



Hey wait, it's not just about DNA! Ballistics Imaging as a Source of Investigatory Intelligence: ATF's NIBIN Program.
Presentation prepared for NIJ's Social Science Research on Forensic Science Topical Working Group Meeting, January 23-24, 2013.

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Opening the Black Box of NIBIN: Grant # 2010-DN-BX-0001

- Overview:
- What is NIBIN?
- Variation in hit communication: method and content
- Elapsed time as a performance metric for labs (nuanced but helpful):
 - Variation in labs across time
 - Variation in a comparative perspective
- Using NIBIN to ID homicide suspects
- Using NIBIN to prosecute criminal organizations
- Using desired goals to structure the management of NIBIN



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- Data and findings are derived from:
 - A. Site visit data from nine NIBIN partner sites.
 - B. Survey data from 112 NIBIN sites (or former NIBIN sites).
 - C. ATF/NIBIN hit data from 18 NIBIN sites.
 - D. Aggregate ATF/NIBIN hit and input data from all NIBIN sites.
 - E. In-person interviews with homicide detectives with a NIBIN hit (n=41 homicides), (n=4 agencies).
 - F. Background information from:
 - U.S. Department of Justice, Office of the Inspector General. (2005). *The Bureau of Alcohol, Tobacco, Firearms, and Explosives' National Integrated Ballistic Information Network program*. Washington, DC: U.S. Department of Justice.
 - Cork, Daniel L., Eugene S. Meieran, and Carol V. Petrie (eds.). (2008). *Ballistic Imaging: Accuracy and Technical Capability of a National Ballistics Database Committee to Assess the Feasibility, Accuracy and Technical Capability of a National Ballistics Database*. National Research Council. Washington, DC: National Academies Press.

1. n=140 NIBIN sites as of July, 2012

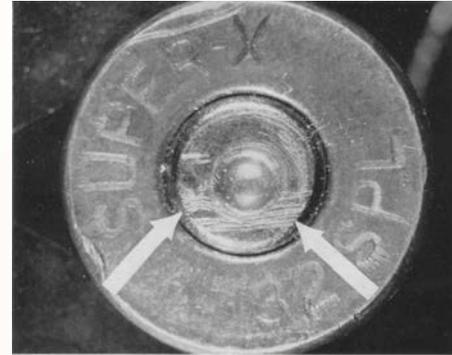


ATF's NIBIN Program

- National Integrated Ballistics Information Network (NIBIN).
- NIBIN terminals are located at 140 sites (state, regional, and local crime labs) in the US.¹
- Since program inception in 1999, NIBIN has produced 47,800 hits.
- A “hit” links two criminal cases via a common firearm.
- A “hit” does not necessarily link an individual perpetrator to the crime, only a common firearm.

1. n=140 NIBIN sites as of July, 2012. There were 236 NIBIN sites in 2005.

Images of spent brass (cartridge cases)



- Breech face mark
- Firing pin impression
- Ejector mark





Communication of Hits from Lab to Investigator: A Loosely Coupled System¹

- NIBIN sites differ in how they communicate a NIBIN hit to criminal investigators.
 - 45.5 percent use telephone
 - 30.4 percent use email in LIMS system
 - 17.9 percent use email or fax
- Sites differ in the amount of information communicated:
 - Some sites provide information before a report is written (fast).
 - Simple (“this case # hit with this case #”).
 - Detailed (dates, locations, offense type, victim and suspect names).
 - Some sites route hit reports to supervisors, some to the investigator, some to both, some to crime analysis unit, and some to police command staff.

1. Findings from survey of NIBIN partner sites, 2012. n=112 completed surveys



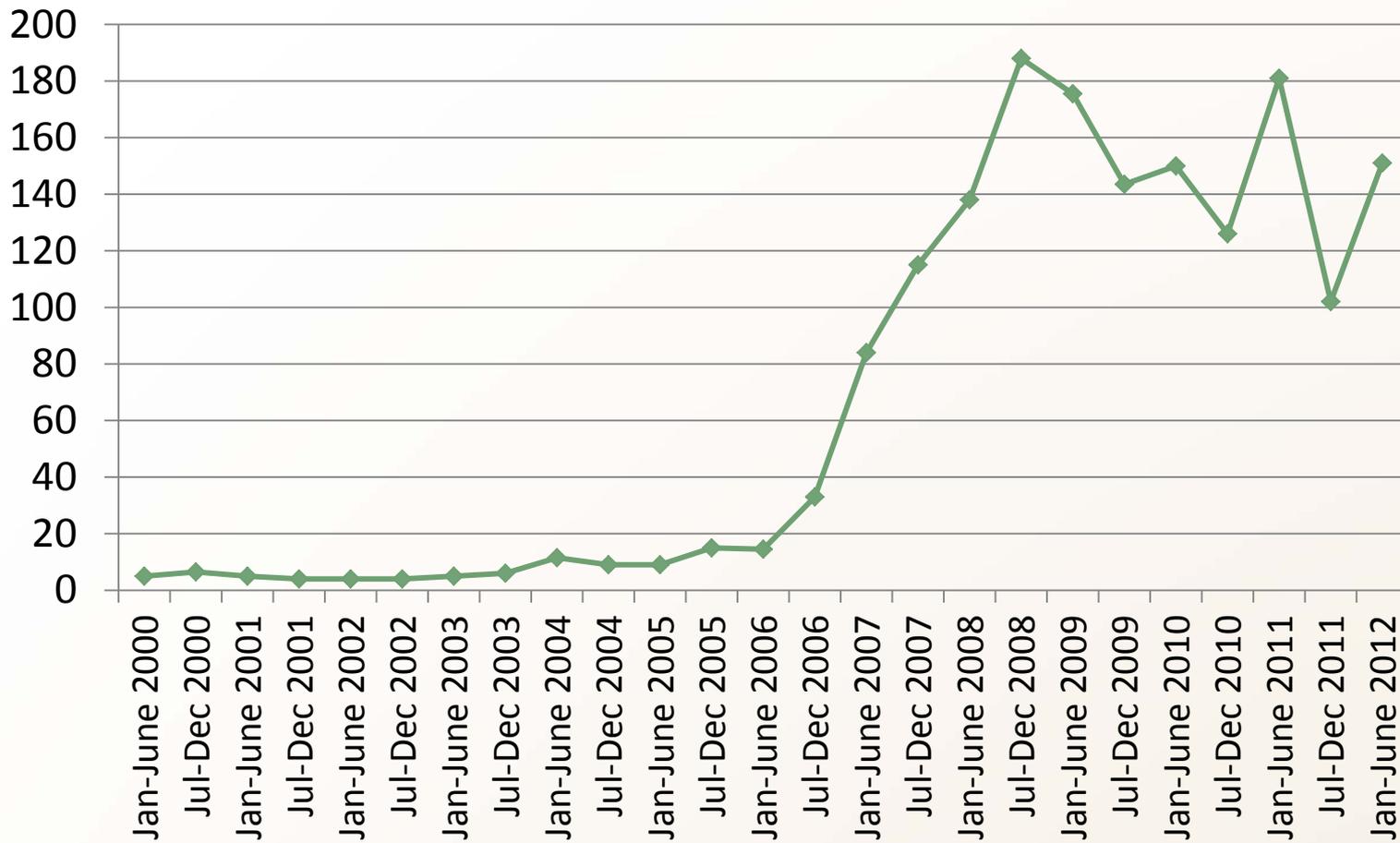
Performance Metrics: Processing Time

- Lag time between submission of evidence to the lab and entry into NIBIN.
- Survey data from NIBIN sites reveal delays in processing ballistics evidence (n=112 NIBIN sites):¹
 - Mean: 57.2 days
 - Median: 27.5 days
 - Min: 0
 - Max: 730 days
 - Sd: 96.7 days

1. Days between submission of evidence to lab and a report

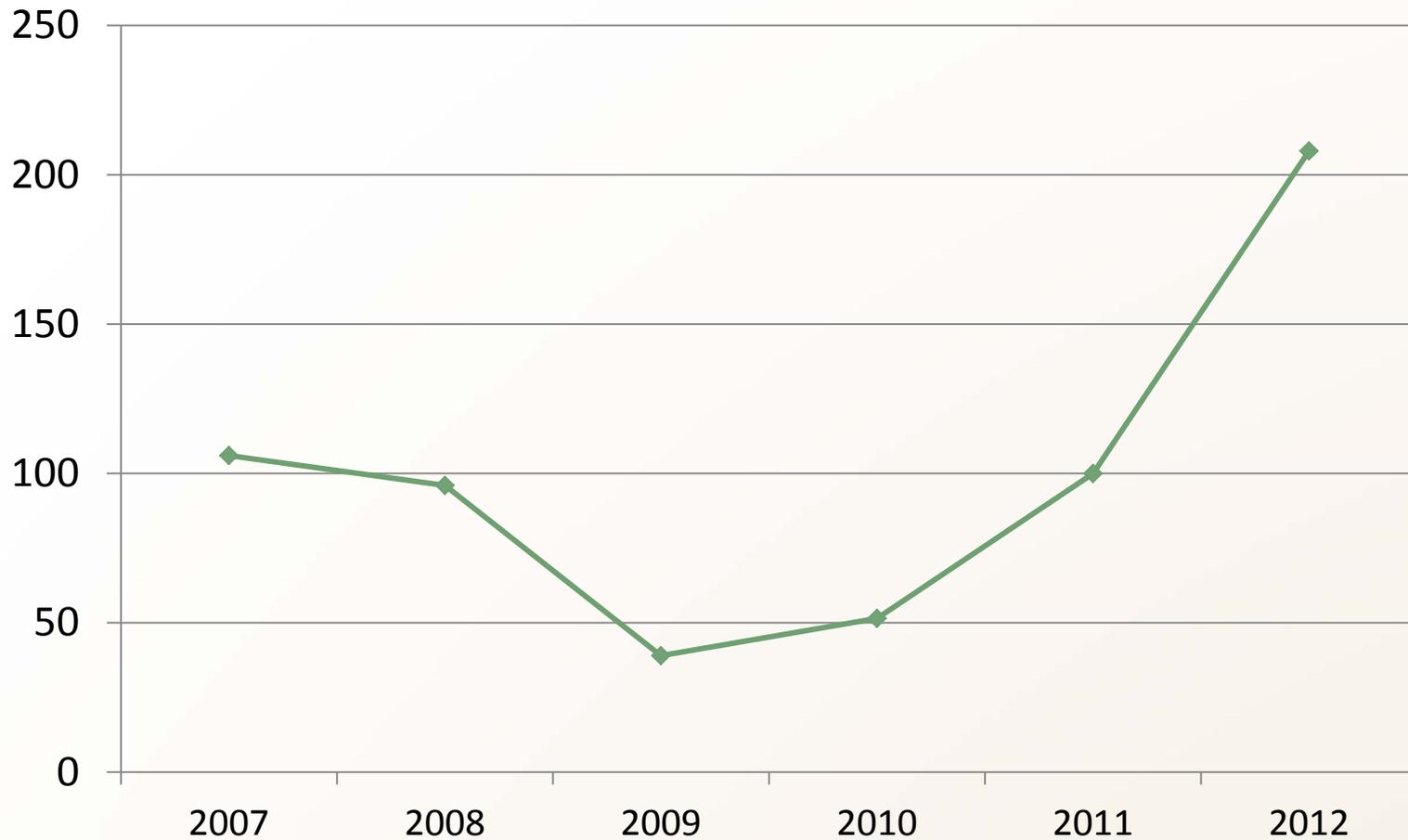


Median days between most recent crime and NIBIN hit report: One, large Police Department (Site H) (n=1129 hits)



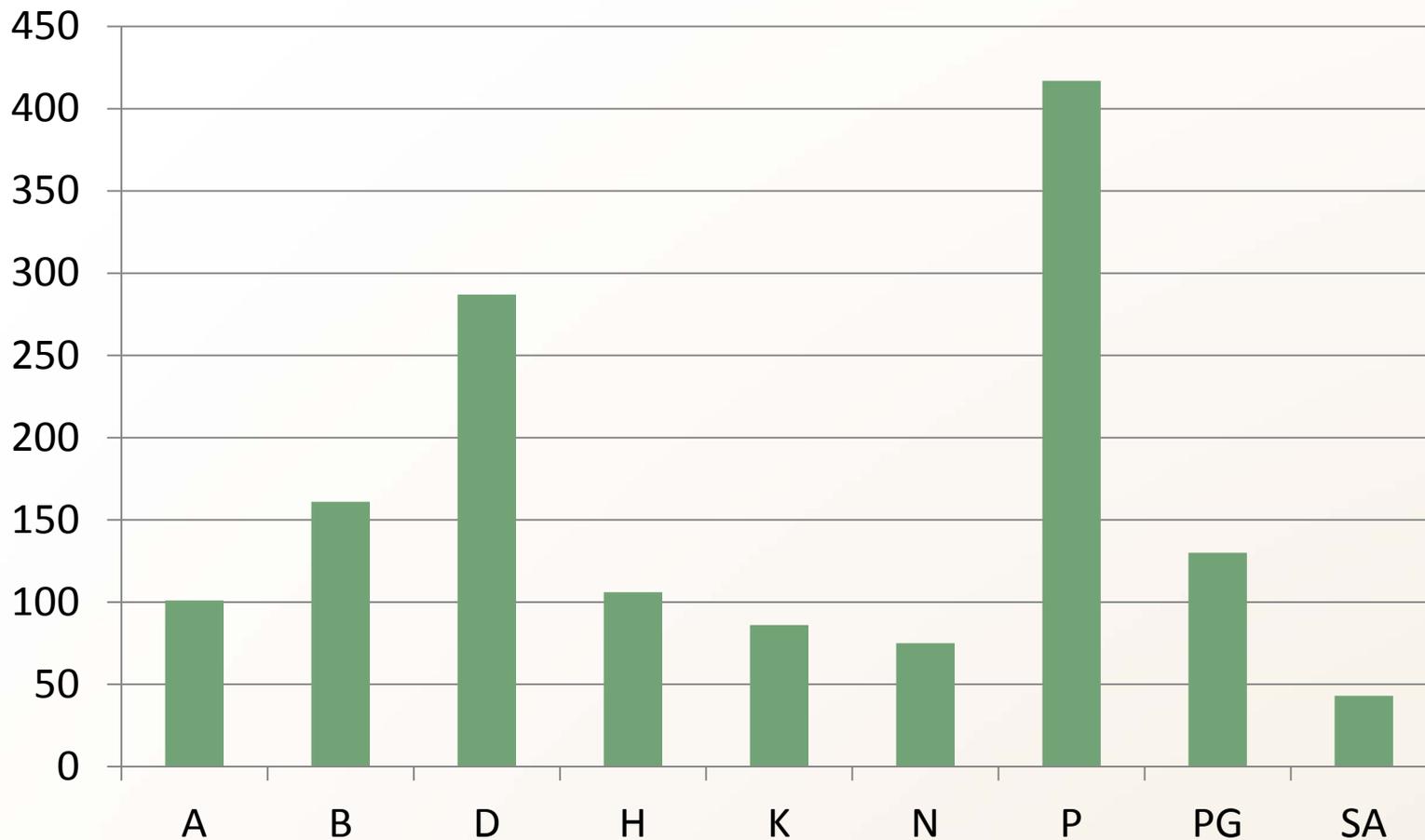


Median days between most recent crime and NIBIN hit report: One, medium-sized Police Department (Site K) (n=414 hits)



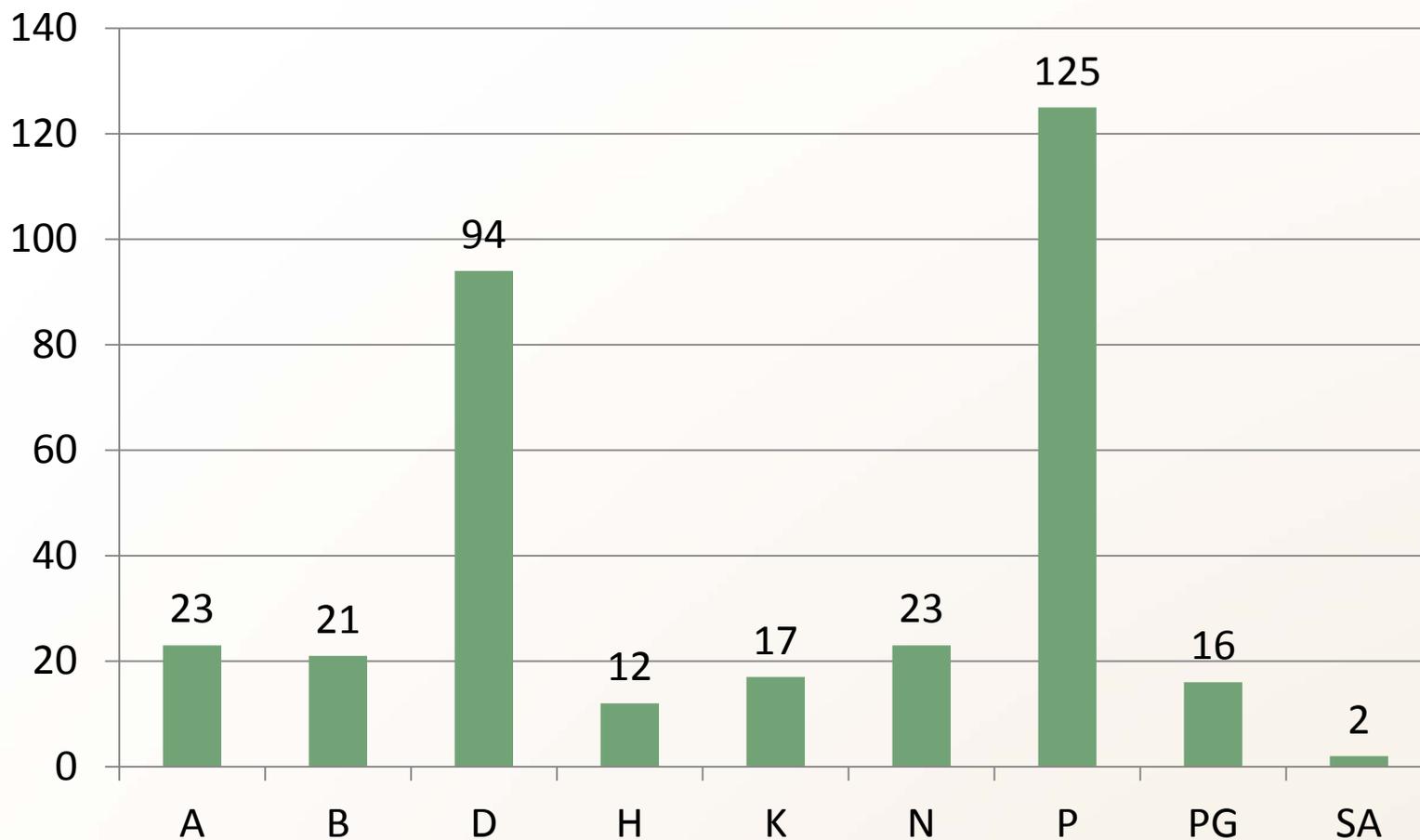


Median days between most recent crime and NIBIN hit report for nine NIBIN sites





Elapsed days for quickest 10 percent of hits for nine NIBIN sites





Investigator Interviews (n=41)

- Face-to-face interviews with homicide investigators in four police agencies.
- Unit of analysis: Homicide case with a NIBIN hit (n=41).
- Suspect ID'd and arrested due to NIBIN hit (n=1).
- Investigators in one agency used NIBIN data to verify information from confidential informants.
- Investigators sometimes used NIBIN hits to determine gang affiliation.
- DA's sometimes used NIBIN hits at the charging stage.
- Investigators find NIBIN hits useful, but not for ID'ing suspects.



Why don't investigators use NIBIN hits to identify suspects?

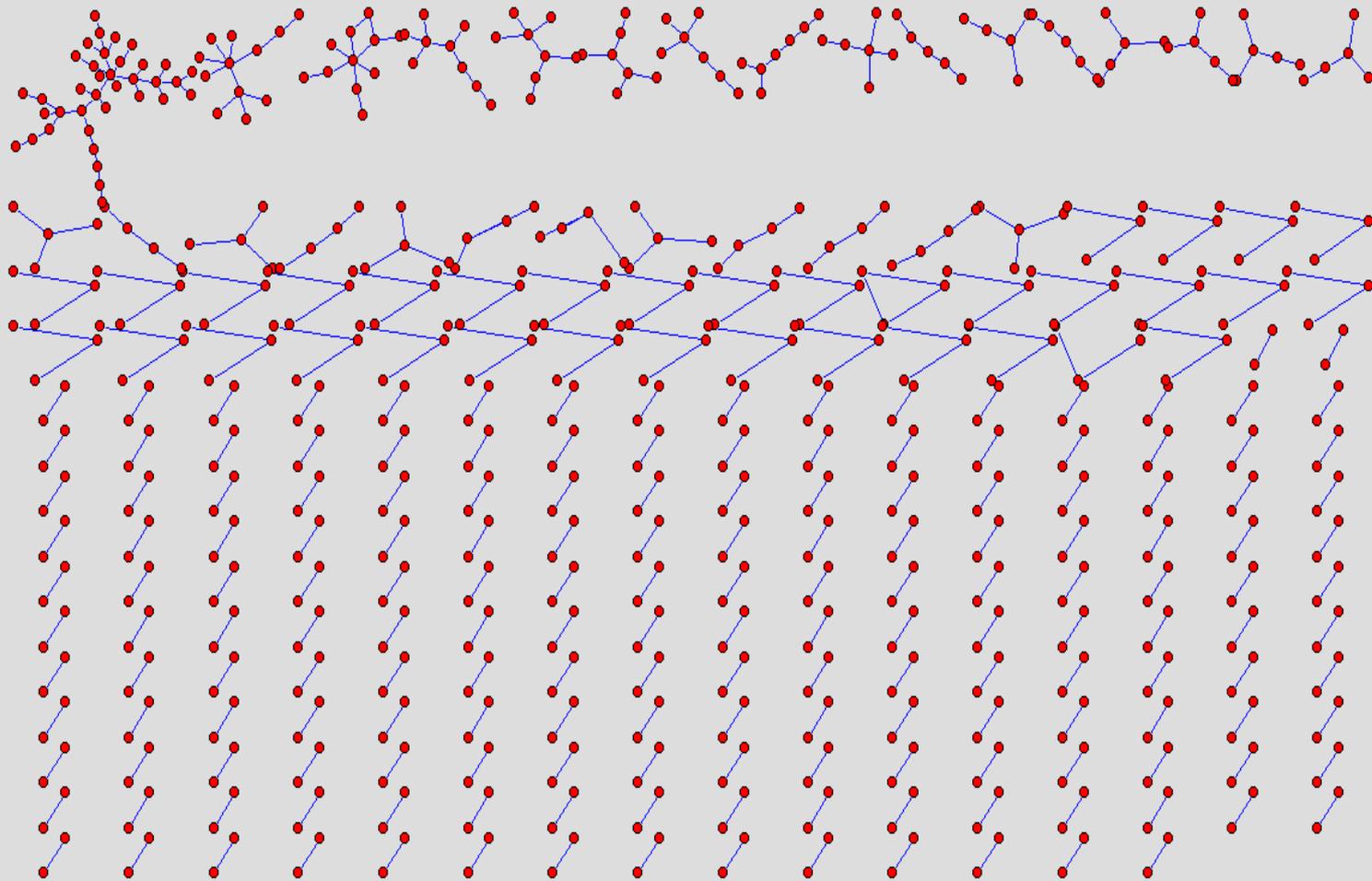
- 50 percent of US homicides are cleared within 7-17 days (Regoeczi et al. 2008 ;Wellford and Cronin 1999).
- NIBIN inputs take too long (mean entry time = 57.2 days).¹



NIBIN Hits as Intelligence on Criminal Organizations

- Some NIBIN sites use hits to identify and prosecute violent criminal networks.
- NIBIN hits that indicate gun sharing within gangs are used as evidence in RICO prosecutions.

NIBIN hits in one city (Site K): A simple network analysis





Two potential uses for NIBIN information: Intelligence on criminal organizations versus identifying suspects

- If we want to use NIBIN hits to identify and prosecute criminal organizations
 - EVERYTHING should be put into NIBIN.
 - Complete information is important.
 - Prioritizing and fast-tracking inputs matters less.
- IF we want to help investigators ID suspects quickly:
 - Remove impediments to processing (e.g., DNA and fingerprints).
 - Prioritize cases for fast-track analysis based on solvability.
 - Triage cases.



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