

National Institute of
Justice


NIJ

Is DNA Forensics Cost-Effective for Property Crimes?

Edwin Zedlewski, PhD





- [Home](#)
- [News](#)
- [Travel](#)
- [Money](#)
- [Sports](#)
- [Life](#)
- [Tech](#)
- [Weather](#)

[News](#) » [Nation](#) » [Troops at Risk](#) » [States](#) » [Lotteries](#)

More burglary, theft arrests based on DNA

Updated 9h 4m ago | [Comment](#) | [Recommend](#) | [E-mail](#) | [Save](#) | [Print](#) | [Reprints & Permissions](#) | [RSS](#)

By [Kevin Johnson, USA TODAY](#)

WASHINGTON — Twice as many burglary and theft suspects are arrested based on DNA evidence as on more conventional investigative techniques such as eyewitness testimony, a new report concludes.

In non-DNA cases, police often rely on a mix of evidence — from fingerprints to witness statements — that result in arrests in 8% of cases, compared with a 16% arrest rate in DNA cases, according to the report released Monday. DNA evidence collected in burglaries and thefts can include a mix of biological material left at crime scenes, including blood, hair or saliva. In one case, blood left on a broken window led to the identification and conviction of a suspect.

Funded by the Justice Department, the report was conducted by the Urban Institute, a non-partisan research organization. It reviewed 1,841 cases in which DNA evidence was available from 2005 to 2007 in Denver, Los Angeles, Orange County, Calif., Phoenix and Topeka.

DNA also assists in the initial identification of burglary and theft suspects in 31% of cases in which such evidence is available, compared with 12% when police relied on traditional crime-solving methods, the study finds.

DNA-related investigations "may become a more common means of identifying suspects in criminal cases," the report says.

[Mixx it](#)

Other ways to share:

[Yahoo! Buzz](#)

[Digg](#)

[Newsvine](#)

[Reddit](#)

[Facebook](#)

What's this?

FIND MORE STORIES IN: [California](#) | [Phoenix](#) | [Justice Department](#) | [Orange County](#) | [Los Angeles](#) | [Topeka](#) | [Denver](#) | [Urban Institute](#) | [National Institute of Justice](#) | [John Roman](#)

Why DNA in Volume Crimes?

- State databases grow dramatically after 45 states include all felons
- CODIS pilot program of 14 labs -1990
- NDIS holds 6 million offender profiles (June 2008)
- 45,400 hits–46,300 investigations aided

Why DNA In Volume Crimes?

- Property offenders are dangerous
 - Property offenders also violent offenders
 - Florida – 52 % violent crime IDs had prior burglary convictions
 - Virginia - 40 % VC hits were to NV priors
- Databases mostly property offenders
 - Virginia – SDIS is 71 % property felons
 - Virginia – 80 % of hits were to NV priors

UK's DNA Expansion

- DNA samples increase suspect IDs from 15% to 46% in residential burglaries
- For every 5 crimes solved by DNA, 4 other crimes were cleared
- Prevented 7.8 new crimes for each conviction and imprisonment

NIJ's Property Crime Trials

- Five Sites – LA, OC, Denver, Phoenix, Topeka (500 cases each, max 2000 samples)
- Randomly Assign Cases
 - Collect DNA at all scenes
 - Experimental: Investigation + DNA
 - Control: Investigation only (shelve DNA)
- Track outcomes from lab to prosecution
- Trials completed by August 2007 – Outcomes tracked to November 2007
- Report issued June 2008

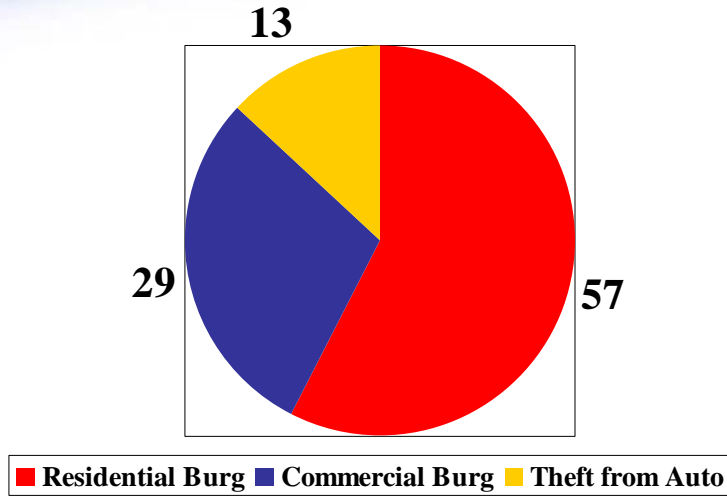
Project Goals

- Crime scenes – Which ones to attend
- Probativity – Where to Take Samples*
- Promptness – How Quickly to Process
- Tenacity – How to Locate Offenders*
- Effectiveness – How to convict*
- Accountability – How track outcomes*

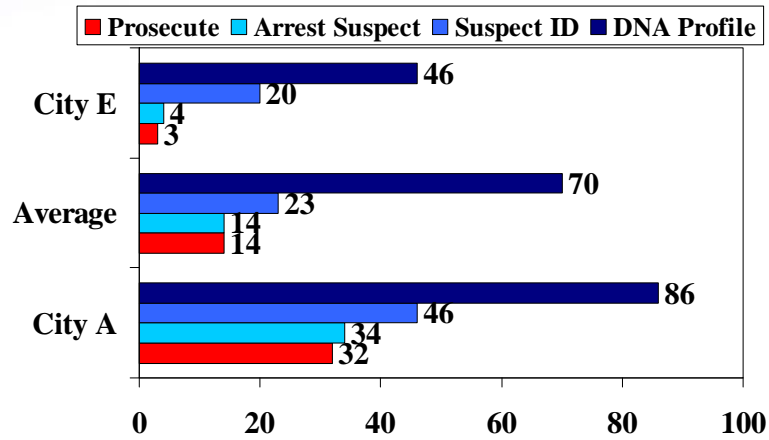
Sample Cases By Site

Site Location	Total Test Cases	Total Control Cases	Total cases
Topeka, KS	131	129	260
Los Angeles, CA	193	198	391
Denver, CO	255	255	510
Orange County, CA	250	251	501
Phoenix, AZ	251	249	500
Total	1080	1082	2162

Scenes Investigated (pct.)



DNA Cases Surviving By Stage



Main Outcomes

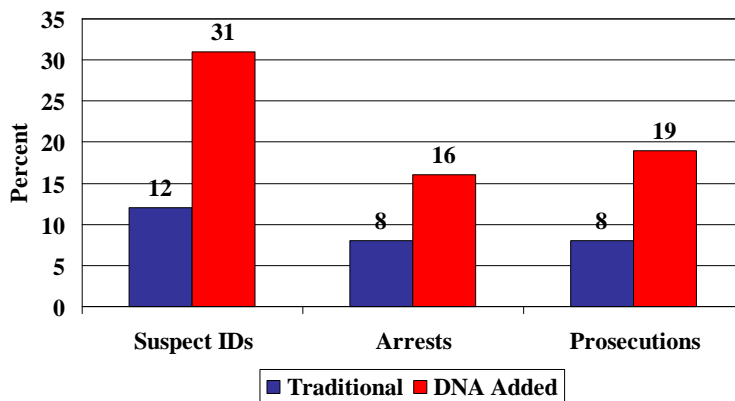
- Suspects identified in 31% of DNA cases; *
- Suspects identified in 12% w/ traditional inv. only;
- Arrests in 16% of DNA cases (n=173);
- Arrests in 8% w/ traditional inv. only (n=86);
- Accepted for prosecution in 19% of DNA cases;
- Accepted for prosecution in 8% w/ traditional inv. only;

* Traditional – 12%; DNA match – 16%; Forensic match – 3%

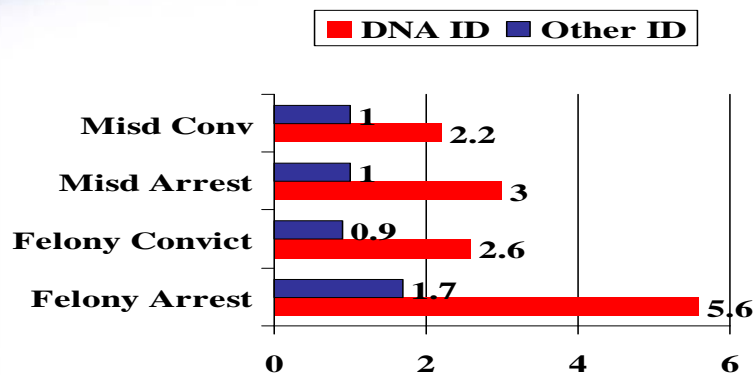
Criminal Histories of Arrestees

- Suspects arrested via CODIS ID had **triple** the prior arrests and convictions.
- DNA arrestees had 2.9 prior felony convictions and 5.6 prior felony arrests.
- Arrestees identified by traditional investigation had 0.9 prior felony convictions and 1.7 prior felony arrests.

Main Outcomes (2162 cases)



Arrestee Prior Records



DNA versus Fingerprints

- DNA evidence was collected in every case, but fingerprints were collected in 1 out of 3 cases.
- Comparing just cases with both types of evidence:
 - DNA (16%) identified **twice** the suspects (8%);
 - DNA (9%) yielded **three times** as many arrests (3%);
- Comparing all cases:
 - DNA (16%) identified **five times** the suspects (3%)
 - DNA (9%) yielded **nine times** as many arrests (1%).

Costs per Process Step

Process Step	Low	High	Average
Obtain Profile	\$154	\$980	\$510
Match and Verify	\$ 83	\$362	\$205
Investigate/Arrest	\$300	\$412	\$365
Post Arrest	\$108	\$838	\$317
All Steps	\$815	\$2481	\$1397

Costs per Benefit Realized

Benefit	Low	High	Average
Identify Suspect	\$1244	\$ 8147	\$ 4514
Arrest Suspect*	\$3679	\$27378	\$14178
Prosecute Case**	\$1903	\$12899	\$ 6183

- * Costs driven by percentage of arrests made
- ** Costs driven by DA acceptance rates

Summary of Findings

- DNA dramatically improves outcomes
- DNA far more prevalent than prints
- DNA database size affects outcomes
- CSIs, patrolmen are equally effective

Cost-Effectiveness Requires ..

- Good crime samples (CSI)
- Obtain valid profiles (CSI/Lab)
- High offender match rates (CODIS)
- Find and arrest offenders (PD)
- Prosecute and convict (Pros)
- PREVENT CASE ATTRITION

Necessary Policy Changes

- Train property CSIs in all forensics methods
- Management must reinforce DNA message
- Change detectives culture and practices
- Track progress from crime scene to courtroom