License Plate Readers

An example for evidence-based policing

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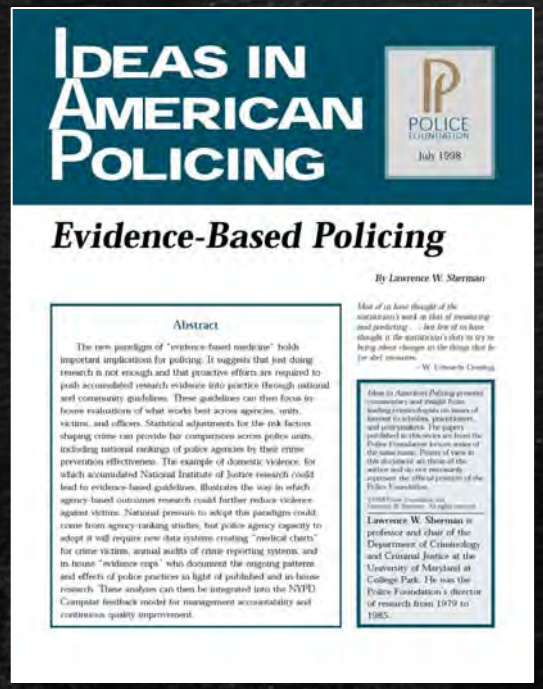
The Story of LPR and LPR Research

1. Evidence-based policing: A brief definition and context
2. LPR – early logic, support, concerns
3. Rapid diffusion of innovation absent of knowledge base
4. Post-hoc knowledge: The GMU LPR Experiments
5. Post-hoc knowledge: The GMU LPR Community Survey
6. Final Take-Away-Points

Evidence-based policing

Definition and Context

Evidence-Based Policing


IDEAS IN AMERICAN POLICING

POLICE FOUNDATION

July 1998

Evidence-Based Policing

By Lawrence W. Sherman

Abstract

The new paradigm of "evidence-based medicine" holds important implication for policing. It suggests that just doing research is not enough and that proactive efforts are required to push accumulated research evidence into practice through national and community guidelines. These guidelines can then focus in-house evaluations of what works best across agencies, units, victims, and officers. Statistical adjustments for the risk factors shaping crime can provide fair comparisons across police units, including national rankings of police agencies by their crime prevention effectiveness. The example of domestic violence, for which accumulated National Institute of Justice research could lead to evidence-based guidelines, illustrates the way in which agency-based outcomes research could further reduce violence against victims. National pressure to adopt this paradigm could come from agency-ranking studies, but police agency capacity to adopt it will require new data systems creating "medical charts" for crime victims, annual audits of crime reporting systems, and in-house "evidence cops" who document the ongoing patterns and effects of police practices in light of published and in-house research. These analyses can then be integrated into the NYPD Compstat feedback model for management accountability and continuous quality improvement.

Lawrence W. Sherman is professor and chair of the Department of Criminology and Criminal Justice at the University of Maryland at College Park. He was the Police Foundation's director of research from 1979 to 1985.

"Police practices should be based on scientific evidence about what works best."

Lawrence Sherman, 1998

"police practices… should be informed by the best knowledge that can be acquired about the nature of those problems and about the effectiveness of various strategies for dealing with them."

Herman Goldstein, 2003

Evidence-Based Policing

- Policies and practices reflect crime prevention principles derived from rigorous research and analysis.
- Some decisions include and incorporate knowledge from analysis, evaluation, and research.
- Research and analysis are “a part of the conversation” when police practitioners strategize about crime prevention.

Evidence-based policing and law enforcement planning

BUSINESS

- Efficiencies (speed, rapid response)
- Response to demand (911, media)
- Cost-benefits
- Merit-based employment and supervision

GOVERNANCE

- Crime reduction (proactive, place-based, focused)
- Supply of legitimate effective crime control (values of advanced democracy, science)
- Cost-*effectiveness*
- Civil service-based employment and supervision

License Plate Readers

An example of why evidence-based policing is an important contextual framework for planners

LPR: Beginnings

Early support, logic, and marketing to LEAs

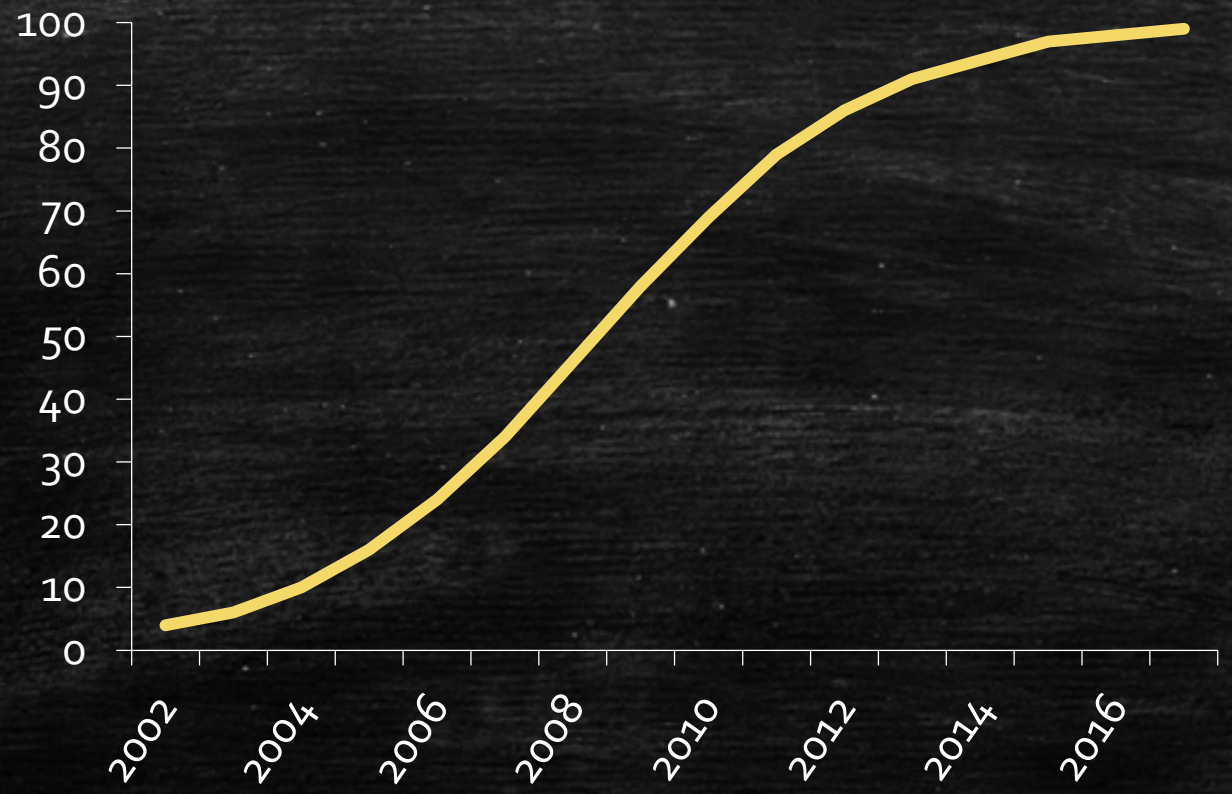
From Look-Out-Lists to LPR

YLK 1254	YLK 1263	BVJ 6551
YLK 1243	SHF 1392	YLK 1256
SHF 1406	YLK 1265	FHD 8941
YLK 1252	FHD 8944	YLK 1262
BVJ 6559	BVJ 6554	BVJ 6556
BVJ 6551	YLK 1251	BVJ 6545
YLK 1256	SHF 1395	FHD 8949
FHD 8941	BVJ 6549	YLK 1249
YLK 1262	BVJ 6546	FHD 8934
BVJ 6556	BVJ 6548	FHD 8940
BVJ 6545	SHF 1393	YLK 1248
FHD 8949	FHD 8935	FHD 8945
YLK 1249	BVJ 6561	BVJ 6552
FHD 8934	SHF 1403	SHF 1405
FHD 8940	SHF 1404	YLK 1260
YLK 1248	FHD 8943	SHF 1402
FHD 8945	YLK 1244	YLK 1250
BVJ 6552	FHD 8952	FHD 8951
SHF 1405	FHD 8939	YLK 1257
YLK 1260	BVJ 6555	SHF 1394
SHF 1402	FHD 8937	YLK 1264
YLK 1250	SHF 1391	BVJ 6557
FHD 8951	SHF 1399	SHF 1390
YLK 1257	YLK 1258	SHF 1398
SHF 1394	SHF 1389	SHF 1408
YLK 1264	FHD 8948	YLK 1246
BVJ 6557	FHD 8953	BVJ 6544
SHF 1390	BVJ 6562	SHF 1409
SHF 1398	SHF 1397	SHF 1407
SHF 1408	BVJ 6563	FHD 8936
YLK 1246	SHF 1396	FHD 8954
BVJ 6544	FHD 8947	YLK 1259
SHF 1409	YLK 1261	BVJ 6560
SHF 1407	BVJ 6553	BVJ 6550
FHD 8936	YLK 1266	FHD 8950
FHD 8954	BVJ 6558	BVJ 6564
YLK 1259	SHF 1400	BVJ 6547
BVJ 6560	FHD 8942	YLK 1247
BVJ 6550	FHD 8938	YLK 1245
FHD 8950	YLK 1253	YLK 1255

Early marketing of LPR

- The technology itself and its ease of use
- IACP 2007 Resolution
- UASI grants and other funding sources
- LPR manufacturers and excellent marketing
- Early research studies supporting LPR efficiencies

The rapid diffusion of LPR



Unanswered Questions about LPR

- Can LPR actually prevent and reduce crime?
- What is it being used for in agencies, and how diffuse is this technology?
- How salient are community concerns regarding LPR?
- What is the cost-effectiveness of LPR?
- What is the impact of LPR on police legitimacy?

National Survey of LPR Use (*Lum et al., 2009*)

- 37% of large and 4% of small agencies used LPR
- *21% of those who did not use LPR said they were acquiring LPR or access to LPR by 2010/2011.*

More Information About this Diffusion

- Use of LPR?
  - Prevention use: Auto violations/theft 91%
  - Location of LPR: Mounted on moving vehicles 83%
  - Operator: Uniformed patrol 77%

- Cost-effectiveness?
  - Assessment of LPR efficiency? 15%
  - Impact evaluation of LPR? 0%

The strategic planner's technology challenge:

Rapid diffusion of a "logical" technology in a low information environment

&

Adoption of innovation in light of unstable understanding of core functions of policing.

The LPR Evaluations

Knowledge “after-the-fact”

GMU Experiments and Surveys by Lum et al.

PERF experiment by Taylor and Koper

GMU LPR Experiments

- **QUESTION**: Does LPR reduce, prevent, deter crime?
- **METHOD**: Randomized controlled, place-based experiment in two adjacent jurisdictions using "most likely, optimal conditions"
- **NTERVENTION**: Sweep and Sit with Koper Curve in hot spots
- **OUTCOMES MEASURED**: Specific/General deterrence of all crime, auto related crime, and auto theft/theft from auto
- **FINDINGS**: No significant differences found between experimental and control groups.

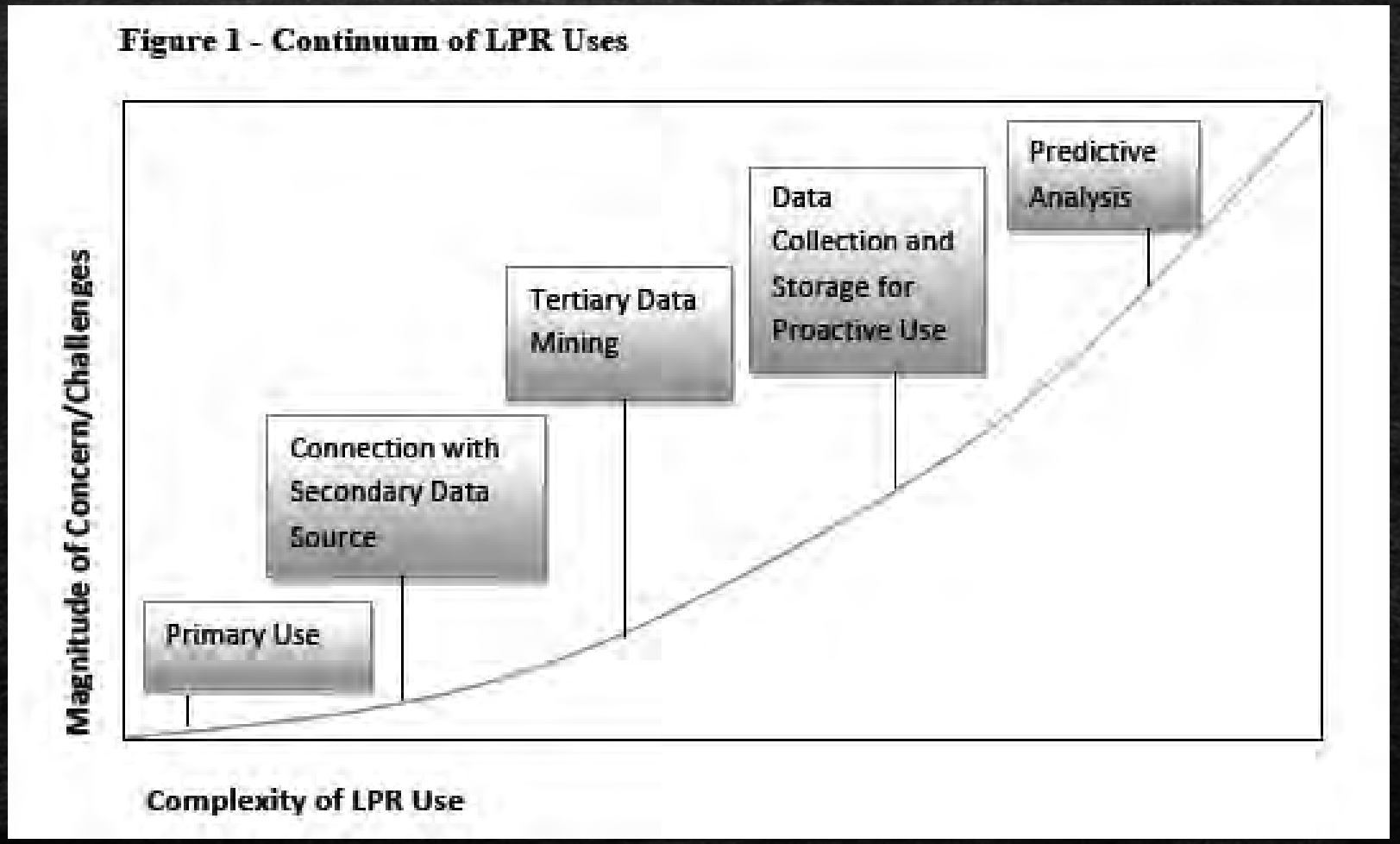
CAVEATS-Effectiveness of LPR depends on:

- The manner in which it is deployed
- The intensity of that deployment
- The information accessed by LPR
- The interaction between LPR use and crime analysis
- The use of the data collected by LPR
- The motivation and use of LPR by officers

The LPR Community Survey

Assessing community beliefs about LPR

Hypothesizing about community beliefs



Findings of the Community Survey

- High level of community support for most uses of LPR*
- 50-87% of community "support" or "strongly support" use of LPR data in ways other than to detect stolen autos or unpaid tickets and fines. (opposite of our hypothesis)
- The more trust a respondent had for the police, the less concerned he or she was about the use/misuse of LPR.

Final Take-Away-Points

Technology and evidence-based policing

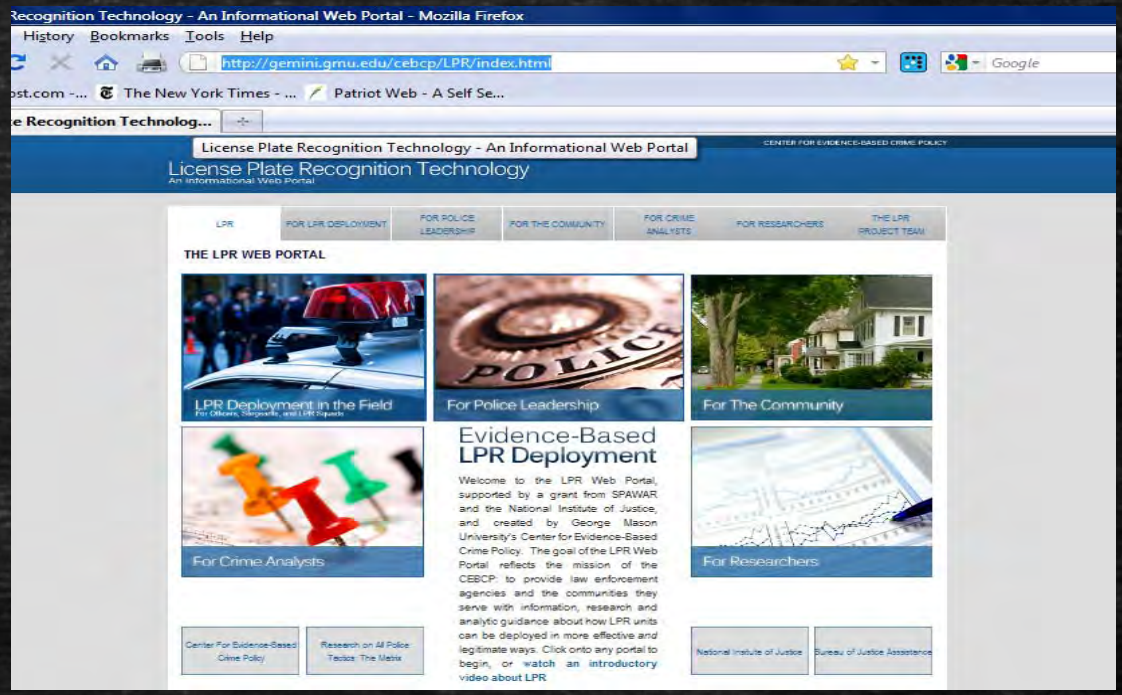
Evidence-Based Policing and LPR

- Technology often rapidly diffuses in a low-information environment.
- In such an environment, technology can reinforce ineffective, traditional and reactive policing.
- A knowledge base and relentless analysis and evaluation provides important information to make better decisions .
- Police often playing catch- regarding technology, which in the end becomes costly both monetarily and for the organization.

What we still need to know

- Can LPR be used in a way that can effectively reduce crime?
- Can a sensible LPR data use policy be developed to facilitate using LPR to reduce and prevent crime?
- In what ways can we maximize our cost-effectiveness of LPR?
- What level of LPR use is needed to have an effect?
- What is the impact of LPR use on police organizations?
- How can the evidence-base be disseminated and used for decision making?

Thank you



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CEBCP Website: www.cebcp.org
LPR Web Portal: http://gemini.gmu.edu/cebcp/LPR/index.html