# New Perspectives in Policing

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HARVARD Kennedy School
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## One Week in Heron City (Case B)

A Case Study

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### Introduction

The Heron City case study is divided into three parts — Case A, **Case B** and Teaching Notes. The case study is designed to serve as a basis for discussions regarding: (a) the relationships among a range of current policing strategies, and (b) the nature of analytic support that modern operational policing requires.

The broad strategic or organizational approaches discussed in the case study include:

- Community policing.
- Compstat (as an organizational approach to crime-reduction tasks).
- Problem-oriented policing.
- Evidence-based policing.
- Intelligence-led policing.

# One Week in Heron City: Case B

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**Heron City is fictional. So are all the characters in the following narrative.**

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## Wednesday, Late Morning: Nigel Jewett, Junior Analyst, IT[1] Services

As Chief Harrison was leaving the IT department after her meeting with IT Director Phil Goring, she stopped to say hello to Nigel. Nigel showed her some license plate images on his computer screen, which the Chief agreed were pretty easy for the human brain to interpret, and which the system ought to have read correctly. Nigel explained to the Chief that the biggest problem was the system's failure to distinguish between six and eight, particularly if a license plate was dirty. He believed that the misreading of sixes and eights, where the software interpreted one of these digits as the other, accounted for about 80 percent of the errors he had examined. The next biggest source of errors was failure to distinguish the letter "I" from the number "1."

As Chief Harrison was about to leave, Nigel asked her, somewhat shyly, if he could talk to her sometime. "About anything in particular?" she asked. "About stolen cars," he replied. She told him she was about to go and find a cup of coffee in the cafeteria and asked him if he'd like to walk down with her.

Following are excerpts from the first meeting between Chief Laura Harrison and Nigel Jewett, junior analyst, IT department. The meeting takes place in the headquarters cafeteria.

**Chief Harrison:** I understand from Mr. Goring that your job is pretty repetitive. We appreciate you doing this analysis. I understand it is important for the sake of improving the system. So I hope you can stand it.

**Nigel Jewett:** I suppose it is important. But it is certainly not what I like to do.

**Chief Harrison:** What do you like to do?

**Nigel Jewett:** Data analysis. I majored in oceanography and marine biology, and I just love to find out the way the world is and the way it works.

**Chief Harrison:** What you're doing isn't data analysis?

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[1] Information Technology

**Nigel Jewett:** No. Nobody here does much data analysis. What I'm doing is data quality analysis. As if the end goal is to have a vast library of perfect data! What's the point of having a vast library of perfect books if nobody's reading them?

**Chief Harrison:** What sort of analysis do you like to do?

**Nigel Jewett:** Oh, all sorts. Whatever helps find out how things work. When I was eight years old, my parents gave me a book called *How Things Work,* and ever since then I've been taking things apart and sometimes [he smiles] putting them back together again. Then, in college I discovered how to take the world apart using a range of data sources, and I'm waiting for a job at NOAA,[2] which they've promised me, so I can start doing that kind of work all over again.

**Chief Harrison:** What is it you want to take apart, once NOAA lets you in?

**Nigel Jewett:** I do need to tell you something about the stolen cars. But what I really want to work on, at NOAA, is hypoxia.

**Chief Harrison:** Hypoxia? Forgive my ignorance. What is hypoxia?

**Nigel Jewett:** Dead zones in the ocean. Particularly in the Gulf of Mexico. They are seasonal, but they're getting bigger. They can be hundreds of miles across now. One year, the hypoxic zone in the Gulf was as big as the state of Massachusetts.

**Chief Harrison:** Dead zones?

**Nigel Jewett:** Yes. No oxygen, or extremely low levels of oxygen, from the bottom of the ocean all the way up to a depth of about 9 meters. Hypoxia is related to excessive nutrient loadings and red tides, but it is a distinct phenomenon and not the same as red tide and algae blooms, which are much better known and better understood on the whole.

**Chief Harrison:** So, how do you study such a thing? How does that relate to data analysis?

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[2] The National Oceanographic and Atmospheric Administration

**Nigel Jewett:** One of my specialties was SONAR.[3] I used to love sifting through databases of SONAR and sound recordings and figuring out how we might or might not be able to monitor these dead zones. Or their edges. Shoals of fish gather around the edges of the zone. They can't go into it because they can't breathe.

**Chief Harrison:** Is that typical of the type of work that marine biologists do?

**Nigel Jewett:** Well, I like to do anything that involves finding meaning, or patterns or structures, from huge dumps of otherwise useless data. That's what I mean by data analysis.

**Chief Harrison:** What sort of patterns do you search for in marine biology?

**Nigel Jewett:** All kinds of things. There's one class of analysis where you look for things you can describe but that shouldn't happen. Like a hypoxic area because there are no crabs on the bottom when there should be, and no shoals of fish for miles. Where a bottom-trawl would come up with no living organism. And for very different types of research, other oddities, for example: a female dolphin traveling alone. Dolphins don't generally travel alone, except for the older males who peel off when it's time to go off and die. First you describe what you're looking for. Then you work out what the data representation of that thing would look like, if it existed, within the data that you have or data you can get. Then you work out how to search for it within the data without even knowing whether it might be there or not.

**Chief Harrison:** Are there other classes of analysis you use?

**Nigel Jewett:** Yes. Another big category is deviations from known patterns. When migration patterns change. When ocean temperatures deviate from seasonal norms. That's particularly important for many species in spawning seasons. A couple of degrees off normal is enough to substantially reduce a spawning yield. And I did some work once on early signs of sickness and stress in coral reef ecosystems.

**Chief Harrison:** Can you tell if people are sick? If the population had flu for instance? From data analysis of various types?

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[3] Sound navigation and ranging (SONAR) is a method of locating objects in the water and determining their echo characteristics.

**Nigel Jewett:** I'm sure you can. Google can. They can see how many people are looking up "flu symptoms" for instance. You could watch sales of health-related items or prescriptions, assuming you can collect all that data from the pharmacies. Epidemiologists have all those kinds of monitoring systems, I'm pretty sure.

**Chief Harrison:** Could you tell a flu outbreak from traffic patterns? I guess you could see if there was any dip in overall traffic volume, and that might give you a citywide indication.

**Nigel Jewett:** You could probably do much better than that. Maybe if you focused on commuters.

**Chief Harrison:** Could you pick out the commuters?

**Nigel Jewett:** Sure. At least, you could if you could just get the data onto some usable platform where you could play with it. We don't have such a thing here at the moment. But you could identify the commuters by the fact that they would exhibit a daily-repeat pattern in their movements. And then if you were interested, you could count by 10 a.m. — for instance — how many of the normal Thursday morning commuters had not gone to work this particular Thursday. That might be more accurate than overall volume, because you could ignore all the traffic passing through and the tourists, and all of that other noise.

**Chief Harrison:** Could you tell if someone was being followed, from the ALPR data?

**Nigel Jewett:** Someone in particular or someone in general?

**Chief Harrison:** Someone in particular. Like Hayley Scott.

**Nigel Jewett:** Should be able to. It's an easy enough pattern to describe and then search for. One car following close behind another, and doing it more often than you'd expect by chance.

**Chief Harrison:** Are you aware that the Scott murder inquiry had an outside contractor look at this already? And they didn't find anything of interest except that her husband often escorted her home, which is hardly surprising in the circumstances.

**Nigel Jewett:** I didn't know that's what the dump was for. My boss asked me to do the data dump of one month's ALPR data, which I did, warts and all. He only told me he had a special project to do for the detective branch, and would I please run the extraction routine. It was all a bit

hush-hush for some reason, and we weren't supposed to talk about it. This seems really odd to me. It's not just that data analysis isn't done here. I almost get the impression it's prohibited. Like we'd get into legal trouble if we actually used the data for anything! Anyway, I did the dump for him. But I bet the contractors didn't do the job right.

**Chief Harrison:**    What do you mean, "Didn't do the job right"?

**Nigel Jewett:**    They don't know the data. Do they know about the transposition errors? Did they correct for them or allow for them in the analysis?

**Chief Harrison:**    I don't know. Do you think an 8-percent-error rate matters much when you're looking for a pattern of stalking?

**Nigel Jewett:**    That's actually rather an interesting subject for scientists who care about pattern recognition. Some structures that you look for fall apart pretty quickly with a data error rate of only 1 percent or so. Other structures remain pretty visible even with error rates up to 50 percent. Some patterns you can see quite clearly with only 10 percent of the relevant information. But I have no idea how this outside group approached the problem and what allowances they made. And so I don't know how robust the search method they used would be in compensating for missing or bad data.

**Chief Harrison:**    You said "structures." What do you mean by that? Like a dolphin traveling alone?

**Nigel Jewett:**    Well, structures are higher-level objects than individual items, like a dolphin or a sick whale. You can search for structures of coincidence that ought not to be there. Or you can search for structures that should be there but aren't. Like a whole group of commuters not going to work today. These are the four main general classes of things-to-search-for within massive databases: (1) known "bads," (2) deviations from normality, (3) presence of structures that shouldn't be there and (4) absence of structures that should. Whatever the thing is you are interested in, you figure out the data representation, then you create an algorithm to search for it and to display the results in a form you can use, and then you test the output to see if it means what you thought it meant. Then you go around through the refinement loop several times, until you've got a robust algorithm, showing you something you wanted to know.

**Chief Harrison:** I've heard that word "algorithm," but never really understood what it means. In fact, one of my husband's brothers describes himself as an algorithmist. I know he works at Los Alamos labs and, last I heard, he was working on credit-card fraud detection for credit card companies. I thought he was a computer programmer. Is it the same thing?

**Nigel Jewett:** Not really. You can represent an algorithm in a program, but you shouldn't need to do any programming yourself if you've got the right kind of high-level query tools. An algorithm is simply a series of logical steps, in order, that get you the analytic product you want from the data you start with. I use Excel a lot — simple spreadsheets — and whatever you do once, you can record as a macro. You don't need to know any programming language. Then, if you want to repeat that analysis, you just call the macro. One key. Can be pretty efficient. The only problem is that you can only stick a million or so records into any one spreadsheet, which is a bit of a limitation for some things. So, for bigger datasets, I have to use some other tools.

**Chief Harrison:** Why do you say you can't do analysis of the ALPR data here in the IT department?

**Nigel Jewett:** That's what I wanted to tell you about, ma'am. Here, the system is restricted to the uses already defined in the contract ahead of time. The system gives alerts. And apart from that it just stores the data. There's no facility to slice and dice or play around with the data. The contract was set up on the assumption that they could predict, ahead of time, everything they'd ever want to do with the data. That's crazy. No one ever knows that up front.

**Chief Harrison:** So you can't hunt for dolphins traveling alone? Or for anything else of interest?

**Nigel Jewett:** Well, I can. That's the point. But not here. And my boss is only interested, unfortunately, in data quality. If I try to poke around and do something useful with the data, like figure out what's happening to the stolen cars, not only do I have to mess with the operating system (and potentially upset the vendor) but I also don't keep up with my workload schedule, which already takes me seven hours a day at the workstation. And apparently it might be frowned upon, legally, as well.

**Chief Harrison:** So what do you do?

**Nigel Jewett:** What I normally do is get bored, and my eyes get sore. What I did this time is, I took a copy of one month's data — the extract I was asked to run — and took it home with me. On my USB stick, 25 gigabytes. Not the images, of course; that would be way too much data. Just the extracted data. Maybe I shouldn't be telling you this!

**Chief Harrison:** Why on earth did you take it home?

**Nigel Jewett:** So I could load it onto my computer and use my own tools and macros. I've built up a pretty useful collection of them over time. The system dump comes out in a sort of flat-file, comma-delineated format and you can read those into Excel if you know what you're doing. You have to strip out a whole bunch of spurious characters and so on. But you can get the data in a form you can shuffle, and filter and carve up. So, then I could dive down into the data and swim around a bit.

**Chief Harrison:** And what did you see?

**Nigel Jewett:** I think you've got three different stolen car problems. Not just one.

**Chief Harrison:** What do you think they are?

**Nigel Jewett:** First of all, there's the ordinary joyriding. Seems to be older cars on the whole. They mostly stay within the city. They're found — according to the stolen car report data in the system — within a day or two. And damage seems to be minor and miscellaneous. Not deliberate vandalism or anything like that.

**Chief Harrison:** OK. That's not the piece that everyone's baffled by at the moment. What about luxury cars?

**Nigel Jewett:** That's the next piece. If you filter out the recovered cars, and rank order the remainder by reported value, then the top 100 cases are dominated by three makes: Lexus, BMW and Mercedes.

**Chief Harrison:** Yes, we knew that, I think. But why aren't we getting alerts on these? Don't they go past the ALPR locations?

**Nigel Jewett:**    Yes, they do. The reason you don't get alerts is because they haven't been reported stolen at the time they go past the ALPRs. They are typically reported stolen two to three hours after the last ALPR sighting within our area.

**Chief Harrison:**    So you think the owners are driving them away somewhere, and reporting them stolen later?

**Nigel Jewett:**    No. It is not the owners. I looked at the stolen-from locations, and they seem to be different parking lots, spread all over town. But they are all connected to similar types of establishments.

**Chief Harrison:**    Like what?

**Nigel Jewett:**    Cinemas. Restaurants. Theaters. Parking lots in the theater district. These are all places where you know, when a car arrives, that the owners are going to be busy for at least two hours. Watching a movie. Having their meal. Whatever they're there for. Which, I think, gives the thieves time — assuming they watch the car arrive and steal it right away — to drive it out of our area, and even past our ALPRs, before it gets reported missing.

**Chief Harrison:**    Smart enough. So you think they are targeting not only particular types of vehicles but patrons of particular types of establishment just to cut down the risk of alerts? Can you see where they are going?

**Nigel Jewett:**    I think this is a theft-to-order operation. The heaviest concentration, in terms of time, is Wednesday and Thursday evenings, between 7 and 10 p.m. Those are the times of the last ALPR sightings, within our area, of luxury vehicles subsequently reported stolen but reported the same night. I have a graph of these times for that defined subset. The spikes are obvious. And where are they going? The last sightings are nearly all on I-572, southbound for Maynard.

**Chief Harrison:**    How come we're not getting recoveries from Maynard? Do you think they don't stay in Maynard?

**Nigel Jewett:**    I don't. There's a container ship that leaves from Maynard every Friday morning for Rio de Janeiro. I think they're being shipped out on that.

**Chief Harrison:**    How on earth do you make that connection?

**Nigel Jewett:**    I figured it must be organized. The coincidences were just too many to be isolated criminal actions. This is one of those structures that shouldn't be there. It shows that this is not a rash of isolated crimes. And when I saw the I-572 connection, I wondered about the port and wondered where the market was for all these cars. So I Googled "Lexus, BMW, Mercedes," just to see what would come up.

**Chief Harrison:**    And what came up?

**Nigel Jewett:**    That was hopeless. A huge list of car dealerships. So, then I tried the same thing with "second hand." Same thing. Hopeless. Then I typed in the three makes with "wholesale," and I started getting hits on a lot of parts distributors in Latin America. Apparently there is a real clamor for parts, for these cars in particular, all over Latin America and Brazil in particular. I think these cars are worth a fortune chopped up into parts. Not whole. So it's a wholesale export operation, in parts, and we should probably talk to Customs.

**Chief Harrison:**    All this analysis … is this the type of analysis that criminologists do? Or do you marine biologists have your own approach?

**Nigel Jewett:**    I think the criminologists and social scientists worry a lot more about statistics, and regressions, and things like that. I'm actually not very good at that stuff. I failed stats in college and was therefore not allowed to take the regression course. I was never really comfortable with the idea of randomness anyway. Or maybe I just wasn't taught probability theory particularly well. But that's not the type of analysis scientists do very much anyway. When you're studying natural systems and trying to figure out how they work, you go at it with a much more open mind. You don't assume one particular analytic method is going to show you anything. You keep an open mind about the nature of the thing, and the structure underneath. You have to get under the covers, down in the weeds, and see what you see. Then you can worry about models and theories, and pick and choose methods that might actually make sense and are based on what you've observed, and so on. But at a much lower level. All the stuff that really counts is beneath the surface. And you have to find it first, and look at it, and understand what type of thing each one is.

**Chief Harrison:**    Is that like "finding distinct subcomponents of a crime problem, and studying their unique characteristics," like Herman Goldstein said?

**Nigel Jewett:** Rather than assuming a crime rate is just a crime rate, and treating it as if it were just one generic thing? Yes. I haven't heard of Goldstein. But that does sound exactly right.

**Chief Harrison:** Why don't you use regression analysis since criminologists seem to use it all the time?

**Nigel Jewett:** Yes, they do. And economists, and social scientists. But that's because they focus on a very particular set of models or theories about how the world works. And, on the whole, I don't think the world works that way. Most problems aren't just one thing or one object, dependent on a bunch of high-level factors. That seems to be the basis for most regression analyses. Most problems have a texture beneath, and a lot of parts and pieces, and each of those separate components all behave quite differently. And to figure out how the natural world behaves, you have to dive down among the parts.

**Chief Harrison:** And swim around?

**Nigel Jewett:** Yes, ma'am. Swim around. See what there is to see. Enjoy the colors and the spectacle.

**Chief Harrison:** And watch out for the sharks. And stingrays. What's the third piece, by the way?

**Nigel Jewett:** Oh, newer cars but not luxury ones. They're being driven to some specific locations and dumped. And, they have the built-in GPS[4] systems stripped out of them.

**Chief Harrison:** Nigel, this is very interesting stuff. Have you looked at the Hayley Scott case at all?

**Nigel Jewett:** No, ma'am.

**Chief Harrison:** Do you have her license plate number?

**Nigel Jewett:** I can get it from the registry files, provided it hasn't been blocked.

**Chief Harrison:** No more taking the data home, you understand? That's not allowed. Encrypted or not. Doesn't matter. Bring your computer and your macros in here. Do you still have the data for that one month leading up to the murder?

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[4] Global Positioning Satellite

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| **Nigel Jewett:** | Yes, ma'am. On my data stick. |
| **Chief Harrison:** | I have two jobs for you. Can you write up what you've told me about the three components of the stolen car problem? Less than five pages. Just notes is fine. I'll want you to come with me to the senior staff meeting Friday morning, if you can. |
| **Nigel Jewett:** | Yes, ma'am. What I should say to Mr. Goring? |
| **Chief Harrison:** | You should leave that to me. The other thing is, take a few hours, if you can, and see if you can figure out if Hayley Scott was being followed. OK? |
| **Nigel Jewett:** | Which one first? |
| **Chief Harrison:** | Hayley Scott. |
| **Nigel Jewett:** | OK. By the way, there's one other thing I'd be interested to look at sometime. |
| **Chief Harrison:** | What's that? |
| **Nigel Jewett:** | The accident rate in town. |
| **Chief Harrison:** | Why? It just went down this last month by about 10 percent, didn't it? |
| **Nigel Jewett:** | Yes, ma'am. It did. But last year at this time, it went down quite a lot more. I remember last year, seeing the press stories about how the police department was so proud of the reductions, and I remember thinking it was the end of the tourist season, and the rate ought to have dropped off a lot, just because of that. This year, the drop is only 10 percent. Last year, it was more like 35 percent month to month, if I remember correctly. |
| **Chief Harrison:** | Sure. Take a look if you have time. But Hayley Scott first. |

## Wednesday Afternoon: Dr. Tom Boden, Compliance Monitor for Evidence-Based Policing

Following are excerpts from a meeting between Chief Laura Harrison and Dr. Tom Boden. Dr. Boden is a criminologist who has been working within the Heron City Police Department for two years to advance the use of evidence-based policing. Heron City is one of 18 cities, spread throughout the United States, Canada

and Europe, participating in a major international effort funded by a consortium of philanthropic foundations to move evidence-based policing from the academic literature to the world of police practice. Under the terms of the program, each city gets a qualified criminologist working fulltime, on site, for an initial three-year period. Dr. Boden was posted to Heron City, and his salary is paid from grant funds. The department also receives a grant for accommodating and supporting the work of their compliance monitor.

**Chief Harrison:** Very happy to meet you, Dr. Boden. I read one of your early papers, some time ago, when I was studying for one of my promotion exams.

**Dr. Boden:** Likewise, chief. Happy to meet you. And welcome to Heron City. I'm not sure your predecessor and I always saw eye-to-eye. I'll certainly do everything I can to make sure we make this department just as effective as it can possibly be.

**Chief Harrison:** I appreciate that. But I'm curious. What does your title "compliance monitor" actually mean?

**Dr. Boden:** I'm not sure I like the title all that much. But the idea is "evidence cop," or something like that. It comes from papers by Professor Larry Sherman, and he says the role of the evidence cop is "to redirect practice through compliance rather than punishment." So it is actually supposed to signify a close working relationship as opposed to an adversarial one. I suppose it could sound as if "compliance monitor" meant something adversarial, but that's not the way I interpret it.

**Chief Harrison:** I'm happy to hear that. Because, I must say, I find the idea of an academic researcher "redirecting" a police chief — either through punishment or compliance — rather amusing. But whose compliance are we talking about, just so I'm clear? Mine, I suppose?

**Dr. Boden:** No, ma'am, not yours. It is about the department's use of various methods. The whole idea is to move the department from choices based on assumptions and guesswork toward choices and methods based on facts and proven to work through the use of proper scientific methods.

**Chief Harrison:** What kind of scientific methods?

**Dr. Boden:** Empirical research. The idea is that policing should be as solidly grounded in scientific research as the practice of medicine. So we — and when I say "we," I mean the community

of program-evaluation experts who are participating in this program — use only the very best studies, and even then we normally require that there be at least two or more studies, in different locations, that show a program to be effective before we accept that it really is. Not just any studies either, but studies of the highest quality.

**Chief Harrison:** OK. But what makes one study of higher quality than another? And who's to judge?

**Dr. Boden:** Well, a lot of work has been done in that area. The most reliable evidence comes from randomized controlled experiments, where you can really isolate the effect of an intervention. Some forms of quasi-experimental design rank pretty highly, too, provided the researchers interpreting them know about and deal with all of the relevant inference problems. In terms of judging, we are moving toward a fairly broad international agreement about how many studies you need, and of what quality, before the effectiveness of a particular program should really be accepted.

**Chief Harrison:** Sounds like a pretty high standard! And a lot of work. How long has this been going on? By the way, how much police experience do you have?

**Dr. Boden:** I've never worked as a police officer. But I have worked on police data and crime data ever since my Ph.D. My thesis was on the impact of lead-paint exposure in early childhood and its subsequent impacts on delinquency. We know this type of research takes a long time, and one of the ways we are trying to accelerate the process is by reviewing studies already completed by others and, if they're done well enough, we can combine their findings through meta-analyses. That gives us even more robust findings and saves the need to set up brand new experiments.

**Chief Harrison:** What kinds of programs have actually passed this test? And how many of them are there now?

**Dr. Boden:** The National Crime Prevention Centre, in Canada, published a summary in 2007. They listed 14 types of programs that could now be accepted, that is, proven effective in preventing crime.

**Chief Harrison:** Just 14? Can you get me that list? I'd love to know what they are.

**Dr. Boden:**   I have it here in my case. [Hands over document[5] and points to listing on page three.]

**Chief Harrison:**   I see. So family-based prevention is one category, and that category contains five approved programs. Is that right? Including home visitation, day care, parent training with younger children and so on. These don't really sound like police business so much.

**Dr. Boden:**   Yes, ma'am. But they are crime-prevention programs. Five of them approved under the family-based prevention category, three under community-based prevention, three under school-based prevention and three under place-focused prevention.

**Chief Harrison:**   What are the place-focused ones? Maybe they sound more like police work.

**Dr. Boden:**   These are the place-focused, crime-prevention programs. [He points to document.] They are nuisance abatement, closed-circuit television surveillance cameras and improved street lighting.

**Chief Harrison:**   So you have just 14 programs in total that you've established actually work. Is that right?

**Dr. Boden:**   I think a couple more have been added since 2007, but roughly that number. We could accept more, but we need to keep the research to the highest possible standards so we don't make mistakes. The whole idea is to direct public funds to those programs that we know for sure make a real difference. The Canadians used a very high standard for this listing. They say here, on page five, that as well as using proper experimental or quasi-experimental designs, the studies should also include "large samples, long follow-up periods, follow-up interviews, and provision for economic analysis."[6]

**Chief Harrison:**   If I had to guess, I'd say that this department probably does at least a thousand different things each day, all supposed to contribute to crime prevention. Are you saying we shouldn't be doing the other — however many it is — 986?

**Dr. Boden:**   Well, these listed here are major crime-prevention programs that are run across broad segments of the population. Not just ordinary daily decisions, like what the beat officer should do next. This is designed to help police and society make the big crime-prevention investments on the basis of science rather than guesswork.

[5] See appendix: *Evidence-Based Crime Prevention: Scientific Basis, Trends, Results and Implications for Canada,* by Brandon C. Welsh.
[6] Ibid., p. 5

**Chief Harrison:**	Is there really nothing in between — between your kind of science and guesswork? It sounds as if it has to be high science, complete with enormously expensive randomized experiments, armies of Ph.Ds and, I assume, a huge amount of money. And if it's not that, then it's witchcraft, or maybe just stupidity? Don't police managers do an awful lot of perfectly sensible stuff that you haven't even had a chance to consider yet? And don't they confront problems that nobody's seen before, where they just have to try what seems best at the time? How long does it take, from the time a new problem appears to the time that your community of scholars actually decides what works? Must be a good five years or so? What help is that for operations?

**Dr. Boden:**	It's surely better to know what works. Otherwise, we'd just keep pouring public money down the drain.

**Chief Harrison:**	Don't you think police know anything without your help? Hey, wait a minute. I'm looking at this list. Do you know what I don't see here? Catching murderers. Do you think catching murderers is important? If we continue this very high-profile murder investigation that we have now, which is tearing up our city at the moment, will I get to be "noncompliant" in your eyes, just because arresting murderers does not appear on this list? Have you evaluated catching murderers yet? What about meeting with the mayor? Can you tell me the optimal number of times I ought to meet with the mayor per month to reduce crime to the lowest possible levels? Do you have equations for that?

**Dr. Boden:**	We haven't looked at those things. No. A murder only counts for one in the reported crime figures. It probably wouldn't figure very much in the types of analysis we normally do.

**Chief Harrison:**	So, what makes things "figure" in your type of analysis? Public outrage? Political pressure? Dreadful fear wrecking people's lives? What?

**Dr. Boden:**	The things that matter in our analyses generally start off as factors or programs that end up with a statistically significant coefficient in a regression analysis, or a significant effect under hypothesis testing of some sort. The dependent variable is usually the crime rate or some piece of it. Econometric methods point us to the factors that really make a difference. And then, when we are ready to evaluate a specific program, we try to set up a properly constructed experimental design so we can measure the impact on crime rates of a specific intervention and be really sure it is the intervention, and not something else, that is making the difference. That's the stage when we try to establish a causal connection.

**Chief Harrison:** Alright. Just so you know, I never did a regression analysis or ran a randomized experiment in my life. And I'm sorry you don't have a study, or haven't done one, that shows that investigating murders is actually important. But I'm going to see that murder investigation through anyway, if that's okay with you.

**Dr. Boden:** You don't need my permission, ma'am. You're the chief.

**Chief Harrison:** This makes me wonder. Maybe your role, with all this sophisticated research at your disposal, should be to inform me about things that might work and that I wouldn't have thought of by myself. How about that, as a basis for our relationship? I guess that might seem more reasonable to my operational managers than the idea that you'd prohibit them from doing things just because scholarship hadn't got around to evaluating them yet. But let me ask you one more thing: Have you read Goldstein?

**Dr. Boden:** Yes, ma'am. Of course.

**Chief Harrison:** Doesn't Goldstein's approach suggest that we should tackle problems once, making sure that we devise a solution that not only suppresses them in an effective and resource-efficient manner but also keeps them suppressed for a good long time and with minimal subsequent effort?

**Dr. Boden:** Yes. I guess that's a fair description of the problem-solving approach.

**Chief Harrison:** It strikes me that this very short list of programs that you and your colleagues have actually approved for use by police — such as day care, or after-school recreation — are programs that once you'd started, you'd probably continue forever and at enormous expense. Presumably you have to continue these programs all the time, once you've started, and for each successive cohort and each generation of might-be delinquents. Is that right? Are you and Goldstein talking about the same kind of approach?

**Dr. Boden:** Well, the closest thing to Goldstein's idea that most police departments actually do is place-based policing. Police tend to do hot-spot analyses and place-based interventions. So we have evaluated some of those methods, and that's why some of these place-based ideas, like cameras and street lighting, appear on this list. The nuisance abatement idea is linked closely to the broken windows theory, and that's been pretty well validated over the years. So we believe we have validated Goldstein's approach.

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| **Chief Harrison:** | So you tested Goldstein's approach by finding out that place-based problems, like hot spots, tend to have place-based solutions. Is that right? |
| **Dr. Boden:** | We believe that has been demonstrated in enough places now so we can be fairly sure it works. Yes. |
| **Chief Harrison:** | Isn't that rather obvious? Couldn't we have guessed that place-based problems would tend to have place-based solutions? Doesn't the likely shape of the solution go with the shape of the problem? I mean, if it was a family-shaped problem rather than a geographic hot spot, wouldn't you expect a family-centered solution of some sort? |
| **Dr. Boden:** | The whole point is that we shouldn't be relying on guesswork. |
| **Chief Harrison:** | By the way, doesn't hot-spot analysis by police predate Goldstein? I thought Goldstein started off by complaining about just how narrow the police profession had always been in the types of analysis they used. The police always did hot spot analysis, even when it was with pin-maps on the office wall. I remember Goldstein starts off one of his books by listing about 13 other dimensions in which we ought to be able to identify problems: like repeat victims, repeat offenders, modus operandi, criminogenic commodities, patterns of organized crime and so on. |
| **Dr. Boden:** | I think the intelligence-led policing system follows up on the repeat offenders idea. And we haven't had a chance to evaluate that approach yet. That one is difficult to evaluate because different departments actually implement intelligence-led policing in such different ways. |
| **Chief Harrison:** | But what have you and your friends done about Goldstein's ideas? It sounds to me as if you've tested Goldstein by testing the one thing he complained about as being the only thing that police knew how to do? If I was Herman Goldstein, I don't think I'd be thrilled about that! |
| **Dr. Boden:** | I think the work done on place-based approaches has been pretty thorough. Pretty high quality. We can say, for sure now, that some of these methods actually work. |
| **Chief Harrison:** | From what you say, it seems to me you've validated some of the most limited and simple-minded forms of Goldstein's approach. I suppose you do have to focus on the methods |

that enough police departments have used — like improving street lights — and in a sufficiently standardized manner that you can actually perform your meta-analyses. So you end up looking at standardized tools, generally understood everywhere. Didn't Goldstein talk about tailor-made interventions for carefully identified problems? He talked a lot about the fact that real problems have unique features and, from what I read, I'd say he stressed that you had to understand the uniqueness of a problem to have any real chance of success. I don't think he assumed that at least three other departments must have used the same solution, exactly the same way, before we can know anything about effectiveness. He was all in favor of brilliant, surgical, locally invented interventions, wasn't he? Isn't that what the annual "Goldstein problem-solving awards" are supposed to celebrate?

**Dr. Boden:**     The evidence-based tradition does recognize that contexts vary, and of course you have to take that into account. So, once a program is accepted as effective and approved for use in crime prevention, then we do understand that the program may need to be tailored, to some degree, if you decide to use it in another jurisdiction.

**Chief Harrison:**     But you haven't answered my question. Goldstein starts with problems. You start with programs. Goldstein says the problems are often unique and require careful study. He also says you first need to disaggregate the overall crime rate into individual and actionable pieces. Isn't that what they do in medicine? In evidence-based medicine, don't they start with a particular disease or condition? And don't they also start with a careful description or profile of the patient, with all of the patient's risk factors and history, and so on? Isn't that like Goldstein's rather precise problem definition, which he says you must do first, before you even begin to think about solutions or methods or programs?

By contrast, you seem to start with methods. This [holds up *Evidence-Based Crime Prevention*] is a list of programs. Shouldn't I be looking at a list of specific problems first? What's the disease that these programs are supposed to cure? I don't see a list of problems here, except for crime in general. Maybe delinquency in general.

**Dr. Boden:**     I'll have to think about that, ma'am. I think it is mostly a difference of semantics. I think we all want the same thing.

**Chief Harrison:**     What's that?

**Dr. Boden:** To be science-based. For policing to be based on facts. Not on superstition, or guesswork or useless traditions. And I don't mind if you'd prefer a different title, something other than compliance monitor. I'd be happy to think of myself as your chief scientist instead, if that makes sense to you.

**Chief Harrison:** Dr. Boden, I'm not sure I need a chief scientist. I think I just need some sensible analysts, who can actually help me get the job done. Let's see. Can you help me solve the Hayley Scott murder?

**Dr. Boden:** No. I don't think so.

**Chief Harrison:** Can you tell me what might prevent or reduce our rash of car thefts — brand new, luxury class vehicles — and explain why they seem to be disappearing into thin air at unprecedented rates and only in this city? Can you offer any insight, from your studies, as to where they might be going?

**Dr. Boden:** I'm not aware of any work specifically on thefts of luxury cars. I guess the thing that might help is to use some of these place-based approaches that have already been proven. We do know that CCTV acts as a fairly good preventive measure, although it does seem to work better in England and Wales, for some reason, than it does in the United States.

**Chief Harrison:** [Laughs]. Maybe the United States is bigger, so things are more spread out. Oh, excuse me. I'm only guessing. That's not allowed any more, is it?

**Dr. Boden:** Are these car thefts concentrated in hot spots at all?

**Chief Harrison:** Absolutely not, according to my chief of operations. They've been mapping them for a good long time, and they seem to fall all over the city. There are many, many tiny clusters, but no big clusters. There are almost as many clusters, now, as there are parking lots in the city. And that's several hundred. No way could CCTV coverage be affordable.

**Dr. Boden:** We could cut the cost in half, if you like. We could put the cameras up in half of the parking lots, rather than in all of them. Then we could really see what difference they made. Might be a really good experiment. I'd be very happy to help you with the experimental design.

**Chief Harrison:**     Any other ideas, apart from running experiments so you can get your name in print?

**Dr. Boden:**     What about improving the street lighting? That's been shown to work in many different cities.

[Chief Harrison looks up but does not reply.]

**Dr. Boden:**     I guess, if the thieves turned out to be high schoolers, then the after-school recreation programs might help?

**Chief Harrison:**     Thank you Dr. Boden. Let me show you out. I appreciate you coming up.

Chief Harrison starts to lead Dr. Boden toward the office door, but halfway there she stops suddenly, turns, and (being quite accomplished in martial arts) deftly strikes Dr. Boden's nose with the base of her flat, open palm. Not hard, but accurately, and just hard enough to make his nose bleed. Dr. Boden looks startled and horrified, and fumbles for his handkerchief as blood begins to trickle down his face. Chief Harrison smiles at him kindly and hands him a box of tissues that was on the edge of her desk.

**Dr. Boden:**     Excuse me, ma'am. What was that about?

**Chief Harrison:**     Oh, I'm sorry. Just a modest little intervention of my own.

**Dr. Boden:**     You made my nose bleed!

**Chief Harrison:**     No, no, I don't think so. Just because I touched your face I don't think you can jump to the conclusion that it was I who made your nose bleed. On the contrary, there's a storm coming, and I assume it was the drop in barometric pressure. Maybe you always get nosebleeds this time of day or in this type of weather. I really don't think it had anything to do with me.

**Dr. Boden:**     But you hit me. And now it's bleeding. It's obvious.

**Chief Harrison:**     Surely you can't possibly deduce, based on just a single trial, and with no control sample of any kind, that my striking you actually caused your nose to bleed. Would that kind of claim make it through your filters for high-quality scientific evidence? Or the Canadians'

even more rigorous standards? Where are the large sample and the extensive follow-up interviews?

[Dr. Boden looks at Chief Harrison, bemused. He moves toward the door.]

**Chief Harrison:** If we really wanted to know for certain that I made your nose bleed, wouldn't we have to conduct a significant number of trials? We could do this again. I suppose it would be good if we could get some of the other compliance monitors also, to stand right next to you. And we'd hit some of them, but not others. Maybe random selection would help? What do you think? Should we do a real experiment?

## Thursday Morning: Nigel Jewett, Junior Analyst, IT Department

When Chief Harrison arrived at her office at 8 a.m. on Thursday, Nigel Jewett was sitting in the waiting area outside.

**Chief Harrison:** Nigel, good morning. Come right in.

**Nigel Jewett:** Thank you, ma'am. This was fun.

**Chief Harrison:** How long did it take you?

**Nigel Jewett:** Most of the night. But I think it was worth it.

**Chief Harrison:** So tell me. What did you do?

**Nigel Jewett:** A number of things. We do have an accident problem. And I did some work on the Scott case, too.

**Chief Harrison:** What kind of accident problem?

**Nigel Jewett:** Thanks, first, for getting me the accident data. Once I had that in Excel, it was pretty easy to figure out what was happening. I just looked to see, month by month, what segment of the accident data was not following the aggregate trend downward.

**Chief Harrison:** And was there one?

**Nigel Jewett:**     Yes. It seems to be women driving alone. And not always alone, but with no other adult in the car. Sometimes they have their kids in the car.

**Chief Harrison:**     And what's happening to them?

**Nigel Jewett:**     They just run into things. The car in front. A few into trees or other objects. Just seems like they're not paying attention to their driving.

**Chief Harrison:**     So? What do you make of this? Are the men being equally careless all of a sudden?

**Nigel Jewett:**     No. The men-driving numbers are behaving like everything else — dropping off by total volume. I think it might be related to the Scott case. Maybe we have just too many women worrying about being followed. Maybe they're all spending too much time staring into their rear-view mirrors. That's the only reason I could think of.

**Chief Harrison:**     Are you sure about the trend? I know you don't much care for probability theory, but could this just be a fluke? Is this statistically significant at this stage?

**Nigel Jewett:**     Probably not. But I thought you'd want to know about it before it got to be statistically significant. It is quite a particular grouping of accidents, once you see it, and it includes two fatalities already this month. That's twice as many as the murder itself.

**Chief Harrison:**     What about the Hayley Scott case? What have you done on that?

**Nigel Jewett:**     With her license plate number ... first, I ran the simple test on the ALPR data. I took 30 seconds as the following interval worth checking. I started with Hayley Scott's car number, at least the one registered to her, and she shows up 403 times in the month. I merged the lists for all the cars that passed within 30 seconds afterwards and looked for multiple hits.

**Chief Harrison:**     And what did that show you?

**Nigel Jewett:**     Not much that's interesting. Her husband's car jumps out, following her seven times. And there are lots of cars that hit three times. But no fours.

**Chief Harrison:**   That marries up pretty much with what the contractor found, I believe.

**Nigel Jewett:**   If there really was a stalker, and only one, then I'd expect to be able to find them much more cleanly. I'd expect to find a way of looking at the data to make them really stick out, if they were there at all.

**Chief Harrison:**   So you didn't stop there, right?

**Nigel Jewett:**   No, ma'am. I did a couple of other things. The first was to allow for the errors. Hayley Scott's number is DBR 862. So I also wanted to try all of the misreading possibilities. That could be read as 882, or 682 or 662.  So one thing was to broaden the search and cover all four possibilities. That bumped up the number of Hayley Scott sightings, potentially, to 432.

**Chief Harrison:**   What else?

**Nigel Jewett:**   Then I wondered about the husband. Not as a suspect so much. But what was it they were doing? Seven times he was behind, and four times he was in front. But still close in front. So I wondered what that meant. If this was my wife — and I don't have one yet — but if I did and she thought she was being followed, I'm pretty sure I'd follow right behind, not in front. So if they were doing that, it means they swap cars sometimes. Which makes sense, if you've got two different sizes of car. Depends who's carrying the trash to the dump, or who's driving the kids around, right? So I wondered what happens if we assume she also drives her husband's car around town on a regular basis. And his car shows up 320 times in the month.

**Chief Harrison:**    So now you combine all these things?

**Nigel Jewett:**   Exactly. Husband's number doesn't have any sixes or eights. So I decided to treat his number, and all four of her possibilities, as a single entity and see who might be following that entity, whichever one of the five forms it took. That gave me 432 plus 320, which is 752 possible Hayley Scott sightings. I merged those lists and stuck to 30 seconds for the interval. The Scotts' own cars come up amongst the followers, as you'd expect, with scores of nine and 13 occurrences, following behind the other. I just ignored those. There was still a big pool of threes. And a single car with a score of nine.

**Chief Harrison:** Nine? So what exactly does that mean for this one car?

**Nigel Jewett:** That one is logged as being close behind Hayley Scott's car, as DBR 862, twice in the month. It is behind her car, when her plate is read as DBR 882, three times. I guess she had a dirty license plate. And it is logged as behind her husband's car four times. It's enough. It sticks out like a sore thumb. The next highest score is three. This is nine.

**Chief Harrison:** Do you have the number?

**Nigel Jewett:** Yes, ma'am. [He passes over a spreadsheet printout with 18 rows showing the nine sightings and nine related "followings."] I could have taken this one level further and done the potential correction job for all other cars having sixes or eights, or "I"s or "1"s in their plates.

**Chief Harrison:** How would you have done that?

**Nigel Jewett:** I would have created new records for all of the possible misreadings for all cars in the database. Actually, I did create the macros for that, in Excel. But it wasn't necessary and, in this case, it probably wouldn't change the result.

**Chief Harrison:** Why not?

**Nigel Jewett:** Because the vehicle now of interest doesn't have any of those characters in its license plate. PYN 447. So you wouldn't increase the score. And that type of correction — putting back in potentially missing data — can only increase the scores if you're using any kind of additive scoring function, like I was here.

**Chief Harrison:** This is pretty impressive stuff, Nigel. Sounds like a complicated process. As algorithms go, was this a tough one?

**Nigel Jewett:** No, not really. Usually it takes a whole sequence of stages to get to anything useful. We call these "multipass algorithms" or "multistage" ones. What comes out of each stage acts as the starting point for the next stage. You filter this way, then sort that way, then score what you see. And then, usually you don't know what to do next until you stare at what you have, at least for a while. So you can't specify the whole process up front. That's why

you need the kinds of tools where you can see what you're doing and what you're getting, and why you try a lot of different ideas pretty quickly until something jumps out at you.

**Chief Harrison:** What makes someone good at this kind of research?

**Nigel Jewett:** My marine biology professor used to say "abandoning useless alleyways quickly." You know, get out of them and into another one. Not too fast, of course. But not to stick too long to any one analytic idea when it is not showing you anything useful.

**Chief Harrison:** Nigel, listen to me. Thank you for this. This may turn out to be very important. But I have 61 other women now who are worried they are being followed. Maybe by this same car, PYN 447. Maybe by another guy. Maybe by nobody at all. Can you do this over again, 61 times, for each of them? Did you save your macros?

**Nigel Jewett:** I was thinking about that. Yes, of course we can do the same thing for 61 other numbers. But that's not the best thing to do.

**Chief Harrison:** Why not? What would you do?

**Nigel Jewett:** Why not ask the bigger question? Is anyone following anyone? Maybe police ought to know if anyone is following anyone. Maybe someone's being followed and is the next murder victim and hasn't even become suspicious yet. Would you want to know that?

**Chief Harrison:** You could do that?

**Nigel Jewett:** I think so. There is one extra difficulty, though, when you don't have any particular place to start, like a suspect or a victim, and you have very large databases. You have to think carefully about all the permutations and combinations you need to try. And I checked the volumes overall. We have roughly 300,000 unique cars each day, with multiple sightings of most of them. In a month, close to 2 million cars seen at least five times each. If you started with just those 2 million — leaving out the drive-through-once set — then you would want to know the relationship between any one of those 2 million cars and any other one of those 2 million cars. You'd want to see which pairs have the most frequent links between them. You'd define two cars as "linked" if they passed any ALPR, anytime, less than so many seconds apart. The interval is a search parameter you could adjust, if you needed to control the volumes of the output or change the sensitivity of the search.

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| **Chief Harrison:** | Logically, that sounds a lot simpler than what you've already done in this case. |
| **Nigel Jewett:** | Logically, it is. But computationally, it isn't. You might start off with a matrix or array, 2 million by 2 million, and start logging the links in the array. Just work through each ALPR history one by one, creating all the links. Then count them up and look at the biggest totals. But on most machines, unless you have masses of internal memory, you can't declare arrays 2 million by 2 million. And if you can, you can't do anything with them. It is pretty easy to blow up your machine, not literally of course, but grind it to a miserable halt by writing a thoughtless algorithm that will produce billions and billions of possibilities. |
| **Chief Harrison:** | So what can you do? |
| **Nigel Jewett:** | For those types of problems, you have to get crafty and creative about the actual search method even after you've already decided what you're looking for. So you find ways to chop out half of the data, hopefully without loss. Or to look first among subsets at higher risk. And if the structure you want to find is one of those that is not at all robust to missing pieces of data, then you simply cannot throw anything away or, for all you know, the pattern might evaporate before you can find it. |
| **Chief Harrison:** | So, what then? |
| **Nigel Jewett:** | For those, you have to use other computational techniques, like sparse matrices and linked-list programming, that cut down the amount of memory space you need by working only with the nonzero entries. Or use massively powerful computing technologies. Like they have at Los Alamos, I guess! I wonder how many credit-card transactions there are every day on the global systems and what structures your brother-in-law ends up searching for. That must be fun, too! |
| **Chief Harrison:** | Nigel, I'm intrigued by your idea of fun. I'd like you to do more of this type of work. I just have to figure out where to put you exactly, and how this type of work fits in with all the other things we have to do here. |

## Thursday Afternoon: Telephone Call With Dr. Tom Boden, Compliance Monitor for Evidence-Based Policing

Following are excerpts of a telephone call placed by Chief Harrison to Dr. Tom Boden at 2 p.m. on Thursday.

**Chief Harrison:** Dr. Boden. I'm hoping we can work closely together. And I promise not to slap your face anymore.

**Dr. Boden:** Ma'am. I'm delighted to hear that. I hope so, too.

**Chief Harrison:** I'm interested in setting up a new analytical unit to support operations. I'm not sure if it's the type of thing you'd like to do, or whether it serves your agenda. But I would need some technically very well-qualified people to run it and work in it.

**Dr. Boden:** I'm honored. It sounds like a great idea. It is exactly the type of engagement I had hoped for in this department. What sort of staff do you have in mind?

**Chief Harrison:** People like Nigel. Do you know Nigel Jewett?

**Dr. Boden:** Yes, I know Nigel.

**Chief Harrison:** Could you work with him? And people like him? Maybe we could get some of his friends or friends from college in here, too?

**Dr. Boden:** I'm not sure that's what you need, ma'am. I actually don't think Nigel is qualified to be an analyst.

**Chief Harrison:** No, why not? What makes you say that? He seems quite bright to me.

**Dr. Boden:** Maybe. But he doesn't know the first thing about program evaluation.

**Chief Harrison:** OK, I understand. Thanks. Don't worry, I'll find someone else.

**Dr. Boden:** Ma'am, I'd be happy to help you find someone else. I could bring in some really good graduate students who would be really good for the department. And they'd be well qualified. Very well qualified, I can promise you.

**Chief Harrison:** I don't think you understood what I meant, Dr. Boden. I'm keeping Nigel.

## Friday Morning: Nigel Jewett, Junior Analyst, IT Services

At 10 a.m. on Friday, Nigel Jewett comes to the chief's executive suite and asks the chief's executive assistant if he can see Chief Harrison. Nigel says it is urgent. Following are excerpts from his subsequent conversation with the chief.

**Nigel Jewett:** I've run it.

**Chief Harrison:** You've run what?

**Nigel Jewett:** Who's following whom. I found a way to do it on my computer. And my computer is now in my office, ma'am. I thought you'd be pleased to know that. I actually had to program it in C++ using linked lists. But it worked.

**Chief Harrison:** So, who's following whom?

**Nigel Jewett:** There are three women. They are all being followed by the same car, but on different days of the week. Only one of them is in the group of 61 that have reported anything odd. The other 60, by the way, have nothing to worry about.

**Chief Harrison:** The same car as you found for me the other day? We arrested that guy as a suspect!

**Nigel Jewett:** Not that one. Another one. But the same car for all three women. And that's not all.

**Chief Harrison:** Heavens. What else?

**Nigel Jewett:** You're being followed.

**Chief Harrison:** I'm being followed! By whom, for heaven's sake?

**Nigel Jewett:** Two cars. They work together. Normally there's one in front, close, within 15 seconds, and one behind, that can be up to 45 seconds behind. They switch places, too. It's not always the same way around.

**Chief Harrison:** Which car are they following?

**Nigel Jewett:** Your official car, sometimes. But more often your private car. Evenings and weekends. This goes back three weeks. It started two weeks before you arrived here, ma'am.

**Chief Harrison:** But after my appointment was announced in the press, right?

**Nigel Jewett:** I suppose so.

**Chief Harrison:** Who is following me?

**Nigel Jewett:** One car is private but registered to a lieutenant in the department. And the other is an unmarked car registered to the Drug Squad.

**Chief Harrison:** Who'd have thought it?

**Nigel Jewett:** [Pause.] It's funny sometimes, what you discover by accident. Like Marie Curie. When she discovered radium, she wasn't looking for it, or anything like it, at all.

**Chief Harrison:** But she was looking, and she was a scientist. So she knew how to look. Who knows, maybe she was having fun, too!

**Nigel Jewett:** Why would they be following you, ma'am?

**Chief Harrison:** That's anyone's guess, at this point. Maybe we found some sharks, and we weren't even looking for them. They probably want to know if and how I might be compromised.

# Appendix: Excerpt from *Evidence-Based Crime Prevention*[*]

**EVIDENCE-BASED CRIME PREVENTION:**
SCIENTIFIC BASIS, TRENDS, RESULTS AND IMPLICATIONS FOR CANADA

## The State of Science on What Works to Prevent Crime

Research on "what works" in preventing crime has long been of interest to practitioners, policy-makers, and academics alike. Only in recent years, however, has there been an increased effort to improve the trustworthiness of claims about what works in preventing crime. This has come about through the use of the highest quality scientific evidence and the most rigorous and transparent review methods to assess what works. It has come to form the state of science on evidence-based crime prevention.

### Family-Based Prevention

Five types of family-based programs have been found to be effective in preventing crime:

- Home visitation;
- Day care/preschool;
- Parent training (with younger children);
- Home/community parent training (with older children);
- Multisystemic therapy.

### Community-Based Prevention

Three types of community-based programs are considered to be promising in preventing crime:

- Gang member intervention programs that are focused on reducing cohesion among youth gangs and individual gang members;
- Community-based mentoring;
- After-school recreation.

### School-Based Prevention

Three types of school-based programs have been found to be effective in preventing crime:

- School and discipline management;
- Interventions to establish norms or expectations for behavior;
- Self-control of social competency instruction using cognitive-behavioral instruction methods.

### Placed-Focused Prevention

Three types of place-focused programs have been found to be effective in preventing crime:

- Nuisance abatement;
- Closed-circuit television surveillance cameras;
- Improved street lighting.

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**Professor David Bayley**, Distinguished Professor, School of Criminal Justice, State University of New York at Albany

**Dr. Anthony Braga**, Senior Research Associate, Lecturer in Public Policy, Program in Criminal Justice Policy and Management, Kennedy School of Government, Harvard University

**Chief William J. Bratton**, Los Angeles Police Department

**Chief Ella Bully-Cummings**, Detroit Police Department (retired)

**Ms. Christine Cole** (Facilitator), Executive Director, Program in Criminal Justice Policy and Management, Kennedy School of Government, Harvard University

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