutions, and convictions of sex offenders. They believed that more serial rapists would be identified as the number of entries in the DNA database of sexual assault cases grew. Such developments were expected to give victims greater confidence in coming forward and telling their stories to hospital staff, police, and prosecutors.

One of the requirements of the Texas law was that all untested sexual assault kits (where the statute of limitations had not been reached at the time the law went into effect) had to be submitted for laboratory DNA analysis. That encompassed cases between 1996 and August 2011 which we will refer to hereafter as "legacy" cases. The statute required law enforcement agencies across the state to report how many SAKs remained untested in their custody by October 15, 2011, and to submit all evidence connected to an "active criminal case" to the Department of Public Safety (DPS) or another accredited public laboratory by April 1, 2012, subject to lab capacity. DPS, in turn, was tasked with developing DNA profiles and uploading them to CODIS. The law required DPS to report to the governor and the Texas House of Representatives about the numbers of SAKs across the state and to request the funding necessary to test all kits.

In 2013, after an audit revealing over 18,000 untested sexual assault kits statewide, the Texas DPS received $10.8 million from the State for testing. The large volume of cases necessitated that DPS contract with three private labs. DPS had initially hoped to have all testing completed by the end of 2016, but issues with the private labs made it necessary to extend the time frame for completing testing through 2017.

The initial funds for the project ran out but, in 2017, the Texas Legislature appropriated an additional $4.2 million for testing, as well as $1 million to create a statewide tracking system for all new rape kits. In 2019, an additional $40 million was allotted for testing and additional forensic staff at DPS to catch up on DNA reviews and uploads to state and federal DNA databases. As of August 2017 (the most recent data available from the DPS website), testing had been completed on virtually all of the 18,000 legacy cases, with the major exception of 1800 Dallas cases.

Texas, with its 18,000 untested kits collected by DPS provided an excellent opportunity to determine the value of testing old SAKs in which law enforcement agencies apparently saw insufficient merit in testing at the time of the report. The question that we addressed in our work was this: Is there is a significant number of these SAKs in which offenders could be arrested and prosecuted and, after the passage of time, can the victims in these cases still be found and are they willing to testify?

With funds from Communities Foundation of Texas, we examined the impact of SB 1636. In our final report to the foundation, we assessed the impact of the statute on sexual assault reports, arrests, and court filings in the state and in four Texas cities. We also examined the burden that the requirement to test all kits placed on crime labs, police investigators, and prosecutors. That work is described in Davis, et. al, (in press). At that time, we could only present a preliminary look at investigative outcomes of CODIS matches since testing was still in the early stages for several of the four cities. In the current NIJ-funded project, we worked with the sexual assault units in five Texas cities to determine the investigative outcomes of CODIS hits from the legacy pre-August/2011 kits.

Method

We coordinated with the sexual assault unit heads of municipal police agencies in Dallas, Fort Worth, Austin, Arlington, and Corpus Christi, in the beginning of the project asking each to track what happens to CODIS matches from the 1996-2011 legacy untested sexual assault kits. We tried to track at each site the number of CODIS hits among legacy cases, investigative outcome, and – if the case did not result in arrest – the reason that it was terminated. Because each law enforcement agency is maintaining its own unique database on dispositions of these cases, the methods and specific information collected differed across sites. Austin has an extensive reporting system because it has had both BJS and DANY grants to facilitate testing of legacy cases. But, while that enabled us to some additional analysis that could not be done in other sites, the reasons recorded for Austin CODIS hits not proceeding were often not specific.

Originally, we had hoped to track cases through arrest and prosecution. However, because the testing process was so slow, we were able only to track through the police disposition. We collected information on the number of CODIS hits returned to the agencies for possible further action, whether an arrest was made, and reasons for investigations terminating without arrest.

Site Descriptions

Dallas

The Dallas Police Department (DPD) was chosen to be the first law enforcement agency to supply untested kits for DNA analysis. DPD initially identified in its property room 4,130 sexual assault kits between September 1996 to August 2011 that had not been tested. DPD was to send approximately 250 kits per month to a private DNA lab which then had 90 days to test the kits, with results sent to DPS to enter and then uploaded into CODIS. As time went on, the lab became backlogged and did not have the physical space to accept any more kits from DPD. From that point DPD only shipped kits to the lab when it indicated that it had room. The project wound down until state funds ran out in August 2017.

There have been 2,332 legacy kits tested to date. Out of those 2,332 kits, there were 1,086 DNA profiles uploaded into CODIS: The remainder did not have sufficient DNA material to be CODIS eligible. DPD is looking for funds to finish testing 712 kits still in possession of the private laboratory. In addition, there are approximately 1160 legacy kits from the 1996-2011 time period sitting on shelves in the property room waiting to be tested. The department has maintained a database that tracks outcomes of cases where a CODIS hit was obtained.

Fort Worth

The Fort Worth Police Department created a cold case investigator position in 2012. Although the position was not created as a direct result of SB 1636, it came just in time to conduct an audit of the department's cases with untested sexual assault kits and later follow up on CODIS hits. The detective identified 1,083 cases with sexual assault kits that were not tested; of these 648 were determined to have sufficient DNA material to submit for laboratory analysis.

As CODIS hits from the legacy cases came back to the department, the cold case investigator followed up on these cases until her retirement about a year ago. Upon her retirement, work on these cases ceased. The department recently installed a new cold case investigator who will continue the work. As of June 2016, Fort Worth Police Department had 144 CODIS hits returned by DPS. The

department has not maintained statistics on the dispositions of these cases, but did record dispositions in an Excel spreadsheet.

Austin When SB 1636 became law, APD conducted an internal audit that identified approximately 1,700 untested sexual assault cases in its possession. There was some confusion at first whether all of the identified kits would need to be tested. As a result, APD initially informed DPS of only 407 kits that needed to be tested. After discussions with forensic and legal communities, APD determined that all of the identified kits needed to be tested and so notified DPS. Since by that time DPS had already allocated all available funding, APD committed to testing the remaining kits themselves using a DANY (District Attorney of New York) grant for $2 million.

CODIS hits were distributed to the original detectives where possible for follow up. Investigative outcomes were recorded in an extensive Excel spreadsheet.

Arlington

The Arlington Police Department identified 395 sexual assault cases with untested DNA from 1996-2011. All now have completed laboratory testing. Out of the 395 kits, 308 were determined to be CODIS eligible. To date, the sergeant over the sexual assault unit has reviewed approximately 1/3 of the returned CODIS hit cases. The department does not maintain a database of investigative outcomes for these cases, but does have a text record of work done and outcomes for each case investigated.

Corpus Christi

Corpus Christi Police Department sent approximately 700 kits to be tested to a local DPS crime lab at the rate of 20-30 kits every other week. CODIS hits are reviewed by the head of the sexual assault unit and then passed to one of ten investigators who work sexual violence cases as well as other major crimes. Cold cases go back to the original investigator if the investigator is still on the force. The testing process in Corpus Christi remains incomplete. The department does not maintain a database of outcomes or reasons for terminations of investigations without an arrest.

Results

DPS provided to us results of their testing process to date at each of the state DNA labs. The first two columns in Table 2 below represent samples uploaded to the state and national DNA databases, respectively. Arrestee and conviction matches represent matches made to offenders already arrested and/or convicted of the crime that generated the DNA sample. The most interesting columns are hits to a previously unknown offender (offender hits) or hits to an offender profile produced through a judicial order (legal index hits). These categories, comprising 34% of profiles uploaded to the state CODIS database, typically provide investigators with information about previously unknown suspects. Finally, forensic hits represent case to case matches – indicating that an offender has sexually assaulted at least one other victim in the past. This category comprised 5% of cases uploaded to the state CODIS database.

Table 2: Texas Department of Public Safety Results of Analysis of Untested Sexual Assault KIts

Lab	# Profiles Uploaded to SDIS	# Profiles Uploaded to NDIS	# Conviction Match	# Arrestee Hit	# Offender Hit	# Forensic Hit	# Legal Index Hit
Austin	1794	1665	124	33	458	72	
Garland	1370	1321	102	48	559	114	12
Lubbock	513	479	39	9	223	15	5
Totals	3677	3465	265	90	1240	201	17
Total Cases Completed (internal + outsource):	10110						

Data provided by DPS through 5/3/2019

Investigative Outcomes of CODIS Matches Returned to Local Agencies

Table 3 below summarizes the results of the DNA analysis of the legacy untested sexual assault kits from 1996 to 2011 in the five cities in our study. The overall ratio of arrest and court filings to sexual assault kits tested was less than 1% (.008), and the ratio of arrests to CODIS hits was 5.5%. This is with the caveat that there were still a significant number of kits to be tested in Dallas and Corpus Christi. It is unclear as of this writing whether the remaining legacy kits that have been identified in the two sites will eventually be submitted for DNA analysis.

There was considerable variation among the sites. Fort Worth and Austin averaged about 12 arrests and filings per 100 CODIS matches, while Dallas and Corpus Christi averaged about a 4% arrest and filing rate per 100 CODIS matches. Arlington's rate was under 1%. The differences between sites in arrest and filing rates are likely due to the historical policies of each site on testing sexual assault kits. It's reasonable to assume that police agencies that historically had the most liberal testing policies (I.e., tested the greatest proportion of kits) would have the lowest arrest rates for untested kits since the pool of cases with untested kits would contain fewer prosecutable cases.

Table 3: Investigative Outcomes of Legacy Sexual Assault Kits in Five Texas Cities

	# Legacy SAKs tested	# CODIS Eligible	# Hits	# Case to Case Hits	# Arrested and filed	# Open Cases with Active Investigations	# Still Untested
Dallas	4,130	1,086	538	53	22	11	1,872
Ft Worth	648	Unavailable	144	12	17	0	0
Arlington	395	308	140	1	1	6	0
Austin	407	270	103	20	12	0	0
Corpus Christi	725	Unavailable	28	Unavailable	1	0	200
Totals	6,305		953		53	17	2,072

Reasons for Not Proceeding in Cases with CODIS Matches

We attempted to better understand why most CODIS hits in the legacy cases did not result in an arrest. In doing so we relied on the data collection systems that each site had developed, in some cases, explicitly for our project. Because each of the five departments had their own methods for categorizing reasons why cases did not proceed to arrest, comparisons between the sites are not possible. What we can do is to look across the sites to look for common reasons. Across the sites, victim issues -- including inability to locate, lack of interest in cooperating with prosecution, and stories that were judged by authorities to be inconsistent – were consistently responsible for large numbers of investigations not proceeding. When it is recalled that these cases now are between 8 and 23 years old, it is not surprising that victims become lost to contact or are not interested in participating in an investigation. Dallas and Arlington had fair numbers of CODIS hits that represented arrest confirmations. It is not clear whether other sites did not have such results from lab analysis or whether arrest confirmations were buried in other categories like "Case Suspended" in Austin. See Appendix A for detail from each of the sites.

Time Study

We sought to estimate the detective hours that went into investigations following CODIS hits in the legacy cases. To generate these estimates, we sat down with cold case detectives in the study sites and asked them to pull examples of CODIS hits that had resulted in court filings. In all, we were able to gather information on 21 such cases across the sites.

To interview the detectives about time spent on various aspects of investigating cold cases, we developed and refined a data collection form. The form contained a comprehensive list of eleven categories, ranging from initial case review to time spent locating and interviewing victims and suspects to consultation with prosecutors and testifying in court. See Appendix B for a copy of the form.

The minimum, maximum, and mean times within each of the categories is displayed in Table 5 below. Not surprisingly, the times across 21 cases and five sites showed considerable variation, with some coefficients of variation equal or greater than 2 (indicating that the standard deviation is twice the size of the mean). The activities that consumed the greatest amount of time were locating and interviewing victims (6.5 hours) and preparing and testifying at trial (7.9 hours). The average overall time spent on arrest cases was 32.64 hours.

We also calculated average investigative hours spent on CODIS hit cases that did not result in an arrest by summing the times for the initial case review, consultation with the prosecutor, and locating and interviewing victims. This turned out to be 12.72 hours. This figure is a rough approximation. In some non-arrest cases, the time spent by investigators would have been less since they may have done nothing but review the case file; while in others time spent would have been more because investigators may have also spent time trying to locate and/or interview witnesses or suspects.

Table 5: Time Spent on Various Investigative Activities for CODIS Hit Cases

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Process CODIS results. Review case file/obtain criminal histories	20	7.50	.50	8.00	1.6500	1.66307
Consult with prosecutor	21	16.00	.00	16.00	3.9048	6.26023

Locate/interview victims, prepare photo spread	20	19.00	1.00	20.00	6.5000	4.79583
Locate/interview witnesses	21	16.00	.00	16.00	2.3095	4.00773
Obtain DNA or arrest warrant	21	6.50	.00	6.50	3.1905	1.38272
Locate/interview suspects; obtain confirmatory DNA; take sample to lab or property room	21	12.50	.00	12.50	4.9524	3.08182
Meet with Probation/Parole officer/attended parole hearing	21	2.00	.00	2.00	.1429	.47809
Prep case for DA	21	4.00	.00	4.00	1.7381	1.35664
Trial prep/testify at trial	21	32.00	.00	32.00	6.2143	11.28779
Input case info in computer database	20	4.50	.50	5.00	1.9500	1.66938
Other	21	2.00	.00	2.00	.0952	.43644

Cost of Investigating Legacy Cases with CODIS Matches

In this section, we estimate the costs involved in testing, investigating, and prosecuting the legacy untested kits that led to the 53 arrests and court filings that were achieved in the five cities where we conducted the research.

Costs of DNA Testing

A North Carolina Department of Justice survey of the cost of SAK processing in eight states found a wide range in cost, from $236 to $2,300 per case.[2] The DNA Sexual Assault Justice Act of 2002 cited the cost of DNA testing an SAK to be between $500 and $1,000 per case.[3] A 2011 report cited the cost of SAK laboratory processing at $800 - $1,500.[4] More recently, End the Backlog.org Placed the cost at $1000-1500 per sexual assault kit analyzed.[5] The ranges in the estimates result from the fact that each sexual assault kits may contain one or multiple DNA samples. We will use $1,000 for calculation purposes here. Based on that figure, the total cost of processing the legacy DNA samples in the five Texas cities was approximately $6,305,000.

Investigative Costs

[2] Department of Justice, Office of State Budget and Management. (2006). *Cost Study of DNA Testing and Analysis*. Retrieved from https://files.nc.gov/ncosbm/documents/files/3-1-2006FinalDNAReport.pdf

[3] Leahy, P.J. (2002). *The DNA Sexual Assault Justice Act of 2002* (Report No. 107-334). http://www.gpo.gov/fdsys/pkg/CRPT-107srpt334/pdf/CRPT-107srpt334.pdf

[4] Hobbs, J.M. (2011*). The sting Failure: Prompt Analysis of Sexual Assault Evidence*. 10 Ideas for Equal Justice, 2011 Retrieved from https://www.scribd.com/document/61681245/10-Ideas-for-Equal-Justice-2011

[5] http://www.endthebacklog.org/backlog/why-backlog-exists

To calculate police investigative costs, we relied on data collected in our time study and information on investigator salaries in the state of Texas. Above we calculated that the average time to investigate legacy CODIS hit cases was 32.64 hours. According to the Bureau of Labor statistics, as cited by Detective Edu.org, the average salary of a detective in the Texas is $74,596.[6] On an hourly basis, that works out to just a bit under $36/hour. Multiplying $36/hour x 32.64 hours yields $1175 for each case resulting in arrest. Multiplying that by 53 cases arrested and filed yields $62,275 which represents investigative costs in cases resulting in arrest and filing. For the cases that do not result in arrest, we use the 12.72 hours of investigative time calculated above. Multiplying the number of hours per case by the hourly rate and then by the number of non-arrest cases yields a total of $412,128. Adding that to the cost of cases arrested and filed yields a total of $474,403 representing investigative costs for the CODIS hits in the five cities.

Court and Prosecution Costs

The costs of prosecution and the judicial system for cases resulting in arrest and court filing must also be taken into account in computing the cost of analyzing the legacy kits. For that estimate, we relied on recent work by Hunt, Anderson, and Saunders (2017). Hunt, et. al. applied a Monte Carlo simulation to refine bottom-up data on court, prosecution, and defense staffing costs and hours for different types of cases, including sexual assault. The authors argue that this is the best method for generating an estimate of the marginal cost of prosecuting a case. This seems the best approach to our question which is "What is the additional cost of filing a relatively small group of sexual assault cases that otherwise would not have been filed?" The figure that Hunt, et. al. come up with is $3,165 in justice system costs per additional sexual assault case filed. This figure tallies well with another recent estimate of $4,000 for marginal criminal justice costs for police, prosecutors, court, and defenders in sexual assault cases by Schlueter, et. al. (2014). Multiplying $3,165 x 53 cases filed adds additional $167,745 to the cost tally.

That brings the total costs of the legacy kit project to just under $7,000,000. Dividing that total by the 53 arrests and court filings yields approximately $132,000 per filing.

Estimates of the costs of sexual assault vary enormously, depending on what assumptions are made. Researchers attempting to estimate these costs divide them into tangible and intangible costs. Tangible costs include medical and mental health care, loss of income, insurance administration costs, and criminal justice costs. Intangible costs of rape and sexual assault include the psychological pain and suffering of survivors and the generalized fear of victimization in society (Miller, Cohen, & Wiersema, 1996). Miller et al. estimated intangible costs by averaging jury awards for pain and suffering in sexual assault trials. Using Miller et al.'s assumptions and calculations, Post et al. (2002) estimated the cost of a sexual assault in Michigan to be approximately $108,000, not including the cost of criminal justice system processing or preventive actions victims took to avoid another victimization. Other estimates of the costs of a sexual assault discussed in Heaton (2010) range from $150,000 to $283,000, depending on the methods used and assumptions made.

These estimates of the cost of a sexual assault ($108,000 to $283,000) are similar in magnitude to the cost per arrest and filing ($132,000) of the Texas project requiring analysis of untested sexual assault kits. We do not know how many sexual assaults are prevented as a result of the statute

[6] https://www.detectiveedu.org/texas/texas-salary/

requiring analysis of untested sexual assault kits: If each arrest and court filing prevented one sexual assault from occurring, the costs of the project would be recouped.

Conclusion

Texas was a pioneer in the national movement to test all sexual assault kits. The Texas law had dual requirements – that all kits be tested going forward *and* that existing untested kits in the custody of law enforcement be submitted to DNA testing. The two requirements are distinct and need to be assessed separately. Our earlier work (Davis et. al., in press) evaluated the impact of the law on cases going forward, while this paper examines the results of the process of lab analysis of previously untested, or legacy, kits.

The proportion of arrests and court filings resulting from untested kits has been remarkably similar across studies, including this one. We found that the ratio of arrest and filings to all kits submitted for lab analysis was just under 1% and the ratio of arrest and filings to CODIS hits was 5.5%. Two caveats are worth noting here: First of all, not all testing was completed as of this writing (although, in fact, all of the kits may never be tested). Second, the Texas cases are quite old (based on crime reports made 8-23 years earlier), making it more likely that original case files could not be located, making it more difficult to locate victims and suspects, and making it harder to secure victim cooperation.

Still, our results are quite consistent with other studies that have reported on results of analyzing all untested kits as reported in Table 1 above. The studies that reported higher rates (Davis and Wells, 2019; Gabriel et. al, 2010) are ones that, rather than analyzing all untested kits, were selectively targeted those cases most likely to result in an arrest.

We calculated the cost of each arrest and filing to be $132,000 taking into account the costs of DNA testing, investigating cases with CODIS matches, and court costs for those cases filed. We note that our estimates of DNA analysis and investigative costs are similar to those reported by Singer, et. al. (2016). Based on our analysis, we concluded that, if each arrest and filing led to one less sexual assault, the Texas testing program would have paid for itself. Of course, this is an optimistic assumption: Singer et. al. assume that every four prosecutions will prevent one additional assault.

Based on our findings, it could be argued that, while the Texas requirement to analyze all untested kits was commendable, it might have been more narrowly crafted and certainly better funded. Certainly cases where the lab analysis could only confirm an arrest might have been excluded. Also, in cases where the accused was a romantic partner who could be expected to mount a consensual defense, the decision to test might have been left to the discretion of investigators (although some would make the argument that these cases ought to be tested because of the possibility that the romantic partner may have raped someone else in the past). Possibly as well, there might have been a age limit placed on the cases to be tested, with a cut off at those more than 10 or 12 years old. The "staleness" problem was exacerbated by the slowness of the legislature to provide adequate funding to state and private labs, and the complete lack of state funding provided to local law enforcement agencies where testing was often perceived as an unfunded mandate.

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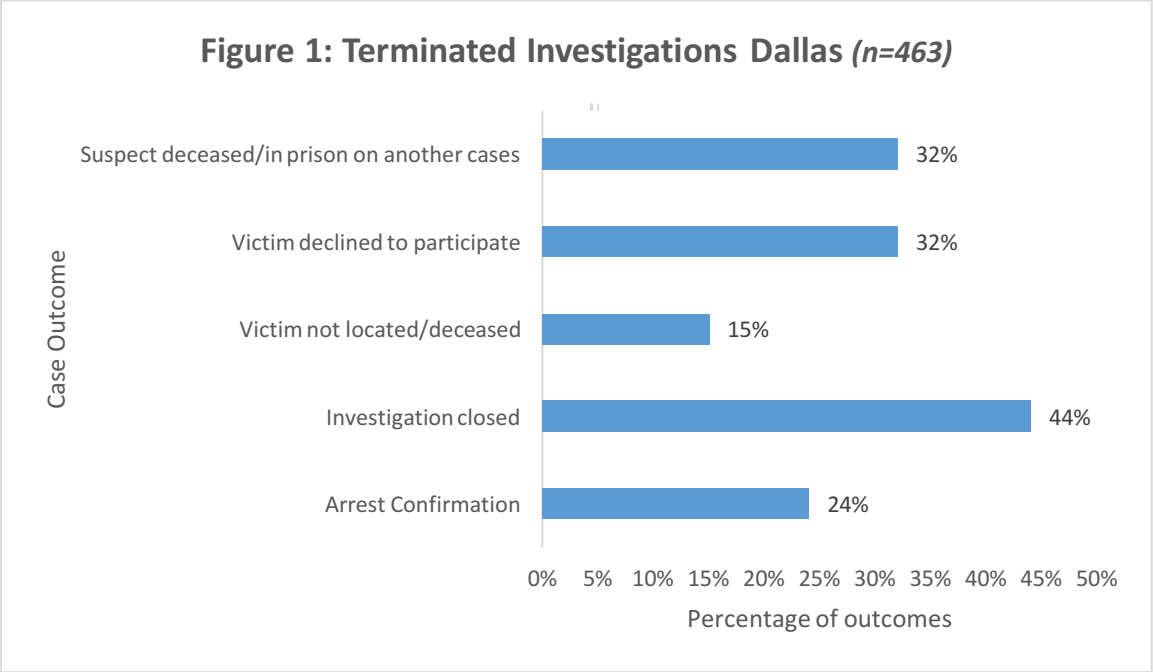
Appendix A: Reasons for Terminated Investigations of CODIS Matches by Site

Dallas

Investigative outcomes of CODIS hits returned to the Dallas Police Department were tracked using database software. The software allowed multiple outcomes to be entered for each case. Therefore, unlike the data from the other sites, the table below depicts outcome categories that are not mutually exclusive and therefore do not sum to 100%. The largest category for investigations that did not proceed is the opaque "Investigation closed." Forty four percent of cases that did not proceed were coded into this category. Victim declined to participate and suspect deceased/incarcerated each were coded as outcomes in roughly one third of cases. Arrest confirmation was coded for one-quarter of terminated investigations and victims that could not be located or were deceased were coded in 15% of cases (see Figure 1 below).



* Categories sum to more than 100% because some categories are not mutually exclusive

Fort Worth

As shown in Figure 2, The biggest reason for no further action among terminated cases (28% of terminated investigations) was reluctance on the part of victims to cooperate in further investigation. Other frequent reasons given for cases not being pursued included that they were determined to be unfounded (18%), closed by exceptional means (13%), the case file or victim information was lost (12%) the victim could not be located (12%), or the district attorney's office refused to bring charges (10%) (see figure below). Of course, some of these categories overlap and the determination of which category to place cases in may have been quite arbitrary. For example, the district attorney may have

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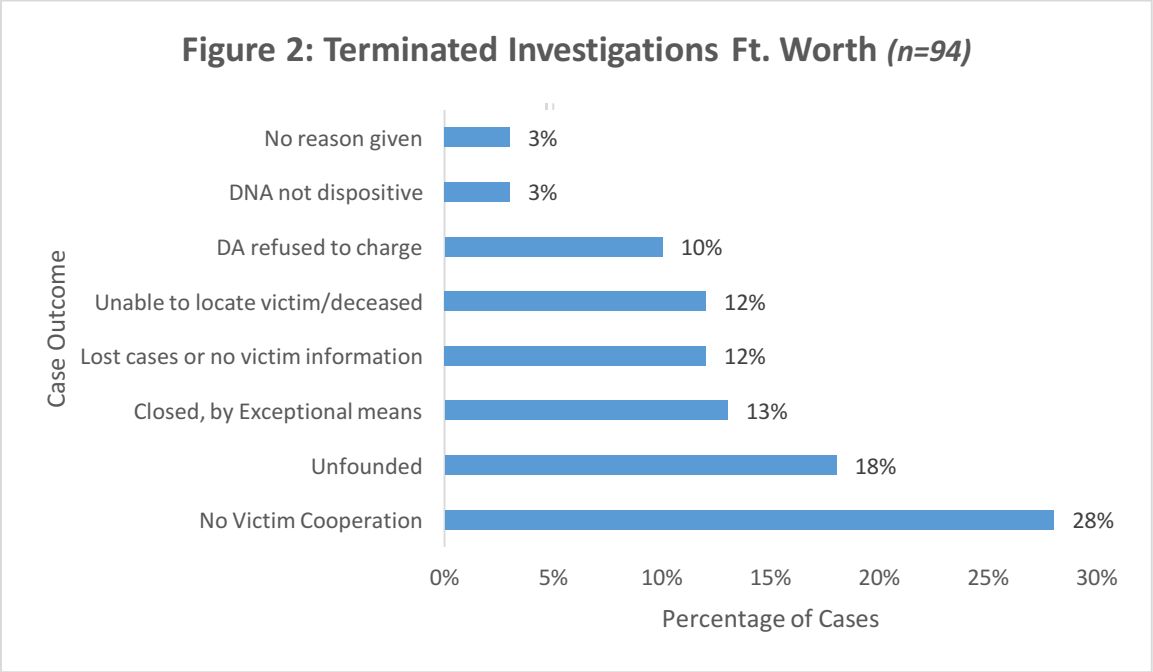
declined to charge a case because victims were reluctant or the charges were determined to be unfounded.



Austin

Figure 3 below summarizes the Austin Police Department's data on cases where investigations were terminated without arrest. Unfortunately, the departmental database does not provide much useful detail on why cases did not go forward. We know that the district attorney declined to charge in 19% of these cases and that the department perceived victims to be uninterested in proceeding in 35% of terminated investigations. However, 45% of the cases were simply categorized as "case suspended."

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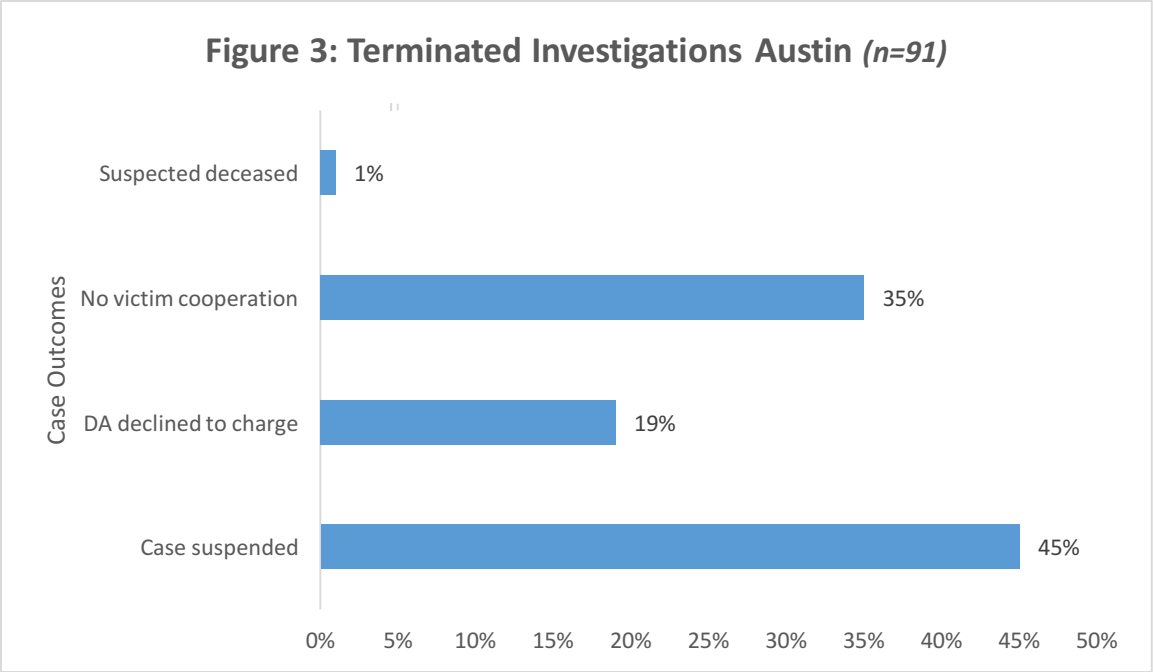


Because the Austin Police Department has received funding from both BJA and DANY grants to conduct DNA analysis on previously untested sexual assault kits, it maintains a more detailed database than the other agencies that we worked with. Therefore, we were able to analyze whether there were certain case characteristics that made an arrest following a CODIS hit more likely.

Table 4 below depicts the relationship between arrest and offender criminal history and victim/offender relationship. Whether an arrest was made is heavily influenced by the offender's criminal history. If an offender has a criminal conviction, he had 17 chances in 100 of being arrested, while not a single suspect who did not have a criminal history was arrested. Offenders who had a sexual assault conviction were the most likely to be arrested: Fully 39% of these cases resulted in arrest. Surprisingly, arrests were somewhat more likely when victims were involved in an intimate relationship with the offender (15%) or when they were acquainted with the offender (16%) than when the offender was a stranger (7%). However, these differences did not rise to the level of statistical significance.

Table 4: Predictors of Arrest/Filing in Austin

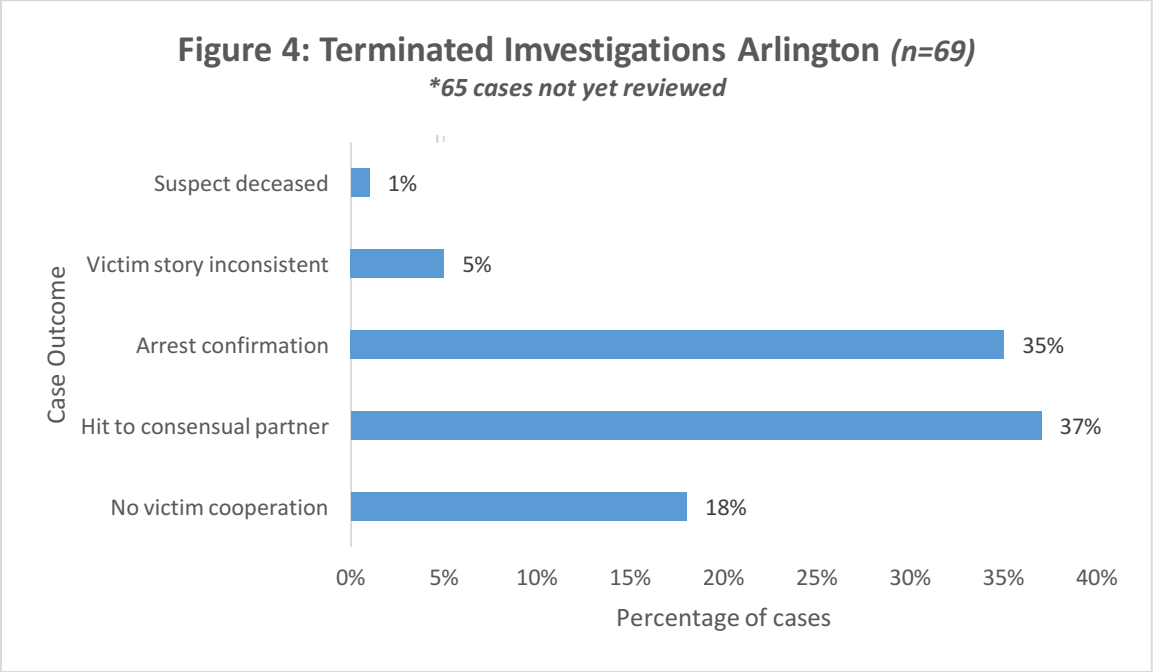
	Case results in arrest
Prior criminal convictions*	
Yes	17%
No	0%
Prior sexual assault convictions*	
Yes	39%
No	6%

Victim/offender relationship	
Intimates	15%
Acquaintances	16%
Strangers	7%

*p < .01

Arlington

In Arlington, the most frequent reasons for investigations not proceeding were that the CODIS match was to a consensual partner (and the victim claimed to have been assaulted by a stranger or declined to cooperate) or the suspect had already been arrested (arrest confirmation): Each of these accounted for a little more than a third of investigations that did not go forward. Victim issues (victim declined to cooperate or her story was thought to be inconsistent) accounted for about a quarter of the failed investigations. Suspect deceased or match to a case in another jurisdiction comprised just a few percent of terminal investigations (see Figure 4 below).



Corpus Christi

The Corpus Christi Police Department declined to provide a breakdown of reasons for terminating investigations without an arrest.

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Appendix B: Time Study Data Collection Form

Case # (detective) Date of initial report:

Description		
	Hours	**Notes**
Process CODIS results. Review case file/obtain criminal histories		
Consult with prosecutor		
Locate/interview victims, prepare photo spread		
Locate/interview witnesses		
Obtain DNA or arrest warrant		
Locate/interview suspects; obtain confirmatory DNA; take sample to lab or property room		
Meet with Probation/Parole officer/attended parole hearing		
Prep case for DA		
Trial prep/testify at trial		

Input case info in computer database		
How was case closed? Arrest, exceptional means, unfounded. Suspended?		
Other		