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Unsubmitted Sexual Assault Kits in Houston, TX: Case Characteristics, Forensic Testing Results, and the Investigation of CODIS Hits

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REPORT FOR NIJ REVIEW

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In 2011, the National Institute of Justice funded the Houston Police Department to form a multidisciplinary team to study the problem of sexual assault kits (SAK) that were collected but never submitted to a crime lab for screening and testing. The Houston Action-Research Project sought to understand the factors that produced the volume of unsubmitted SAKs, the way forensic evidence is used during criminal investigations and prosecutions of sexual assaults, and what stakeholders should expect when large numbers of previously unsubmitted SAKs get tested. The project adopted a holistic approach and considered the broader issue of responses, beyond testing the kits, to sexual assaults in the community.

Houston's Action-Research Project Working Group includes representatives from the following organizations:

- Houston Forensic Science Center [1]
- Harris County District Attorney's Office
- Harris Health System
- Houston Area Women's Center
- Houston Police Department Sex Crimes Investigative Units
- Memorial Hermann Health System
- Sam Houston State University – Department of Criminal Justice and Criminology
- University of Texas at Austin – Institute on Domestic Violence and Sexual Assault

The group has been working collaboratively and collecting data that has allowed for an understanding of multiple aspects of the local response system. The organizations that have been working on this project have also been implementing and evaluating reforms that are meant to improve the response to sexual assaults. Action research entails an iterative process in which research evidence informs responses and for this reason the project has generated multiple research reports. This is one of a number of reports and presentations that will be released to help other jurisdictions learn from our experiences as they seek to better understand and improve their own practices.

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Learn more about the project at houstonsakresearch.org and nij.gov/unsubmitted-kits

[1] During the course of the project the crime lab was re-organized so that, in April 2014, the crime lab was no longer part of the Houston Police Department.

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BACKGROUND

In 2011 the National Institute of Justice (NIJ) funded two action-research projects to study the problem of unsubmitted and untested sexual assault kits (SAKs). One project occurred in Wayne County, MI (Detroit) (Campbell et al., 2015) and the other occurred in Houston, TX. SAKs contain potentially valuable evidence that can be used during criminal investigations and when prosecuting suspects for sex crimes.[2] The value of pieces of evidence in a SAK can be unlocked when submitted to and tested by a crime lab.

The seemingly continual discovery of thousands of SAKs in police property storage facilities across the country has been cause for concern. In the months and years immediately following high-profile discoveries of untested SAKs, there was little understanding about how widespread this issue was, how the problem developed, what it would take to respond to the problem, and what would result if these kits were tested. NIJ responded by funding action-research projects in Detroit and Houston to help answer some of the important questions; research findings have started to fill the gaps in existing knowledge (Campbell et al., 2015; Nelson, 2013; Peterson, Johnson, Herz, Graziano, & Oehler, 2012). Many important questions still must be answered through continued research. Jurisdictions do not know how test results will impact criminal justice case processing outcomes when large numbers of older SAKs from the 1990s and 2000s are tested. Information is just starting to emerge about the factors that led to this situation (see Campbell et al., 2015) and little systematic information is available about the workload investigators and prosecutors will face when large numbers of older SAKs get

[2] A sexual assault kit (SAK) is collected from victims as part of medical examination, sometimes completed by a specially trained nurse. The kit may include items that contain biological evidence, including blood samples, pubic hairs, vaginal, anal, and oral swabs, and fingernail scrapings (Ritter, 2011). SAKs are intended to be transferred to a police agency as evidence in a possible crime. Police then submit the SAK to a crime laboratory for examination.

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tested. This information can aid decision makers when they plan to test older SAKs and as reforms are considered.

This report describes a set of findings derived from the Houston Sexual Assault Kit Action-Research Project (Houston ARP).[3] More specifically, this report describes the characteristics of a sample of 493 sexual assaults in which a SAK was collected but was not submitted to a crime lab at the time of the initial investigation, the forensic testing results from this sample, and the criminal justice outcomes in the CODIS-hit cases. Even in the context of significant national attention to the problem of unsubmitted SAKs, little is known about the characteristics of these cases (see Campbell et al., 2015 for an exception) and about the criminal justice outcomes that occur after large numbers of SAKs are tested.[4] This report helps to fill this knowledge gap. The report provides a brief literature review, describes the local context and reforms that occurred during the project, describes the methods and results, and concludes with recommendations for agencies responding to the problem of unsubmitted SAKs.

LITERATURE REVIEW

Crime laboratories and police departments throughout the United States possess a significant number of untested SAKs that may contain valuable DNA evidence (Joyful Heart Foundation, 2015; Office on Violence Against Women [OVAW], 2010; Strom & Hickman, 2010). Research into the sources of this problem and attempts to solve it have demonstrated that unsubmitted SAKs are not exclusively a crime lab or a police problem (National Institute of Justice, 2015). The causes of the problem are, instead, multifaceted and solutions will likely

[3] To learn more details about the Houston ARP, including the stakeholders involved and the overarching project goals, and to read the project reports that were completed during the course of the project, please visit www.houstonsakresearch.org.
[4] A comparison of cases in which SAKs were and were not submitted would provide greater confidence in identifying risk factors and reasons why some kits were never submitted for analysis. It is important to note that the current analysis only examines cases in which a SAK was collected but not submitted to a crime lab at the time of the initial investigation.

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require collaboration among multiple agencies. One primary reaction by agencies has been to identify untested SAKs in storage and then begin the process of testing them. Indeed, 52 jurisdictions were awarded over $80 million in 2015 to address the problem of untested SAKs, primarily through evidence testing (Bureau of Justice Assistance, n.d.). Testing older SAKs can serve many purposes, but one important objective is to advance criminal investigations and hold sex offenders accountable.

Sexual assault kit testing can help advance older, unresolved cases by identifying perpetrators and by helping to build stronger cases against known suspects. Offenders who are not known at the time of the initial investigation can be identified through the Combined DNA Index System (CODIS). CODIS stores the DNA profiles of offenders. DNA profiles that are foreign to victims and developed by testing evidence in SAKs can be entered into CODIS. When a profile developed from evidence testing matches a profile in the system, this provides criminal investigators with additional evidence and possibly new leads.

Through CODIS, DNA evidence has the potential to positively impact criminal investigations, but systematic evidence about case outcomes in CODIS hit cases, and the role CODIS hits play, has been lacking. The numbers of CODIS hits are occasionally discussed in media reports, but detailed information about the outcomes of CODIS hit cases is rarely provided. The implication is that a CODIS hit represents a successful police investigation outcome, but conversations with some police practitioners have revealed that a CODIS hit is just the beginning of cold-case investigations and other case variables remain important to the investigation process (see Menaker, Campbell, & Wells, in press).

Direct research evidence about CODIS effectiveness comes from an analysis of over 700 criminal cases in San Francisco (Gabriel et al., 2010), which resulted in 198 CODIS hits,

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including 110 in sex crime cases. Substantive leads resulted from 90 percent of the cases with a CODIS hit. Court outcomes, such as filing charges and convictions, varied by crime type. Sex crimes had lower conviction rates (30%) than homicides (75%) and burglaries (43%). The perceived lack of victim participation and charge rejections by the District Attorney were highest in sexual assault cases (~50%), compared to burglaries (<10%), and homicides (0%). Similar results were found in a sample of sexual assault cold cases from Denver, where 43 percent of CODIS hit cases presented to the District Attorney were rejected. The primary reason for case rejection was the perception that the victim did not participate with the justice system process (Davis, Jensen, & Kitchens, 2011). The current project provides new information by reporting the forensic testing outcomes and CODIS-hit investigation results among a sample of sexual assault cases in which the sexual assault kit was collected in Houston, Texas, but not tested during the initial police investigation.

PROJECT CONTEXT

Houston is the most populous city in Texas and 4th most populous city in the United States. The 2013 population of Houston was approximately 2.2 million people, representing an increase of over 4.5 percent from 2010. The city is located in Harris County and occupies nearly 600 square miles. In 2010, approximately 44 percent of the population was Hispanic, 26 percent was White non-Hispanic, 24 percent was African American, and 6 percent was Asian. Between 2009 and 2013 the median household income was $45,000 and 23 percent of individuals lived below the poverty line (U. S. Census Bureau, 2015).

The Houston Police Department (HPD) is the 5th largest municipal police agency in the United States, with 5,300 sworn officers and 1,300 civilian employees (City of Houston, n.d.).

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Charles McClelland has served as Chief of Police since April 2010, succeeding former Police Chief Harold Hurtt, who served HPD between 2004 and 2009. In June 2009, HPD opened a $13 million state-of-the-art property storage facility. Later the next year, HPD determined there were approximately 16,000 SAKs in the storage facility. The majority of these SAKs had been tested by a crime lab, but some had not been submitted for examination. A sampling of the SAKs in cold storage showed that approximately 4,220 kits had not been tested by a crime lab.[5] This led HPD to engage in a comprehensive effort to determine which SAKs had not been tested. In the end, HPD determined there were 6,663 untested SAKs in storage.

The HPD Crime Lab convened a group of local stakeholders in late 2010 to discuss a plan to apply for a NIJ Action Research grant to study the local problem of untested SAKs and create and implement a response plan. NIJ funded the Houston ARP and work started, officially, in April 2011. The Houston ARP had a goal of implementing sustainable changes that would improve the response to sexual assault. In many ways, this goal has been achieved and the 2011-2015 time period is marked by significant change in several organizations. These changes make it challenging to describe the local context because several organizational arrangements that existed at the outset of the ARP in April 2011 no longer exist today. Attempts were made to ensure the information reported here captured events and practices as of August 2015.

Crime Lab

The HPD Crime Lab applied for and received the ARP grant and coordinated all grant activities, including scheduling and hosting project meetings, facilitating data exchanges and collection, coordinating the work of project partners, communicating with NIJ, and serving as the

[5] Campbell and colleagues (2015) observed that the opening of new police property storage facilities played a role in the identification of untested sexual assault kits in Detroit and New York City.

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fiscal agent. The HPD Crime Lab had overcome significant problems and controversy by the time the ARP started in 2011 (see Bromwich, 2007). The lab was fully functioning and accredited when the ARP commenced and the lab was supervised by a director who reported to an HPD assistant chief. In late 2011, the HPD Crime Lab biology section was staffed by 15 full-time employees. Eleven crime lab employees worked in serology (three of whom were supervisors), three were DNA analysts, and one served as the Combined DNA Index System (CODIS) administrator and supervised nine contract workers. The nine contract workers were hired under a distinct NIJ backlog reduction grant to help screen unsubmitted SAKs for the presence of biological material. In October 2011, the City of Houston funded 16 new, permanent positions in the HPD Crime Lab biology section. During the 2005 to 2010 time period, the HPD property room received an average of 931 SAKs each year. Between September 2010 and August 2011, the lab received an average of 171 requests for biological screening each month and, of those requested, 127 (74%) were related to sexual assault crimes.

During the ARP, two significant changes directly impacted crime lab operations.[6] First, in 2013 the City of Houston devoted $2.2 million to testing all untested SAKs in HPD property storage. The effect was significant for many organizations, including the crime lab. As would be expected, crime lab workload demands increased substantially because all untested SAKs needed to be prepared and shipped to external labs that would complete testing.[7] Crime lab staff also needed to prepare to receive and process the large numbers of testing results they would obtain from outsourced labs. Second, the HPD Crime Lab became an independent government agency in April 2014 and was named the Houston Forensic Science Center, Inc.

[6] A Texas law that became effective on September 1, 2011 required all SAKs be submitted to an accredited crime lab within 30 days of kit collection and, as soon as practical, SAKs shall be examined by the crime lab. Despite the significance of this change in the law, HPD investigators began submitting all sexual assault kits to the HPD crime lab in 2006. Thus, it is not clear how this 2011 change in the law impacted crime lab operations.

[7] On February 23, 2015 it was announced that all untested sexual assault kits in police property storage had been tested.

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(HFSC). Thus, the organizational context of the crime lab shifted during the course of the ARP. This process required personnel to give substantial time and attention to making the organizational change. The HFSC is managed by a Director, a CEO, and a Board of Directors that is appointed by the Houston City Council and Mayor. This represents a significant organizational change and was the result of substantial work by HPD and the City of Houston.

HPD Sexual Assault Investigations

Sexual assault reports made to HPD prior to April 2014 were routed to one of two specialized investigative units. In 2011, at the start to the ARP, cases involving victims aged 16 and under were routed to the "juvenile" investigative unit and cases involving victims aged 17 and older were routed to the "adult" investigative unit. The units were under the direction of different captains in different HPD divisions and the units were physically located in different buildings. Interviews with investigators in both units and informal discussions with HPD personnel revealed that each unit had somewhat distinct operating norms. This is explained by differences in the nature of the crimes each unit investigated and in the different operating procedures each unit used. For example, juvenile investigators had more experience collaborating with victim advocates because of the nature of working with young victims. Both units reported that they adopted a practice, in 2006, of submitting all SAKs for testing.

Tables 1 and 2 present numbers of reports made to the adult and juvenile investigative units between 2005 and 2010. It is important to note that these data are not from the Uniform Crime Report (UCR) because the official definition of rape was limited during the timeframe covered by these data. UCR rape statistics will underestimate the true volume of cases that police sex crime investigative units are tasked with investigating. For example, UCR rape data from the FBI show HPD reported 872 rapes in 2005, 854 in 2006, 694 in 2007, and 750 in 2008.

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These figures, when contrasted against those presented in Tables 1 and 2, demonstrate how official rape statistics are not an accurate reflection of the actual workload faced by investigative units. The cases being reported to the unit represent a broader category of sexual assault incidents than rapes, as defined by the UCR.

The juvenile unit receives a substantially greater number of reports than the adult unit each year. This is due to mandatory reporting requirements that exist when it is discovered that juveniles may have been victimized. For example, if a student discloses sexual abuse to a teacher or school counselor, he/she is required to report the incident to the police or child protective services.

Table 1. Houston Police Department Adult Sex Crime[a] Reports and Police Dispositions

	2005	**2006**	**2007**	**2008**	**2009**	**2010**
Reports[b]	866	808	654	738	596	491
Arrests	80	100	89	94	93	104
Percent Cleared by Arrest	9.2	12.4	13.6	12.7	15.6	21.2

Data Source: HPD Adult Sex Crimes Investigative Unit
[a] Includes aggravated sexual assaults and attempted sexual assaults
[b] Excludes reports classified as "unfounded"

Table 2. Houston Police Department Juvenile Sex Crime[a] Reports and Police Dispositions

	2005	**2006**	**2007**	**2008**	**2009**	**2010**
Reports[b]	2,305	2,688	2,356	1,893	1,888	1,909
Arrests	623	585	570	522	534	419
Percent Cleared by Arrest	27.0	21.8	24.2	27.6	28.3	21.0

Data Source: HPD Juvenile Sex Crimes Investigative Unit
[a] Includes aggravated sexual assaults and attempted sexual assaults
[b] Excludes reports classified as "unfounded"

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Much like the crime lab, the HPD sexual assault investigative units were significantly impacted by the decision to test all 6,663 untested SAKs in property storage. HPD administrators decided that all cases would be reviewed after evidence in each SAK was tested. This meant the investigative unit would need to review over 6,500 cases, in addition to the workload of current cases. In an attempt to ensure that sexual assault survivors received high-quality, victim-centered services, HPD initiated multiple changes to the investigative units during this time.

First, a decision was made about when and how to notify victims when their kit was tested (see Campbell et al., 2015 for a detailed discussion of victim notification). The ARP group, including HPD administrators, decided to implement and advertise a means for sexual assault victims to contact HPD for more information about their cases, including SAK testing results. This was accomplished in the form of a hotline that allowed victims to contact HPD. The hotline, which also included an e-mail address, was launched in December 2013 and was advertised through different media, including billboards, television, and bi-lingual pamphlets distributed throughout the city. One purpose of the hotline was to place control in the hands of victims and provide them with the agency to determine whether to follow-up with police to obtain more information about their respective cases. This decision was intended to increase survivor autonomy and self-determination rather than propel survivors into a potentially re-traumatizing situation through systematic case notification.

HPD administrators also decided that investigators would not attempt to contact all victims with unsubmitted SAKs. Rather, police would initiate contact with victims in CODIS-hit cases and with victims in situations in which new investigative actions would occur (other than case file review). Consequently, victims in cases without CODIS hits would not be contacted.

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HPD personnel led the investigation of CODIS-hit cases, which was in contrast to the approaches used in Detroit and Manhattan where District Attorney's Offices directed the follow-up investigations of CODIS-hit cases.

Second, the ARP research team generated information that indicated greater victim advocate involvement with the adult investigative unit may generate positive outcomes (Gaines & Wells, in press). In light of this, the ARP project group and HPD administrators made the decision to use project funds to create and fill a Justice Advocate position. A Justice Advocate was hired and began working for HPD in April 2013. The Justice Advocate answered calls to the hotline (and e-mail address) and collaborated with investigators when they attempted to contact victims following CODIS hits and when investigators contacted victims in current cases. One important objective of the Justice Advocate was to increase the rate at which victims participated in the criminal justice process by facilitating a more compassionate interaction between HPD investigators and sexual assault survivors. To accomplish this, the Justice Advocate made explicit attempts to connect with victims and act as a liaison between police and victims. The HPD Justice Advocate job description is included in Appendix A. By many accounts, the Justice Advocate position has been considered a success (Busch-Armendariz & Sulley, 2015) and HPD administrators made the position a permanent part of the Department in April 2014.

Third, shortly after the lab began testing unsubmitted SAKs, several CODIS hits were returned and assigned to investigators. HPD personnel recognized the significant workload that would be generated through these CODIS hits and that contacting victims and investigating these cases required specialized expertise. Following a brief review of the existing literature about specialized-CODIS units in the United States (Campbell & Wells, 2014a), the ARP began

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exploring more details about specialized cold case squads. In response, HPD created a specialized CODIS Squad in August 2013 with responsibility for investigating CODIS-hit cases.

Next, during the course of the ARP, multiple specialized training opportunities were made available to HPD sex crimes investigators, including programming designed to raise awareness about the neurobiology of sexual assault trauma and the ways in which sex crimes investigators could most effectively facilitate victim-centered contact to move cases forward while providing survivors with appropriate, empathic interaction. Interviews with sex crimes investigators revealed a need for additional training to more effectively investigate sex crimes by addressing survivors in ways that would produce case results and promote post-trauma recovery (Campbell & Wells, 2014b) and ARP funds were used for this purpose throughout the project. Finally, in April 2014 HPD re-organized the adult and juvenile sex crimes investigative units under the direction of a single Captain in a newly created Special Victims Division. The purpose of creating the new Division was to improve responses to victims of sexual violence by, for instance, coordinating training and information sharing among investigations and ensuring optimal resource deployment.

Harris County District Attorney's Office

The Harris County District Attorney's Office (HCDAO) has responsibility for prosecuting sexual assault cases in Harris County, which includes the City of Houston. Devon Anderson has served as District Attorney since September 2013. She was appointed to the position by Governor Rick Perry following the death of District Attorney Mike Anderson (Harris County, Texas, 2015). Devon Anderson was elected to the position in fall 2014. HCDAO maintains a large workload and ranks among the busiest in the United States. For example, a study of 25 large district attorney's offices in the United States revealed, in 2006, the HCDAO

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had the highest total number of filings per prosecutor (Gershowitz & Killinger, 2010). On average, each prosecutor in the HCDAO handled 165 felonies *and* 292 misdemeanors each year. In addition, the number of case filings increased by more than 20 percent in Harris County between 2006 and 2009 (Gershowitz & Killinger, 2010).

HPD investigators and staff in the Intake Division of the HCDAO interact frequently on sexual assault case work. Before taking an individual into custody as a suspected sexual assault offender, an HPD investigator will contact the HCDAO Intake Division to request an arrest warrant. Investigators typically make contact over the phone but may meet with Intake Division personnel in person, especially in cases involving juvenile victims. HCDAO Intake Division personnel review case information with the investigator and make a determination about whether an arrest warrant will be issued. Thus, like HPD, the HCDAO faced an increased workload when the large SAK-testing effort started. In response, the HCDAO created a specialized group of 10 senior-level prosecutors who work closely with HPD on CODIS-hit cases. This unit is comprised of volunteer prosecutors and was created in February 2014. When the call for volunteers was announced, the response was positive and all positions within the new unit were filled immediately.

The communication channels between the crime lab and HCDAO also changed during the course of the ARP. A CODIS-hit e-mail notification system was created so an electronic message is sent to a HCDAO Bureau Chief each time a CODIS hit occurs. The HCDAO does not act on these hit notifications, the responsibility for follow-up investigation remains with HPD. Last, in spring 2015 the HCDAO applied for a state-level grant to fund a permanent, specially-designated sex crimes prosecutor. The proposal is for a senior-level prosecutor who

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would work closely with HPD investigators on sex crimes cases with the goal of building strong cases for prosecution.

PURPOSE OF THE PRESENT ANALYSIS

The analysis described here has three purposes. First, this report describes the characteristics of a sample of 493 sexual assault crimes in which a SAK was collected but was not submitted to a crime lab at the time of the initial investigation. In addition, analyses estimate bivariate relationships between selected case characteristics and estimate relationships between key case characteristics and case outcomes *prior to* SAK evidence testing. The purpose is to provide a descriptive picture of sexual assault cases in which a SAK was collected but not submitted/tested during the initial investigation. The assumption is that understanding the basic elements of these untested SAK cases will benefit criminal justice system practice so that their existence and the criminal justice outcomes after testing can be better understood.

Second, the analysis summarizes the forensic screening and testing results that occurred in this sample of 493 SAKs. This information has rarely been measured in a systematic way and the effect is important. Jurisdictions do not have a baseline of information about what to expect when they begin testing SAKs that have remained in property storage. Finally, the report describes the criminal justice outcomes of the CODIS-hit cases in the sample. Despite significant attention given to the problem of unsubmitted SAKs in the United States, little systematic information is available about testing outcomes and the criminal case outcomes that result when SAKs get tested. The findings reported here are intended to help build this knowledge base.

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When the project began in spring 2011 the data analysis was intended to provide stakeholders in Houston with data about a sample of cases that would aid their decision making about how to handle the much larger set of unsubmitted kits. When the City of Houston made funds available to test *all* untested kits, this purpose of the data collection and analysis became much less important. In other words, the results of the data analysis would not influence future decisions about testing because the decision had essentially been removed. All kits would be tested in a short period of time.

METHODS

Sample

The Houston ARP project included funds to screen and test a sample of 500 SAKs from the larger group HPD identified with their audit. The project working group decided a random sample of kits would be selected for testing so it would be possible to understand results that would likely be observed if or when all of the kits would be tested.[8] In early March 2012, the HPD Crime Lab provided researchers with a data file that listed 6,571 case numbers (referred to as "incident numbers" by HPD personnel) that were linked to an unsubmitted SAK stored in the property room. A meeting between the project researchers, HPD Crime Lab personnel, and sex crimes investigative personnel was held in mid-March 2012 to determine a sampling procedure. A decision was made to use a proportionate stratified random sampling procedure to increase the chances that the final sample would represent the entire group of unsubmitted SAKs in HPD storage. This sampling method can enhance sample quality because it can ensure that a small number of relevant characteristics are accurately represented in the sample. This is an efficient

[8] At the outset of the Houston ARP in 2011 it was not known that all untested SAKs would be tested.

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means of selecting a random sample. It was possible to use this method because the data file with 6,517 cases included some variables that measured relevant case characteristics.

The key decision to make when selecting a stratified random sample is the variable(s) to use for stratification. The group that met in March 2012 considered which variables to use when stratifying. The data were *not* stratified by relationship type or age because of concerns about the quality of existing data for these variables. Instead, the group decided to stratify by case clearance status. One reason this variable was selected is because HPD administrators expressed an interest in comparing the characteristics of cases with different closure statuses. This variable would also allow for an understanding of testing, investigation, and prosecution results across the range of closure types. Thus, the decision was made to select proportionate random samples of cases from within the following groups of cases: open, inactive, closed, unfounded, and missing.

Cases that occurred in 2010 and 2011 were also eliminated during the sampling process. This decision was based on the idea that recent cases would not allow for an accurate understanding of how the volume of untested kits accumulated and, subsequently, would not permit the working group to identify SAKs in storage that would most benefit from testing. The primary focus of the project was with the SAKs that were collected in the relatively distant past and had remained in storage. The initial set of 6,517 cases was reduced to 5,941 after removing 560 cases that occurred in 2010 and 16 that occurred in 2011. A random sample of 501 cases was selected: (1) after removing cases that occurred in 2010 and 2011, and (2) after stratifying cases by their clearance status. The sample of 501 cases was reduced to a final sample of 493 cases that is described in this report. The sample was reduced to 493 because of missing data collection instruments for eight cases.

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Data Sources

Three data sources provide detailed information about cases in the sample. First, information from sexual assault investigative case files was collected from the HPD On-Line Offense (OLO) data system. OLO contains sensitive information about individuals involved in criminal investigations, including victims, suspects, offenders, witnesses, and investigators. For this reason, HPD did not permit researchers to directly access OLO information and collect data from the investigative case files. Rather, retired HPD officers who had experience investigating sexual assault cases were hired to access OLO investigative files and complete the data collection instrument. Detailed information pertaining to retired officers' background characteristics was not collected.[9]

A large and detailed data collection instrument was created for retired officers to use when extracting case file information. The instrument captured critical information about the case, including the nature of the assault, victim and suspect information, and the investigative process. The instrument was developed by modifying instruments used by other researchers to collect data about sexual assaults from police criminal investigation files.[10] Personnel from the HPD sex crimes investigative units then thoroughly examined and recommended changes to the data collection instrument. The instrument was pre-tested with retired officers who would use the instrument to collect data from the OLO investigative case files. The pre-testing was used to train the retired officers on how to use the data collection instrument and how to record data reliably and accurately. A second, slightly modified instrument was developed to capture

[9] It is not known how the experiences of the data recorders influenced the results. One advantage of using former officers is that they possessed a strong understanding about how to navigate the HPD data systems and of terminology and acronyms used in the case files. There are potential limitations with this approach. An interesting study of data collection methods would entail a reliability assessment between researchers and police personnel.

[10] Professor Cassia Spohn at Arizona State University and Professor Rebecca Campbell at Michigan State University graciously shared data collection instruments they used to collect data about sexual assaults from police case files as part of their research projects.

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information when multiple victims and/or multiple offenders were involved in a sexual assault case. Data collection from the OLO case files lasted from spring 2012 into fall 2012. Data are available for 493 of the 501 sampled cases because eight instruments were never completed or were lost in transition from HPD to SHSU researchers. Appendix B reports the results of an inter-rater reliability assessment and suggests acceptable reliability among data recorders.

The second data source was the HPD Crime Lab Information Management System (LIMS). Crime lab personnel provided information about the forensic screening and testing results, including CODIS uploads and CODIS hits, for the sample of 493 cases. Lab personnel provided spreadsheets of data to the research team and were available for phone and face-to-face discussions when questions about the data arose. Given the substantial workload the crime lab faced during the ARP, data sharing about testing results was on-going and lasted from fall 2013 into summer 2015.

Finally, HPD and HCDAO personnel were asked to provide information about the activities and outcomes of CODIS-hit case investigations. This data source provides an understanding of criminal justice system outcomes produced for the sample of cases after the SAKs were examined by the crime lab. HPD administrators made the decision to review all sexual assault case files after the SAKs had been screened and tested and attempted to contact victims only in cases with a CODIS hit in which the statute of limitations (SOL) had not expired. In some of the first CODIS-hit cases returned to HPD, investigators attempted to make contact with victims even when the SOL expired. This occurred in the early stages of the ARP before a clear decision was made to not notify victims when the SOL had expired. Members of the research team interviewed HPD investigators who reviewed CODIS-hit cases in the sample of

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493 to obtain information about the investigation outcomes. Members of the research team also contacted prosecutors for information about cases they reviewed.

RESULTS

Univariate descriptive statistics for victim, incident, suspect, and case disposition (at the time of the original investigation) are presented first, followed by a presentation of bivariate relationships between key variables. Table 3 presents descriptive statistics for victim characteristics in the sample of 493 cases. These statistics represent information about victims at the time of the crime and during the initial investigation as opposed to current information. Counts may not always sum to 493 because of missing data for some variables. Multiple-victim cases were rare in this sample, occurring only five times. The average age of sexual assault victims, among single-victim cases, was 23.19 years old. Over two-thirds of victims (n = 333; 67.5%) were adults at the time of the report, while just under one-third (n = 157; 31.8%) of victims were juveniles.[11] The overwhelming majority of victims were female (n = 469; 95.1%).

Less than one out of three victims (n = 142, 28.8%) provided a sworn statement[12] to police. This is particularly important in the local setting because discussions with police investigators indicated that cases do not advance (except in rare situations) without a sworn statement from the victim. This pattern may partially explain why SAK testing was not requested in many of these cases, but without a comparison sample of cases in which SAKs were tested, it is not possible to determine that this variable (victim providing a sworn statement) is a risk factor for not submitting a SAK for testing. An additional item on the data collection tool asked data recorders to indicate, based on their review of case file, whether the victim appeared

[11] HPD considers juveniles to be individuals age 16 and younger.
[12] HPD investigators asked sexual assault victims to sign sworn statements that describe the assault and that indicates the victim is telling the truth.

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to participation in the investigation. According to data recorders, victims and their parent or caregivers appeared to participate in the investigation in 39.8 percent (n = 196) of the cases.

In addition to perceptions of victim participation, perceptions of victim credibility may have also influenced investigator decision making at the time the case was reported. Indeed, previous research has identified the important role that criminal justice practitioners' assessments of victim credibility have had on formal outcomes (Alderden & Ullman, 2012; Spohn & Tellis, 2014; Spohn, White, & Tellis, 2014; Tasca, Rodriguez, Spohn, & Koss, 2013). Specifically, the appearance of ulterior motives for reporting, the inability to articulate clear details of the assault, and engaging in risky behaviors at the time of the assault, may impact case outcomes. While these factors do not fundamentally define whether a sexual assault occurred, these variables may influence police behavior. Data recorders perceived that at least one concern about the victim's credibility was present in approximately half (n = 245, 49.7%) of cases.[13]

[13] Data recorders used the data collection instrument to record whether any of 14 credibility concerns, identified by prior research and through discussions with investigators, were *explicitly* mentioned in each case narrative. When an indicator of credibility was mentioned, data coders indicated that credibility concern on the instrument. These credibility concerns included the following: an inconsistent story by the victim, patrol officer/investigator suspected victim or outcry witness had ulterior motives for reporting, evidence contradicts victim story, lack of witness corroboration, the victim was unable to verbalize/articulate details, patrol officer/investigator believed victim/outcry witness was fabricating the event, victim had mental illness, victim was acting as a prostitute at the time of the offense, victim had a history of prostitution, victim was engaged in risky behavior at the time of the offense, victim did not attempt self-defense, parent/caregiver had alternative motives for reporting, emotional response was inconsistent for the event, and other credibility concerns.

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Table 3. Victim Characteristics

Variables	N	%
Number of Victims		
1 Victim	476	96.6
2 Victims	4	0.8
3 Victims	0	0.0
4 Victims	1	0.2
Missing	12	2.4
Victim 1 Age		
Mean/SD	23.19 (SD= 12.25)	12.25
Juvenile victim	157	31.8
Adult	333	67.5
Missing	3	0.6
Victim 1 Sex		
Male	22	4.5
Female	469	95.1
Missing	2	0.4
Victim 1 Sworn Statement		
No	346	70.2
Yes	142	28.8
Missing	5	1.0
Victim Participate in Investigation[a]		
No	291	59.0
Yes	196	39.8
Missing	6	1.2
Credibility Concerns		
No	248	49.3
Yes	245	49.7
Missing	5	1.0

[a] Perceptions by data recorded that the victim participated in the investigation also includes juvenile cases in which the caregiver was believed to participate in the investigation.

Table 4 presents information about the characteristics of cases in the sample. Approximately one fourth of cases involved a perpetrator who was a stranger (n = 129, 26.1%) and no suspect information was available in 7.7 percent of cases (n = 38). This implies that at least basic information about the offender were available to investigators in approximately two-thirds of cases in this sample. Nearly three-quarters of the cases involved sexual penetration (n = 357, 72.4%), while the remaining 5.5 percent (n = 27) involved sexual contact without penetration. It is important to note that data were not available about the nature of the sexual contact in 22.1 percent (n = 109) of the cases. Further, 75.5 percent of victims (n = 372) were

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conscious during the sexual assault while one-quarter of the cases involved a victim who may have had difficulty recalling the details of the event because they were not fully conscious.

Over one-third (n = 178, 36.1%) of cases involved a victim who engaged in some form of self-defense and 74.4 percent (n = 367) of victims did not sustain injuries beyond those sustained from the sexual contact. Finally, police collected evidence from the crime scene in 17 percent (n = 84) of cases.

Table 4. Sexual Assault Incident Characteristics

Variables	**N**	**%**
Victim/Perpetrator Relationship		
Stranger	129	26.2
Acquaintance	135	27.4
Friend, coworker, neighbor	46	9.3
Authority figure	5	1.0
Intimate	77	15.6
Relative	50	10.1
Unknown/no suspect	38	7.7
Missing	13	2.6
Nature of Sexual Assault[a]		
Sexual contact	27	5.5
Penetration	357	72.4
Missing	109	22.1
Victim Conscious During Attack		
No	54	10.9
Yes	372	75.5
Partially, in and out	21	4.3
Victim could not recall / Missing	46	9.3
Victim Engage in Self-Defense		
Nothing indicated in the report	311	63.1
Yes	178	36.1
Missing	4	0.8
Injury Sustained by Victim		
No injuries	367	74.4
Some injuries	109	22.1
Missing	17	3.4
On-Scene Evidence Collected		
None Collected	407	82.6
Some Collected (Bed Sheets, Clothes, Condoms)	84	17.0
Missing	2	0.4

[a] Contact is defined as non-penetration and includes touching under or over clothing and contact with genitalia or mouth. Penetration is defined as any form of penetration with or without condom use.

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Table 5 summarizes the characteristics of perpetrators/suspects. Nearly three-quarters of cases (n = 350, 71.0%) involved offenders who did not use a weapon. Just 29 suspects (5.9%) confessed to the sexual assault. In over three-quarters of the cases (n =370, 78.5%) the investigative case file showed that no suspects were interviewed by police during the initial investigation. In 29 cases (5.9%), a suspect confessed to the sexual assault.[14] Eleven suspects (2.2%) had previously been accused (i.e., arrested, convicted, listed as a suspect in the OLO file) of a sex offense.

Table 5. Suspect Characteristics

Variables	**N**	**%**
Suspect Weapon Use during Assault[a]		
No/Not Reported	350	71.0
Yes	83	16.8
Missing	60	12.2
Number of Suspects Interviewed by Police		
0	370	78.5
1	99	20.1
2	6	1.2
3	1	.2
Missing	17	3.4
Any Suspect Confess to the Sexual Assault		
No	430	97.2
Yes	29	5.9
Missing	34	6.9
Any Suspect Ever Accused of Sexual Assault[b]		
No/None Listed in the Report	414	84.0
Yes	11	2.2
Missing	68	13.8

[a] Suspect weapon use includes knives, blade weapons, clubs, blunt objects and firearms for threat to cut/stab, to hit with, or shoot at. Multiple weapons may have been used in a single case.
[b] Suspect accusations include convictions, previous arrests, and indications in the investigative file that the person was a suspect in another sexual assault.

Table 6 presents information about the investigation and criminal justice outcomes in the sample. The data collection instrument captured information about the last investigative

[14] Among these cases with a suspect who confessed, victims signed a sworn statement in 25 cases; 24 resulted in the investigator requesting an arrest warrant from the HCDAO.

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activities to provide an understanding about how the *original* investigation ended. In addition, this provides information that is distinct from the official case closure status and offers unique insights into the ways investigations come to a close. The categories used to capture information about the last investigative activity were not mutually exclusive so counts may sum to more than 493. Nearly half of the investigation files (n = 229, 46.4%) indicated the victim did not participate in the investigation and in nearly one-third of the cases (n = 156, 31.6%), law enforcement was unable to contact or locate the victim. Victim engagement represented an important barrier to case advancement in this sample. Despite the existence of an untested SAK, 11.5 percent of reports (n = 57) indicated there was insufficient evidence to move the case forward.

Table 6 also provides information on arrests and official closure status. As indicated above, sex crimes investigators request an arrest warrant from the HCDAO before making arrests. For this reason, it was important to measure whether or not the investigator contacted the HCDAO and requested an arrest warrant. Officers presented 107 cases (21.7%) to the HCDAO and made an arrest in 70 cases (14.2% of the total sample). Consistent with evidence about the last investigative activity, victim non-participation, as indicated by the "lack of prosecution by the victim" category, was the most common way cases were closed (n = 150, 30.4%). Over one-quarter of cases in the sample (n = 133, 27.0%) were inactivated, which is frequently used to close cases when there is insufficient evidence to continue or when an investigator is unable to contact a victim.

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Table 6. Case Dispositions

Variables	N	%
Last Investigative Activity[a]		
Unable to contact victim	156	31.6
Victim refuse to cooperate	229	46.4
Unable to locate suspect	12	2.4
Insufficient evidence to continue	57	11.5
Arrested/charged	48	9.7
Wanted/charged	11	2.2
DA Declined charges	33	6.7
Suspended/inactive, pending victim therapy	4	0.8
Suspended, pending forensic testing	6	1.2
Other	54	11.0
Missing	26	5.3
Case Presented to DA for Arrest Warrant		
No	373	75.7
Yes	107	21.7
Missing	13	2.6
Arrest Made in Case (arrest of any suspects)		
No	406	82.4
Yes	70	14.2
Missing	17	3.4
Official Case Status		
Arrested and charged in this case	55	11.2
Arrested and charged in another case	7	1.4
Lack of prosecution by DA	31	6.3
Lack of prosecution by victim	150	30.4
Unfounded	25	5.1
Inactive	133	27.0
Cleared by investigation[b]	62	12.6
Open and active	18	3.7
Missing	12	2.4

[a] Last investigative activity is not mutually exclusive. Therefore, the sum of percentages exceeds 100%. The percentage of cases with missing data is based on the sample of 493 cases (26 / 493 = 5.3%).
[b] This category is used when it is not clear that evidence shows the crime was a sexual assault. In these cases the crime will be investigated but it is not clear whether the "sexual assault" title is accurate.

Bivariate Relationships

The next series of analyses estimated bivariate relationships among several key variables to provide readers with additional information about the sample. Variables were selected for analysis because of their assumed role, directly or indirectly in police investigations. For instance, the relationship between the victim and offender may have influenced the investigation

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because a suspect would or would not be named at the outset. Similarly, perceived victim credibility concerns may have influenced the course of an investigation. Discussions with investigators at HPD indicated the lack of a sworn statement from the victim influences the investigation, making the case much less likely to advance. Despite the objective of providing information about relevant variables, the intent of estimating bivariate relationships was not to test specific hypothesized relationships. The following variables were selected for additional analyses: (1) victim/offender relationship (e.g., whether the perpetrator was a stranger or a non-stranger), (2) victim age classification (adult/juvenile), (3) whether victim credibility concerns were present in the case, (4) whether the victim provided a sworn statement to the police, and (5) whether the case was presented to the HCDAO for the issuance of an arrest warrant. Bivariate relationships were assessed using chi-square statistics to test for significant differences between groups and cases with missing data were excluded; Tables 7 through 11 present row percentages.

Victim/Offender Relationship

Table 7 presents relationships between the victim-offender relationship (stranger or non-stranger) and victim, suspect, and case characteristics. The relationship between victim age (adult/juvenile) and perpetrator type (stranger/non-stranger) was significant. Adult-victim cases were more likely to involve strangers (39.4%) compared to juvenile-victim cases (23.9%). Cases with some indication of a credibility concern were more likely to involve stranger offenders (43.3%) than cases with no indication of a credibility concern (25.5%).

In terms of crime characteristics, assaults involving penetration were more likely to occur in stranger assault cases than cases of sexual contact (32.5% compared to 15.4%).[15] There is no statistical difference between relationship and victim injuries. Similarly, on-scene evidence

[15] Recall that Table 4 shows that about 22 percent of cases are missing data on the nature of sexual contact between the victim and offender

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collection rates were similar for stranger and non-stranger cases. Cases involving victims who appeared to participate in the investigation were more common in non-stranger cases than victims who did not appear to participate.

Finally, Table 7 presents the results regarding victim-offender relationship and investigative outcomes (at the time of the original investigation). Investigators were more likely to present cases to the HCDAO for an arrest warrant in non-stranger cases (86.1%) and higher proportion of non-stranger cases resulted in arrest (83.1%. When these arrest outcomes are presented as a function of the number of cases presented to the HCDAO for an arrest, a different pattern emerged. Among the 14 stranger cases that were presented to the HCDAO, 11 (78.6%) resulted in an arrest while 54 of the 87 (62.1%) non-stranger cases presented to the HCDAO ended with an arrest.

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Table 7. Victim-Offender Relationship: Relationships with Victim Characteristics, Incident Variables, and Investigation Activities

Variables	Relationship			
	Non-Stranger	Stranger[a]	Total	χ^2
Individual Victim Characteristics				
Victim Age				
Juvenile	114 (77.0%)	34 (23.9%)	148	12.224**
Adult	200 (61.6%)	130 (39.4%)	330	
Total	314 (65.7%)	164 (34.3%)	478	
Any Credibility Concerns				
No	178 (74.5%)	61 (25.5%)	239	16.661**
Yes	135 (56.7%)	103 (43.3%)	238	
Total	313 (65.6%)	164 (34.4%)	477	
Crime Characteristics				
Sexual Assault Type				
Sexual Contact	22 (84.6%)	4 (15.4%)	26	3.286†
Penetration	235 (67.5%)	113 (32.5%)	348	
Total	257 (68.7%)	117 (31.3%)	374	
Any Victim Injuries				
No	241 (67.7%)	115 (32.3%)	356	1.900
Yes	66 (60.6%)	43 (39.5%)	109	
Total	307 (66.0%)	158 (34.0%)	465	
Any On-Scene Evidence				
No	259 (65.2%)	138 (34.8%)	397	.281
Yes	56 (68.3%)	26 (31.7%)	82	
Total	315 (65.8%)	164 (34.2%)	479	
Victim Participation				
No	177 (61.7%)	110 (38.3%)	287	4.635*
Yes	134 (71.3%)	54 (28.7%)	188	
Total	311 (65.5%)	164 (34.5%)	475	
Sworn Statement				
No	209 (61.1%)	133 (38.9%)	342	11.952**
Yes	105 (77.8%)	30 (22.2%)	135	
Total	314 (65.8%)	163 (34.2%)	477	
Investigative Activity Characteristics				
Case Presented to the DA				
No	222 (60.5%)	145 (39.5%)	367	23.227**
Yes	87 (86.1%)	14 (13.9%)	101	
Total	309 (66.0%)	159 (34.0%)	468	
Suspect Arrested in Case or Other Case				
No	253 (63.3%)	147 (36.8%)	400	9.798**
Yes	54 (83.1%)	11 (16.9%)	65	
Total	307 (66.0%)	158 (34.0%)	465	

**p<.001, *p<.05, †p<.10

[a] Stranger cases include those in which the victim indicated the perpetrator was a stranger and those in which a suspect was not identified in the investigative report. Non-stranger cases include acquaintances, intimate partners

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and former intimate partners, friends, co-workers, authority figures, relatives, those involved in an internet relationship, individuals on a planned first meeting/date, and neighbors.

Victim Age

Table 8 displays relationships between victim, crime, and investigation variables and whether the victim was an adult or a juvenile. As indicated above, in Table 7, among adult cases, significantly more assaults involved non-strangers (60.6%) than strangers (39.4%). This relationship was similarly consistent among juvenile cases, where a significantly higher proportion of incidents involved non-strangers (77.0%) compared to strangers (23.0%). Additionally, a significant relationship emerged in terms of victim age and perceived victim credibility concerns. Perceived credibility concerns were more likely to be present in adult cases.

Regarding crime characteristics, penetration cases were more likely than sexual contact in adult cases (69.9% compared to 18.5%) and less likely in juvenile cases (30.1% compared to 81.5%). Victim injuries were more likely in adult victim cases and on-scene evidence was collected in a larger portion of adult cases. Important differences also emerged between adult and juvenile cases in terms of their participation in the investigation. Victim participation, as perceived by date recorders, was less common in adult-victim cases compared to juvenile-victim cases. Similar to the measure of perceived victim participation, sworn statements were less common in adult cases than in juvenile cases. As expected based on differences in perceived victim participation and sworn statements, significant differences existed in investigative results. Cases that were presented to HCDAO for an arrest warrant were more likely to involve a juvenile victim (56.1%) and cases that ended in arrest were also more likely to involve a juvenile victim (58.6%).

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Table 8. Victim Age: Relationships with Victim Characteristics, Incident Variables, and Investigation Activities

Variables	Victim Age			
	Juvenile	Adult	Total	χ^2
Individual Victim Characteristics				
Victim Offender Relationship				
Non-Stranger	114 (36.3%)	200 (63.7%)	314	12.224**
Stranger	34 (20.7%)	130 (79.3%)	164	
Total	148 (31.0%)	330 (69.0%)	478	
Any Credibility Concerns				
No	96 (39.7%)	146 (60.3%)	242	13.419**
Yes	59 (24.2%)	185 (75.8%)	244	
Total	155 (31.9%)	331 (68.1%)	486	
Crime Characteristics				
Sexual Assault Type				
Sexual Contact	22 (81.5%)	5 (18.5%)	27	29.713**
Penetration	107 (30.1%)	249 (69.9%)	356	
Total	129 (33.7%)	254 (66.3%)	383	
Any Victim Injuries				
No	137 (37.5%)	228 (62.5%)	365	20.085**
Yes	16 (14.7%)	93 (85.3%)	109	
Total	153 (32.3%)	321 (67.7%)	474	
Any On-Scene Evidence				
No	142 (35.1%)	263 (64.9%)	405	9.447**
Yes	15 (17.9%)	69 (82.1%)	84	
Total	157 (32.1%)	332 (67.9%)	489	
Victim Participation				
No	31 (10.7%)	259 (89.3%)	290	142.943**
Yes	121 (62.1%)	74 (38.0%)	195	
Total	152 (31.3%)	333 (68.7%)	485	
Sworn Statement				
No	74 (21.5%)	270 (78.5%)	344	60.548**
Yes	82 (57.8%)	60 (42.3%)	142	
Total	156 (32.1%)	330 (67.9%)	486	
Investigative Activity Characteristics				
Case Presented to the DA				
No	93 (25.1%)	278 (74.9%)	371	36.689**
Yes	60 (56.1%)	47 (43.9%)	107	
Total	153 (32.0%)	325 (68.0%)	478	
Suspect Arrested in Case or Other Case				
No	109 (27.0%)	295 (73.0%)	404	27.527**
Yes	41 (58.6%)	29 (41.4%)	70	
Total	150 (31.7%)	324 (68.4%)	474	

**p<.001, *p<.05, †p<.10

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Perceived Credibility Concerns

Research has shown that assessments of victim credibility by criminal justice decision makers have impacted case outcomes in sexual assault investigations (Bouffard, 2000; Campbell, Menaker, & King, 2015; Spohn & Tellis, 2014). In the current study, data coders were asked to indicate whether or not concerns with victim credibility were explicitly mentioned in each case narrative. Table 9 presents patterns of relationships between victim credibility concerns (yes or no) and victim, crime, and investigative outcome variables. As described above, victim credibility concerns were related to offender – victim relationship (Table 7) and whether the case involved an adult or juvenile victim (Table 8). Adult-victim cases were more likely to involve credibility concerns (55.9%) than juvenile-victim cases (38.1%) and stranger cases were also more likely to involve credibility concerns (62.8% compared to 43.1%).

The relationship between crime characteristics and perceived credibility concerns revealed mixed results. Sexual contact cases were less likely to involve some credibility concern (18.5%) than penetration cases (47.8%). Cases in which the victim provided a sworn statement were less likely to involve a credibility concern and cases in which the victim was perceived to participate in the investigation were less likely to involve a credibility concern (but only when a more liberal statistical significance criterion ($p < .10$) is used). Victim injuries and on-scene evidence collection were unrelated to credibility assessments.

As expected based on existing research findings, case outcomes were related to credibility concerns. Victims in cases that were presented to the HCDAO and in which someone was arrested were less likely to have credibility concerns compared to cases that were not presented to the HACAO and that did not involve an arrest.

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Table 9. Victim Credibility Concerns: Relationships with Victim Characteristics, Incident Variables, and Investigation Activities

Variables	Credibility Concerns			
	No	Yes	Total	χ^2
Individual Victim Characteristics				
Victim Age				
Juvenile	96 (61.9%)	59 (38.1%)	155	13.419**
Adult	146 (44.1%)	185 (55.9%)	331	
Total	242 (49.8%)	244 (50.2%)	486	
Victim Offender Relationship				
Non Stranger	178 (56.9%)	135 (43.1%)	313	16.661**
Stranger	61 (37.2%)	103 (62.8%)	164	
Total	239 (50.1%)	238 (49.9%)	477	
Crime Characteristics				
Sexual Assault Type				
Sexual Contact	22 (81.5%)	5 (18.5%)	27	8.644*
Penetration	186 (52.3%)	170 (47.8%)	356	
Total	208 (54.3%)	175 (45.7%)	383	
Any Victim Injuries				
No	184 (50.6%)	180 (49.5%)	364	.734
Yes	50 (45.9%)	59 (54.1%)	109	
Total	234 (49.5%)	239 (50.5%)	473	
Any On-Scene Evidence				
No	201 (49.9%)	202 (50.1%)	403	.000
Yes	42 (50.0%)	42 (50.0%)	84	
Total	243 (49.9%)	244 (50.1%)	487	
Victim Participation				
No	134 (46.4%)	155 (53.6%)	289	2.781†
Yes	106 (54.1%)	90 (45.9%)	196	
Total	240 (49.5%)	245 (50.5%)	485	
Sworn Statement				
No	162 (47.2%)	181 (52.8%)	343	3.332†
Yes	80 (56.3%)	62 (43.7%)	142	
Total	242 (49.9%)	243 (50.1%)	485	
Investigative Activity Characteristics				
Case Presented to the DA				
No	173 (46.8%)	197 (53.2%)	370	4.156*
Yes	62 (57.9%)	45 (42.1%)	107	
Total	235 (49.3%)	242 (50.7%)	477	
Suspect Arrested in Case or Other Case				
No	184 (45.5%)	220 (54.5%)	404	17.804**
Yes	51 (72.9%)	19 (27.1%)	70	
Total	235 (49.6%)	239 (50.4%)	474	

**p<.001, *p<.05, †p<.10

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Victim Sworn Statement

Interviews conducted with HPD investigators revealed the importance of sworn statements from victims for their case investigations. Investigators attempt to obtain signed, sworn statements from victims as one of their first investigative activities. According to HPD investigators, the lack of a sworn statement will cause cases to stall out. Table 10 presents relationships between the presence of a sworn statement from the victim in the case and victim, case, and investigation variables. As described above, victim/offender relationship, victim age (juvenile or adult), and victim credibility concerns are all related to victim sworn statements. Sworn statements are more common in juvenile-victim cases, cases where victims were reported to be participating with police, and in cases that lacked credibility concerns.

A larger percentage of sexual-contact cases contained a sworn statement from the victim than assault cases where penetration took place (59.3% compared to 30.1%). The existence of a sworn statement was unrelated to victim injuries. A greater percentage of cases in which some on-scene evidence was collected contained a sworn statement (41.7%) compared to cases in which on-scene evidence was not collected (26.6%). As expected, victim participation was associated with the existence of a sworn statement. Sixty-five percent of cases in which the victim was perceived to be participating in the investigation provided a sworn statement, compared to five percent of cases in which the victim was not perceived to be participating in the investigation.

As expected, a larger percentage of cases presented to the HCDAO for an arrest warrant involved a victim sworn statement (84.8%), in comparison to cases that were not presented for an arrest warrant (14.0%). Victim sworn statements were more common in arrest cases (78.6%) than when no victim sworn statement existed (21.3%).

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Table 10. Victim Sworn Statements to Police: Relationships with Victim Characteristics, Incident Variables, and Investigation Activities

Variables	Sworn Statement			
	No	Yes	Total	χ^2
Individual Victim Characteristics				
Victim Age				
Juvenile	74 (47.44%)	82 (52.6%)	156	60.548**
Adult	270 (81.8%)	60 (18.2%)	330	
Total	344 (70.8%)	142 (29.2%)	486	
Victim Offender Relationship				
Non Stranger	209 (66.6%)	105 (33.4%)	314	11.952*
Stranger	133 (81.6%)	30 (18.4%)	163	
Total	342 (71.7%)	135 (28.3%)	477	
Any Credibility Concerns				
No	162 (66.9%)	80 (33.1%)	242	3.332†
Yes	181 (74.5%)	62 (25.5%)	243	
Total	343 (70.7%)	142 (29.3%)	485	
Crime Characteristics				
Sexual Assault Type				
Sexual Contact	11 (40.7%)	16 (59.3%)	27	9.074*
Penetration	245 (69.0%)	110 (30.1%)	355	
Total	256 (67.0%)	126 (33.0%)	382	
Any Victim Injuries				
No	254 (69.6%)	111 (30.4%)	365	.507
Yes	79 (73.2%)	29 (26.9%)	108	
Total	333 (70.4%)	140 (29.6%)	473	
Any On-Scene Evidence				
No	296 (73.5%)	107 (26.6%)	403	7.689*
Yes	49 (58.3%)	35 (41.7%)	84	
Total	345 (70.8%)	142 (29.2%)	487	
Victim Participation				
No	273 (94.8%)	15 (5.2%)	288	201.128**
Yes	68 (34.9%)	127 (65.1%)	195	
Total	341 (70.6%)	142 (29.4%)	483	
Investigative Activity Characteristics				
Case Presented to the DA				
No	319 (86.0%)	52 (14.0%)	371	196.475**
Yes	16 (15.2%)	89 (84.8%)	105	
Total	335 (70.4%)	141 (29.6%)	476	
Suspect Arrested in Case or Other Case				
No	317 (78.7%)	86 (21.3%)	403	93.363**
Yes	15 (21.4%)	55 (78.6%)	70	
Total	332 (70.2%)	141 (29.8%)	473	

**p<.001, *p<.05, †p<.10

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Request Arrest Warrant

The majority of sexual assault case processing research has examined case outcomes to identify correlates of case advancement and attrition. Much of this literature has focused on prosecutorial decisions to charge (Beichner & Spohn, 2005, 2012; Spears & Spohn, 1997; Spohn, Beichner & Davis-Frenzel, 2001; Spohn & Holleran, 2001; Stanko, 1981-82), and police decisions to arrest in sexual assault cases (Spohn & Tellis, 2014; Tasca et al., 2013). This body of research has indicated that practitioners make decisions based on evaluations of the "convictability" of a case. Convictability evaluations have been made "with consideration of how others (i.e., jury and defense) will interpret and respond to a case" (Frohmann, 1997, p. 535). This focus on convictability has been explained using two criminal justice frameworks: (1) the downstream orientation of justice and (2) focal concerns frameworks. The downstream orientation framework has been applied to understand how prosecutors label victims "good" or "bad," based on how credible their allegations will appear if presented to a jury (Frohmann, 1991, 1997). Under this framework, practitioners are more likely to formally process cases based on their perceptions of a victim's credibility (Frohmann, 1997). Research has demonstrated, for example, that negative evaluations of credibility hinder case advancement, while positive evaluations improve perceptions of convictability and facilitate case advancement (Beichner & Spohn, 2005; Kerstetter, 1990; Stanko, 1981-82).

Consistent with the downstream orientation framework, focal concerns theory has also been used to examine the attributes most important to sexual assault case processing (O'Neal, Tellis, & Spohn, 2015; Spohn et al., 2001; Spohn, White, & Tellis, 2014). The focal concerns framework is comprised of three central components that guide practitioner decisions: (1) culpability/blameworthiness of the offender, (2) need to protect the community from the offender

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in each case, and (3) consideration of resource constraints faced by the justice system (Spohn et al., 2014; Steffensmeier, Ulmer & Cramer, 1998). Researchers explain that it is difficult for practitioners to consider all three components fully, because information regarding the background of victims and offenders, as well as evidence, is often limited during the early decision points in the criminal justice process. Accordingly, early decisions are based on a "perceptual shorthand," or understanding of case characteristics that impact perceptions of convictability (Spohn et al., 2014).

Sexual assault researchers have found support for the downstream orientation and focal concerns frameworks in sexual assault cases (Beichner & Spohn, 2005, 2012; Frohmann, 1991; 1997; Spohn et al., 2014). Specifically, scholars have identified several case (e.g., offense severity, victim injury, presence of evidence), suspect (e.g., history of arrest), and victim (e.g., victim credibility) characteristics that impact perceptions of convictability. For example, prosecutorial research has found that when victims sustain injury from an incident that is corroborated by medical evidence, cases are more likely to result in charges (Campbell et al., 2009; Frazier & Haney, 1996). Conversely, when victim credibility concerns arise, cases are less likely to advance through the criminal justice process (Alderden & Ullman, 2012; Beichner & Spohn, 2012; Kerstetter, 1990; Schuller & Stewart, 2000; Spohn et al., 2001).

Findings regarding correlates of case processing are consistent, however, most studies have focused on prosecutorial decision making in sexual assault cases. The analysis presented below examined an earlier case processing decision, the decision to present cases to the HCDAO for the issuance of an arrest warrant. Table 6 shows that an arrest warrant was sought in slightly more than 20 percent cases (n = 107, 21.7%).

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Table 11 presents patterns of relationships between the decision to request an arrest warrant from the HCDAO and victim and crime characteristics. A larger percentage of juvenile-victim cases (39.2%) were presented to the HCDAO than adult cases (14.5%); a larger percentage of non-stranger cases (28.2%) were presented to the HCDAO than stranger cases. The existence of a perceived credibility concern was related to presentation such that18.6 percent of cases with a credibility concern were presented to the HCDAO compared to 26.4 percent of cases that did not have a perceived credibility concern.

With regard to case characteristics, findings revealed that a larger percentage of sexual-contact cases were presented to the HCDAO (48.2%) than penetration cases (24.3%). Perceived victim participation and the presence of a victim sworn statement were both related to an increased chance of presentation to the HCDAO. Nearly half of the cases in which the victim participated in the investigation were presented to the DA (47.4%) comparted to 5.6 percent of cases that lacked perceived victim participation. Similarly, 63.1 percent of cases with a victim's sworn statement were presented to the DA, compared to less than 5 percent that did not contain a victim's sworn statement. Victim injuries were unrelated to case presentation.

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Table 11. Presented to the HCDAO for Arrest Warrant: Relationships with Victim Characteristics, Incident Variables, and Investigation Activities

Variables	Presented to DA			
	No	Yes	Total	χ^2
Individual Victim Characteristics				
Victim Age				
Juvenile	93 (60.8%)	60 (39.2%)	153	36.689**
Adult	278 (85.5%)	47 (14.5%)	325	
Total	371 (77.6%)	107 (22.4%)	478	
Victim Offender Relationship				
Non Stranger	222 (71.8%)	87 (28.2%)	309	23.227**
Stranger	145 (91.2%)	14 (8.8%)	159	
Total	367 (78.4%)	101 (21.6%)	468	
Any Credibility Concerns				
No	173 (73.6%)	62 (26.4%)	235	4.156*
Yes	197 (81.4%)	45 (18.6%)	242	
Total	370 (77.6%)	107 (22.4%)	477	
Crime Characteristics				
Sexual Assault Type				
Sexual Contact	14 (51.9%)	13 (48.2%)	27	7.422*
Penetration	268 (75.7%)	86 (24.3%)	354	
Total	282 (74.0%)	99 (26.0%)	381	
Any Victim Injuries				
No	272 (75.6%)	88 (24.4%)	360	2.596
Yes	88 (83.0%)	18 (17.0%)	106	
Total	360 (77.3%)	106 (22.7%)	466	
Any On-Scene Evidence				
No	315 (79.2%)	83 (20.9%)	398	2.987†
Yes	57 (70.4%)	24 (29.6%)	81	
Total	372 (77.7%)	107 (22.3%)	479	
Victim Participation				
No	268 (94.4%)	16 (5.6%)	284	114.651**
Yes	101 (52.6%)	91 (47.4%)	192	
Total	369 (77.5%)	107 (22.5%)	476	
Victim Sworn Statement				
No	319 (95.2%)	16 (4.8%)	335	196.475**
Yes	52 (36.9%)	89 (63.1%)	141	
Total	371 (77.9%)	105 (22.1%)	476	
Investigative Activity Characteristics				
Suspect Arrested in Case or Other Case				
No	359 (88.6%)	46 (11.4%)	405	197.901**
Yes	8 (11.8%)	60 (88.2%)	68	
Total	367 (77.6%)	106 (22.4%)	473	

**p<.001, *p<.05, †p<.10

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Forensic Testing Results

The screening and testing results for SAKs in the sample are presented in Table 12. Data are presented for 491 cases instead of the sample of 493 described above. When the lab prepared the SAKs for testing a SAK was not located for one case and information about the second case was unavailable in the LIMS. Two sets of percentages in Table 12 demonstrate how frequently different testing results occur. In the testing process, certain results are contingent on previous outcomes. For example, a profile will not be uploaded to CODIS if a sample in the SAK does not yield biological evidence that is foreign to the victim. Thus, it is possible to report conditional and unconditional percentages (see Campbell et al., 2015, p. 191). Conditional percentages use denominators obtained from results in the immediate prior stage in the process. Unconditional percentages use the total number of kits, 491 in this case, as the denominator.

In this sample, 68.4 percent of the SAKs (n = 336) contained biological evidence with potentially probative value. When biological material with potentially probative value is detected, this is known as a "positive screening" result. A DNA profile was developed in 80.4 percent (n = 270) of the cases that screened positive (55% of the overall sample). A profile was uploaded to CODIS in 78.9 percent of the cases (n = 213) in which a DNA profile was produced (43.4% of the total sample). A CODIS hit was returned in about half (n = 104) of the cases in which a profile was uploaded and in 21.1 percent of the full sample.

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Table 12. Forensic Testing Results

	N	Unconditional %	Conditional %
Number of Kits Screened	491[a]	100	100
Screened Positive for Biological Evidence	336	68.4	68.4
Foreign DNA Profile Developed	270	55.0	80.4
CODIS Upload	213	43.4	78.9
CODIS Hit	104	21.1	48.9

[a] Two cases from the sample of 493 are missing data. One case could not be located in the Lab Information Management System and a second case did not have an associated SAK that was submitted for testing.

Few published studies or reports have described forensic testing results from samples of criminal cases. This makes it difficult to determine whether these results obtained in Houston are consistent with other jurisdictions and it makes it challenging for other jurisdictions to anticipate outcomes (Campbell, et al., 2015, p. 302). Table 13 presents the findings from studies that reported forensic testing results among samples of SAKs that were not tested at the time of the original investigation so the Houston results can be placed in the context of prior studies (see Campbell et al., 2015).

Table 13. Forensic Testing Results in Houston ARP in Relation to Other Jurisdictions

	Sample	Screened Positive Biological Evidence	DNA Profile Developed	CODIS Upload	CODIS Hit
Los Angeles Peterson et al. (2012)	1,948	1,320 67.8%	---	699 52.3%[a] (35.9%)[b]	347 49.6% (17.8%)
Detroit Campbell et al. (2015)	1,595	---	---	785 (49.0%)	455 58.0% (28.5%)
New Orleans Nelson (n.d.)	1,008	---	---	256 (25.4%)	139 54.3% (13.8%)[c]
Houston ARP	491	336 68.4%	270 80.4% (55.0%)	213 78.9% (43.0%)	104 48.9% (21.1%)

[a] First percentage listed is the conditional percentage.
[b] Percentage in parenthesis is the unconditional percentage.
[c] Among the set of 830 "older" kits in this sample, there were 83 CODIS hits (10% of the sample).

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The results in Table 13 show a degree of consistency across sites with some exceptions. A smaller portion of kits produced a profile uploaded to CODIS (25.4%) in the New Orleans sample compared to the other sites. The portion of kits that led to a CODIS upload in Houston (43.0%) is slightly less than what was found in Detroit (49.0%) and greater than what was found in Los Angeles (35.9%). Nevertheless, the conditional CODIS-hit rates are remarkably similar across all sites, ranging from 48.9 percent in Houston to 58 percent in Detroit. Houston's conditional CODIS-hit rate (48.9%) is nearly identical to Los Angeles (49.6%). These patterns are revealing for other jurisdictions that are in the process of testing previously untested SAKs.

Campbell and colleagues (2015) cautioned that differences in sampling procedures in these studies present difficulties when making direct comparisons of SAK testing results across studies. For example, in Los Angeles, Peterson et al. (2012) conducted a random sample of all 10,895 backlogged kits discovered in the Los Angeles Police Department (LAPD) and the Los Angeles Sheriff's Department (LASD). SAKs were deemed "backlogged" if they were collected in a case that occurred prior to November 1, 2008. The LAPD produced 6,132 kits and LASD produced 4,763 kits. From these kits, Peterson et al. (2012) extracted a random sample of 20 percent of backlogged cases, producing a sample of 1,170 kits from LAPD, and 840 kits from LASD. In the end, 1,141 LAPD kits and 807 LASD kits were included in the analysis, resulting in a total sample of 1,928 cases. Using data from Detroit, Campbell et al. (2015) selected a sample of 1,600 kits from a total of 11,219 kits. To select the 1,600 kits included in the analysis, the researchers employed stratified random sampling procedures based on three criteria: (1) cases within the statute of limitations (SOL) (cases from 2002-2009) and cases beyond SOL expiration (cases prior to 2002), (2) victim offender relationship (stranger and non-stranger cases), and (3) the DNA testing method (traditional extraction method and selective degradation method). From

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these criteria, four groups were created and a random sample was drawn from each group. The groups included: (1) stranger/within SOL (N = 445), (2) non-stranger/within SOL (N = 449), (3) stranger and non-stranger/beyond SOL (N = 351), and (4) DNA testing method/within SOL (included stranger and non-stranger cases). Finally, in the New Orleans Study, the available description of the sample indicated that the cases analyzed were comprised of 830 older kits that were in custody before 2011 and 178 current cases in custody after January 1, 2011 (Nelson, 2013).

CODIS-Hit Cases

The sample of 104 CODIS-hit cases is particularly relevant in the context of the Houston ARP because these are the cases in which investigators actively worked and made or attempted to make contact with victims. In other words, these are the cases that could have resulted in arrests and new charges. The following analysis describes: (1) the characteristics of these cases that were known *prior to* the CODIS hit and (2) the criminal justice outcomes that resulted after the CODIS-hit occurred. The characteristics of the CODIS-hit cases are based on data collected from the investigation case files at the outset of the Houston ARP project and represent what was known about these cases prior to forensic testing. The results of the post-CODIS-hit investigations are based on data collected through semi-structured interviews with investigators and prosecutors.

CODIS-Hit Case Descriptions

Table 14 presents pre-CODIS-hit information (i.e., information about the case *before* the SAK was tested as part of the ARP) about victims in these cases. All cases involved a single victim, over 80 percent were adult victim cases, and all but one victim was a female. At the time of the original investigation, nearly three-quarters of victims did not provide a sworn statement.

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Similarly, data recorders indicated that victims did not participate in the original investigation in 68.3 percent of the cases. Victim credibility concerns existed in 46.2 percent of cases, which is similar to the percent of credibility concerns identified in the full sample of 493 cases (49.7%).

Table 14. CODIS Hit-Cases: Victim Characteristics

Variables	**N**	**%**
Number of Victims		
1 Victim	104	100
Victim Age at Time of Crime		
Adult Victim	85	81.7
Juvenile Victim	18	17.3
Missing	1	1.0
Victim Sex		
Female	103	99.0
Male	1	1.0
Victim Sworn Statement to Police		
No	77	74.0
Yes	27	26.0
Victim Participation		
No	71	68.3
Yes	33	31.7
Credibility Concerns for Victim		
No	56	53.8
Yes	48	46.2

Table 15 presents information about suspects in the case at the time of the original investigation. A suspect was interviewed by an investigator in approximately 15 percent of the cases and a suspect confessed to the assault in approximately 8 percent of the cases. The investigators contacted the HCDAO to request an arrest warrant in all eight confession cases and an arrest was made in seven of these cases. Investigative case files rarely contained information to suggest the suspect had a history of being accused of sexual assault; this only occurred in a single case.

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Table 15. CODIS-Hit Cases: Suspect Characteristics

Variables	N	%
Suspect Weapon Use during Assault[a]		
No / Not Reported	80	76.9
Yes	24	23.1
Number of Suspects Interviewed During the Investigation		
0	86	82.7
1	16	15.4
Missing	2	1.9
Any Suspect Confess to the Sexual Assault		
No	91	87.5
Yes	8	7.7
Missing	5	4.8
Any Suspect Ever Accused of Sexual Assault[b]		
No / Not Reported	103	99.0
Yes	1	1.0

[a] Suspect weapon use includes knives, blade weapons, clubs, blunt objects and firearms for threat to cut/stab, to hit with, or shoot at. Multiple weapons may have been used in a single case.
[b] Suspect accusations include convictions, previous arrests, and indications in the investigative file that the person was a suspect in another sexual assault.

Table 16 summarizes information about the sexual assault incident characteristics. The distribution of cases across five-year increments from the 1990 through 2009 time period appears even. A single case occurred in 1989. In terms of specific years, 2004 was the modal year with 11 cases, followed by 1998 and 2003 with nine cases, and 1991 and 1995 with eight cases. This sample of CODIS-hit cases was more likely to involve non-strangers (n = 66, 63.5%) than strangers (n = 35, 33.7%).

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Table 16. CODIS-Hit Case Characteristics

Variables	N	%
Offense Year		
1989	1	1.0
1990 – 1994	22	21.2
1995 – 1999	32	30.8
2000 – 2004	29	27.9
2005 – 2009	20	19.2
Victim/Offender Relationship		
Stranger	35	33.7
Non - Stranger	66	63.5
Missing	3	2.9
Nature of Sexual Assault[a]		
Sexual Contact / Touch only	2	1.9
Penetration	85	81.7
Missing	17	16.3
Victim Conscious During Attack		
No	9	8.7
Yes	84	80.8
Partially, in and out	5	4.8
Victim Unsure / Missing	6	5.8
Victim Engage in Self-Defense		
No / Nothing Documented in the Report	59	56.7
Yes	44	42.3
Missing	1	1.0
Non-Sexual Contact Injuries Sustained by Victim		
No Injuries Reported	78	75.0
Some Injuries	21	20.2
Missing	5	4.8
On-Scene Evidence Collected		
None Collected	81	77.9
Some Collected (Bed Sheets, Clothes, Condoms)	23	22.1

[a] Contact is defined as non-penetration and includes touching under or over clothing and contact with genitalia or mouth. Penetration is defined as any form of penetration with or without condom use.

As would be expected, the nature of the sexual assault entailed penetration in a large majority of cases (81.7%). The victim was conscious in 80.8 percent of the cases and used some form of self-defense in 42.3 percent of cases. Injuries occurred in 20.2 percent of cases. Additionally, on-scene evidence was collected in 22.1 percent of cases. The patterns in Table 16 are similar to those that describe the full sample (Table 4)

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Table 17 provides information about how these CODIS-hit cases were resolved at the time of the original investigation and may provide some understanding about why the SAKs in these CODIS-hit cases were not submitted for testing at the time of the original investigation. The measure of last investigative activity does not use mutually exclusive categories and, thus, allows for the possibility that multiple categories characterize a single case. Percentages reported for this measure will sum to greater than 100 percent because the denominator is 104 cases. The lack of victim involvement (i.e., inability for the investigator to make contact and victim decision to not participate in the investigation) was a common way the original investigation ended, occurring in 96 of the 104 CODIS-hit cases. Despite the existence of an untested SAK, the case files indicated there was insufficient evidence in 10 cases.

Investigators presented 18 cases (17.3%) to the HCDAO for the issuance of an arrest warrant and an arrest was made in 16 cases (15.4%). The lack of participation by the victim was a common way the case was officially closed (43.3%), followed by the case being inactivated (22.1%). The patterns of results in Table 17 for all variables are similar to those for the full sample (Table 6). One exception, however, is the "lack of prosecution by the victim" category within the official case closure variable. In the full sample of cases (Table 6), 30.4 percent of cases were closed with this category while 43.4 percent of the CODIS-hit cases were closed this way at the time of original investigation.

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Table 17. CODIS-Hit Cases: Investigative Activities at Time of the Original Investigation

Variables	N	%
Last Investigative Activity during Original Investigation		
Unable to contact victim	34	32.7
Victim does not want to cooperate	58	55.8
Unable to locate suspect	4	3.9
Insufficient evidence to continue	10	9.6
Arrested/Charged	11	10.6
DA Declined charges	2	1.9
Suspended/Inactive, pending victim therapy	1	1.0
Other	10	9.6
Missing	5	4.8
Case Presented to DA for Arrest Warrant during Original Investigation		
No	85	81.7
Yes	18	17.3
Missing	1	1.0
Arrest Made in Case during Original Investigation		
No	85	81.7
Yes	16	15.4
Missing	3	2.9
Official Case Status during Original Investigation		
Arrested and charged in this case	13	12.5
Arrested and charged in another case	2	1.9
Lack of Prosecution by DA	3	2.9
Lack of Prosecution by Victim	45	43.3
Inactive	23	22.1
Cleared by Investigation	13	12.5
Open and Active	3	2.9
Missing	2	1.9

Post CODIS-Hit Investigative Results

Interviews with HPD and HCDAO personnel between mid-November 2013 and early-August 2015 provided information about the disposition of CODIS-hit cases. Interviews between researchers and criminal justice system personnel occurred in-person and via telephone communication. During each interview, researchers asked police investigators and HCDAO personnel to provide information about the current status of the post-CODIS-hit investigation. Interviews involved open-ended discussions about these cases. Criminal justice system personnel examined case files to obtain updated information. Follow-up interviews were

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conducted for cases in which the investigation was in progress, such as when investigators were attempting to locate a victim or when investigators were gathering information about a suspect. Interviews were conducted until personnel indicated that work on the case had ended or until charges had been filed. Seven cases were under investigation or prosecutorial review at the time of the final interviews in mid-August 2015.

The interviews provided important data about the criminal justice system outcomes that resulted from the CODIS hits. Forensic testing results represent the end of crime lab work (see Table 12) but simultaneously represent the starting point for some investigative activities, such as locating and interviewing victims and suspects. Thus, it is important to measure the investigative and court outcomes that follow CODIS hits to obtain a more comprehensive understanding of testing results. At the same time, it is important to note that only measuring case outcomes with criminal justice system indicators represents a limited conception of results. There are many potential outcomes that can result from forensic testing that future research should measure. Forensic testing results, when provided to victims, may generate positive reactions or unintended negative responses from victims and these were not measured in the current study. DNA profiles uploaded to CODIS may produce hits and case resolutions at later times. The focus of the current analysis is the outcomes of criminal cases that produced the SAK and the CODIS hit. Results show that significant numbers of arrests, prosecutions, and convictions did not occur in this sample.

Table 18 presents the criminal justice outcomes of CODIS-hit cases. The information presented in Table 18 utilizes mutually-exclusive categories that allow each case to receive a single code. A decision was made to give primacy to the "expired statute of limitation (SOL)" category since this ultimately determines a case will not move forward with an arrest and

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charges. It is important to recognize that even when the SOL expired, other outcomes may have occured, such as an attempt to contact a victim or alternative criminal justice system uses for the CODIS-hit information, such as notifying a parole board about the hit in situations in which the offender has been incarcerated. The results in Table 18 ignore other categories that may characterize a case with an expired SOL; these additional outcomes are reported in Table 19.

Table 18. Investigative Results Following CODIS-Hit: Mutually Exclusive Categories

	N	**%**
Expired SOL	46	44.2
Unable to locate/contact victim	13	12.5
Victim does not want to participate	13	12.5
DA declined charges	1	1.0
Deceased victim	2	1.9
Deceased offender	6	5.8
Arrest confirmation	12	11.5
Case is from another jurisdiction	1	1.0
Other use for CODIS hit	1	1.0
Charges filed in case	1	1.0
In progress, presented to DA	1	1.0
Investigation in progress	6	5.8
Other	1	1.0

The statute of limitations had expired in approximately 44 percent of the CODIS-hit cases, prohibiting arrests and prosecution. This is the most frequently occurring outcome in the sample of CODIS-hit cases. The inability to secure victim participation in the follow-up investigation, because the victim could not be contacted or because of a non-participation decision, occurred in 25 percent of the cases. The offender identified through the CODIS-hit had been arrested prior to the hit in 11.5 percent of the cases. The investigation was in progress in six cases and one case had been presented to the HCDAO without a decision at the time of the

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final data collection interview. As of mid-August 2015 charges had been filed in one CODIS-hit case.[16]

Table 19 presents results that permit multiple codes to be used within a single CODIS-hit. For example, the frequencies in Table 19 allow for the possibility that the CODIS-hit information in an expired SOL case could be used in alternative ways. In addition, when HPD investigators started to conduct follow-up investigations into CODIS-hit cases, some investigators made attempts to contact victims even when the SOL had expired. As a result, a case can be categorized as having an expired SOL and as involving a victim who was not contacted. Table 19 summarizes 122 codes used for the 104 CODIS-hit cases to present more complete details about these cases.

The pattern of results underscores that making contact with victims and securing victim participation presents important challenges, similar to the patterns presented in Table 18. Table 19 demonstrates that CODIS-hit information was used in alternative ways (i.e., other than to bring charges against the offender in the current case) in approximately six percent of cases. In these situations, the investigator communicated information, via letter, about the CODIS hit and the offender to a parole board or the Texas Department of Corrections.

[16] If one purpose of future studies is to examine patterns of case outcomes following a CODIS hit, different sampling strategies should be used. The approach used here did not generate sufficient numbers of cases for analysis. We thank an anonymous reviewer for identifying this point.

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Table 19. Investigative Results Following CODIS-Hit: Non-Mutually Exclusive Categories

	N	%
Expired SOL	46	37.7
Unable to locate/contact victim	22	18.0
Victim does not want to participate	16	13.1
DA declined charges	1	1.0
Deceased victim	2	1.6
Deceased offender	6	4.9
Arrest confirmation	12	9.8
Case is from another jurisdiction	1	1.0
Other use for CODIS hit	7	5.7
Charges filed in case	1	1.0
In progress, presented to DA	1	1.0
Investigation in progress	6	4.9
Other	1	1.0

The patterns of results presented in Tables 18 and 19 reveal that it was rare for arrests and case filings to occur after forensic testing in this sample of 493 cases. In some instances, arrests had already occurred and in other situations the CODIS-hit information was communicated to criminal justice system actors who could use the information (i.e., parole boards). The expired SOL and the lack of victim participation represent two important barriers to case progression that personnel in other jurisdictions should consider when they undertake the process of working with untested SAKs and conducting follow-up investigations. If charges are filled in the seven on-going cases, eight of the 104 cases will result in charges filed. As of August 2015, only one criminal case in the sample of 104 is proceeding to court processing. It remains to be seen whether the criminal case outcomes described here are unique or reflect patterns found in other jurisdictions.

IMPLICATIONS AND RECOMMENDATIONS

The Houston ARP provided opportunities for organizations in the local jurisdiction to collaborate, understand the problem of unsubmitted SAKs, and implement meaningful changes

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that were grounded in research and a solid understanding of the problem. The project has also provided an opportunity for other jurisdictions to learn from the experiences reported in Houston. As other jurisdictions receive funding to address their untested SAKs they can learn from jurisdictions that have already started working on this problem, including Houston. This report described one portion of the Houston ARP. The analyses examined a single sample of sexual assault cases with unsubmitted SAKs and generated new information about these cases that hold implications for practices.

The present analysis described a relatively large random sample of cases with an unsubmitted SAK to better understand important victim, suspect, and incident characteristics in these cases. This type of systematic information has generally been lacking from discussions of this nationwide problem. Second, the patterns of testing results were presented. Despite significant attention to the problem of unsubmitted SAKs and some efforts to address the problem, little systematic information is currently available to describe testing outcomes that are likely to result when a jurisdiction begins the process of testing unsubmitted SAKs. Finally, the report described the criminal justice outcomes that followed forensic testing. These results provide basic, baseline information, albeit from a single jurisdiction, about what can be expected.

> *Recommendation 1*: Jurisdictions should collect data and report results that describe the characteristics of cases with unsubmitted SAKs, the forensic testing results, and criminal investigation outcomes that follow from testing. These descriptions will systematically improve the collective understanding of these cases and testing results, broadly conceived. The current state of the knowledge is not well developed and current assumptions may not be correct.

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It is common for media portrayals of the problem of unsubmitted SAKs to make broad-brushed conclusions about these cases and their investigations. Data are rarely presented. The presentation of basic descriptive data about these cases allows for a more comprehensive understanding of the nature of this problem. Indeed, this line of research will likely improve the chances that effective law enforcement responses are implemented. When gaps in existing knowledge are filled with anecdotes, good practices may not be advanced.

For instance, without the benefit of examining data, it may seem reasonable to conclude that investigators overlooked most, if not all, cases with an unsubmitted SAK. In contrast, the lack of a participating or cooperative victim might be offered as an explanation for the existence of unsubmitted SAKs. The patterns presented here do not seem to suggest that an overwhelming number of cases involved victims who were unwilling to participate in the original investigation. Table 3 shows that nearly 30 percent of the victims in these cases provided a signed, sworn statement to police investigators at the time of the original investigation and case files suggest that nearly 40 percent of victims participated in the original investigation. In addition, investigators believed there was sufficient evidence to make an arrest in approximately one out of every five cases. Table 6 shows that 21.6 percent of the cases were presented to the HCDAO at the time of the original investigation and an arrest was made in 14.2 percent of the full sample of cases (65% of the cases presented to the HCDAO).

> *Recommendation 2*: Future research should compare similar groups of cases that differ only in terms of whether or not a SAK was submitted and tested. This will provide for an understanding of risk factors linked to unsubmitted SAKs. Jurisdictions working on the problem of unsubmitted SAKs are in a position to conduct this analysis.

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It is not possible to draw firm conclusions about the possible reasons these SAKs were not submitted for forensic testing at the time of the original investigation because this study did not examine a comparison sample of cases in which a SAK was collected as evidence and submitted for crime lab testing. It is not possible, therefore, to understand differences between these groups of cases using these data. For example, Table 3 indicates that victims did not appear willing to participate in 58.4 percent of the investigations. It is unclear whether this is different among cases in which the SAK was submitted for testing. If the percentage (58.4%) is significantly lower among cases in which the SAK was submitted for testing then this would suggest victim participation is a risk factor for non-submission. If the percentages are roughly similar then this variable should not necessarily be considered a risk factor. Identifying risk factors for unsubmitted SAKs is an important task for future research so findings can build on the information derived from the Detroit ARP (Campbell, et al., 2015) and can identify where reforms may be needed.

Recommendation 3: Jurisdictions should be prepared for the workload that results after labs begin testing unsubmitted SAKs, some portion of which will involve older sexual assault cases.

Tables 12 and 13 illustrate that, even if only CODIS-hit cases receive additional investigative activity, the workload increase will be significant. CODIS hits resulted from approximately 20 percent of the cases; this percentage was close to 30 percent in Detroit. Investigative units, prosecutors, and victim advocates require the resources necessary to provide victims with appropriate responses following these CODIS hits. This will entail the development of sound victim notification protocols and collaboration between agencies that interface with

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victims. Investigators will also need to be equipped, with time and specialized training for example, to conduct proper follow-up investigations that stem from CODIS hits. Prosecutors will face the added workload of reviewing older cases and collaborating with investigators, victims, and advocates. Finally, advocates will likely play a critical role in ensuring appropriate victim-centered responses are implemented.

Recommendation 4: Gather baseline information about current practices to identify strengths and weaknesses in the current responses to sexual assault.

This recommendation supports *Recommendation 3* and results from the broader lessons learned during the Houston ARP, not necessarily from the patterns described in this report. The stakeholders in Houston spent time learning about important aspects of the local context, including investigation practices, prosecutorial practices, the communications channels between stakeholder groups (i.e., SANEs, police, and lab), and the role advocates play in investigations. The assumption is that the stakeholder groups involved may not fully understand the nuances of procedures used by the various organizations. In addition, organizations may not be aware of gaps in their performance. The information gained will support the planning process (*Recommendation 3*) and will improve the chances that reforms will succeed.

Recommendation 5: Attend to the importance of victim engagement and participation.

The findings presented throughout this report highlight the important role of victim participation, which reiterates existing work on trauma and the interplay between law enforcement and crime victims. As part of *Recommendation 4* it will be important for jurisdictions to fully understand what they expect from victims. Interviews with HPD

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investigators revealed the critical importance of victim sworn statements for case progression; cases will stall out without these signed statements. While this is a component of victim participation, in the local context a sworn statement appears even more important than the more general idea of participation. Other factors may operate differently in jurisdictions. The most important factors that relate to case progression must be identified if a goal is to reduce case attrition and hold offenders accountable. The data reported in Tables 6, 10, and 18 illustrate the critical role of victim sworn statements and victim participation. The lack of victim participation is an important reason why CODIS-hit cases do not advance through the criminal justice system. Devoting time and resources toward improving victim engagement and participation may pay significant dividends that amplify the value of forensic testing. It may be necessary, based on the results from *Recommendation 4*, to implement and test new protocols that are specifically aimed at improving rates of victim participation and engagement.

Recommendation 6: Consider the use of a SAK testing prioritization system even when all unsubmitted SAKs will be tested.

Establishing priorities for testing is a difficult task that requires careful decision making. Table 18 shows that the SOL had expired in a significant portion of cases (44.2%). If a goal of testing is to improve the chances of making an arrest in a case and charging offenders, then it makes sense to prioritize cases within the SOL. In some cases, data systems may not allow for an easy determination of which cases are within the SOL. It may be worth devoting resources to determining whether a case is within the SOL so cases that stand a better chance of advancing through the system are tested first. This does not imply that there is no value in testing cases with expired SOL, but it does suggest that there are cases that would benefit from more rapid

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testing. Table 18 also reveals that 11 percent of CODIS hits confirmed the identity of an individual who was arrested during the original investigation. While it may make sense to place these cases at a lower priority, testing in these situations may be valuable for identifying serial offenders through CODIS hits. Local jurisdictions should be prepared to discuss testing prioritization systems even when all kits will undergo testing.

Recommendation 7: Measure and report the criminal justice system outcomes of sexual assault cases after SAK testing.

The results described here represent one of the first attempts to systematically measure and describe the criminal justice system outcomes following a significant effort to test unsubmitted SAKs. Jurisdictions currently do not possess estimates of the justice system outcomes they should expect to obtain. Basing expectations on media accounts is not a good practice because those accounts do not (typically) report data about systematic samples of cases. This makes it impossible to understand the *portion* of unsubmitted SAKs that result in arrest, a charge, and a conviction. In the current sample of cases with a SAK that was tested, one case (.2%) has resulted in new charges and seven are still in progress (1.4%) (Table 18). For evidence testing results to matter, other case elements are often required, including victim engagement (see Table 18). Jurisdictions should measure and report the criminal case outcomes that result when unsubmitted SAKs are tested. By sharing experiences, jurisdictions can understand their performance within a larger context. Those jurisdictions that seem to perform well can share lessons that can aid others.

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Recommendation 8: Jurisdictions should measure a broader set of outcomes in addition to the results of criminal cases.

A limitation of the analysis described here, and of analyses reported elsewhere, is how "outcomes" have been conceived. Criminal case progression and attrition is only one possible outcome measure. It makes sense to explore this outcome because it is what practitioners are concerned with and this is what jurisdictions must prepare to handle. In addition, forensic evidence testing is explicitly intended to aid the investigation and prosecution process by, for example, narrowing the field of possible suspects. Yet it can be important to consider a broader view and assess alternative results. For example, SAK testing practices may signal important messages to the community about their responsiveness to the crime of sexual assault. It is possible that these messages, in turn, generate important results, including enhanced police legitimacy and greater rates of victim reporting. Increased SAK testing may signal to the population in a given community that police prioritize sexual assault and victims may subsequently be more willing to come forward knowing the police in their local jurisdiction make sexual assault investigations a priority.

In addition, SAK testing in individual cases may send a clear signal to victims that police consider their crime serious and that police are actively exploring leads by investing time and resources into processing evidence. This may serve to enhance victim participation in the investigation and prosecution. Finally, CODIS entries that result from ongoing efforts across the country to test unsubmitted SAKs may result in large numbers of CODIS hits that ultimately hold offenders accountable. Future research should measure alternative, yet important, outcomes of SAK testing practices.

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APPENDIX A

HPD Justice Advocate Position Description

Objective: To determine the viability and effectiveness of having a Justice Advocate

I. Reduce the attrition rate of complainant participation in the investigative process, in order to increase the rate of case presentation to the Harris County District Attorney's Office with the hope of increased prosecution.

II. Address the emotional, social, physical needs of complainants throughout the investigative process, with a special emphasis on complainants with an ***"identified concern."***

Duties & Responsibilities:

I. Identify complainants of sexual assault that may fall into an ***"identified concern"**** category.

II. Establish contact with complainants after investigators' initial contact in order to assess for additional needs. Engage complainant in-person, when appropriately able. Conduct follow-up contact with the complainant monthly, or as appropriate.

III. Assist complainants with counseling services, referral information, and emotional support.

IV. Act as a liaison between the police department and community-based advocacy groups, shelters, etc.

V. Develop and maintain positive associations and interactions with referral and service organizations that may provide support services to complainants.

VI. Maintain accurate documentation of contact with complainants, including: date, type, and content of communication; reason for contact; case status; and complainant activity level with investigation.

VII. Evaluate the outcomes of complainants who remain participative throughout the investigative process versus complainants who at some point disengage from the investigative process.

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Complainants that are considered to be of "identified concern" include, but are not limited to:

- Age: If the complainant is an older adult (65+) or a late adolescent/young adult (17/18/19yo);

- Mental or physical ability: If the complainant experiences any mental or physical disability that may interfere with communication, mobility, cognitive functioning, stability, or emotional well-being;

- If the complainant is experiencing homelessness or housing instability;

- If the complainant is a male or transgender person;

- If the suspect is a member of the complainant's family or closely known;

- If the complainant has additional needs or services that may need to be addressed;

- If the complainant is experiencing an increased risk of safety due suspect and/or sexual assault;

- If the case is picked up by the media;

(***"Identified concern"*** cases are not the only times it is important to access the Justice Advocate; these are simply cases where it would be important to do so.)

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APPENDIX B

Inter-rater Reliability Assessment

The majority of studies that have analyzed criminal case data to examine sexual assault case processing have employed a team of researchers to code case narratives and record information about variables known to impact case outcomes (Spohn & Tellis, 2014; Tasca et al., 2013). The current analysis departed from this method, and instead used a team of five former and current sexual assault investigators from HPD to code the case narratives used for data analysis. Because of the uniqueness of the coding method, the authors sought to assess the inter-rater reliability of the data.

To enable a statistical analysis of inter-rater reliability, five current members of the HPD Sex Crimes Unit used a small portion of the data collection instrument to code information from the sample of 493 cases. Specifically, the current investigators recorded information victim credibility concerns in each case using the 14 items in the data collection instrument. The current investigators were new to the sex crimes unit and did not have prior experience investigating sexual assault cases, which reduced the likelihood that their assessments of victim credibility would be influenced by prior investigative knowledge. After coding was completed, the data recorded by the original data recorders were compared to the data recorded by the new investigators. The comparison yielded an overall inter-rater reliability score of about 92 percent, which indicated consistency in the coding of cases. Results from the inter-rater reliability assessment are displayed below in Appendix B Table 1.

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Appendix B Table 1. Inter-Rater Reliability between Experienced and New Investigators

Item	Inconsistent	Consistent	N	%
Inconsistent story	60	434	493	87.9
Ulterior motives	34	460	493	93.1
Contradicting evidence	39	455	493	92.1
No witness corroboration	32	462	493	93.5
Complainant unable to verbalize	72	422	493	85.4
LE believes fabricated	32	462	493	93.5
Mental illness (complainant)	28	466	493	94.3
Prostitute (acting)	11	483	493	97.8
Prostitute (history)	12	482	493	97.6
Risk-taking behavior	71	423	493	85.6
No self-defense	55	439	493	88.9
Parent/caregiver had ulterior motives	4	490	493	99.2
Inconsistent emotional response	16	478	493	96.8
Other	78	416	493	84.2
Total	544	6,372	6,902	92.1

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