[JOHN LORINC]

Fire Station 345

Each weekday morning, I make my way to a Starbucks in midtown Toronto, where I set up my laptop at a window table that my friends refer to as "the office." Most days, I arrive after depositing the kids at school. The journey between the drop-off and my "office" involves traversing a residential neighbourhood. Along the way, I regularly pass neighbours who are going through their own familiar morning routines. Then, at the coffee shop, the same faces come in each day to get their java hit, often in the same order, and almost always at the same time.

The city, in all its bustle and apparent randomness, is an intricate web of such patterns. There are the obvious ones, such as rush hour, crowds heading to sporting events, and the ebb and flow of the population on summer long weekends. I used to work at a book store, and the staff all knew that customers arrived in predictable waves — after the nearby rep theatre let out, late on a Saturday morning, and so on. A shared experience emerges from a series of individual decisions made by disparate strangers.

But the city is also a stage for hidden patterns that appear mysteriously from seemingly random events. Sitting at my table at the coffee shop, I've noticed that between about 9:30–10:30 a.m. on most mornings, a fire truck from the station down the street barrels eastward, sirens blaring. Of course, the window of time isn't precise — sometimes the engine comes a bit early, sometimes a bit later, sometimes not at all. Yet this particular event is common enough to have imprinted itself in my mind as another one of those urban patterns in my neighbourhood.

What's intriguing about this mid-morning fire truck run, however, is that those journeys — crews responding to fires, collisions, heart attacks, false alarms — are by definition, the result of unplanned occurrences. The underlying causes — a slowly fraying wire, a gradually occluding artery, an impulsive teenage prank — are only indirectly linked to conscious decisions or activities that occur on a given day. Nonetheless, in the area east of the coffee shop, there seems to be a sufficient concentration of factors capable of generating an emergency in the middle of the morning, most days.

Statisticians and actuaries can demonstrate the truth of such statements, and their calculations form the basis of insurance premiums, health care spending and so on. And certain categories of urban statistics powerfully attest to the validity of the weird science of probabilities. In the city of Toronto, for example, about 30 to 40 pedestrians are killed each year by vehicles, and another 2,000 to 2,500 are injured (City of Toronto Transportation Services statistic). Year in and year out, these levels are fairly stable. This is an extraordinary phenomenon if one pauses to consider that, in Toronto, there are hundreds of millions of vehicle and pedestrian journeys each year. Within this immense matrix of risk and randomness, the actual volume of incidents doesn't fluctuate greatly.

The fire engine run made me curious about whether there are other underlying patterns behind emergency calls. Toronto Fire Services (TFS) provided me with the data for a month's worth of calls to Station 345, which serves a very diverse west-end neighbourhood containing retail strips, gentrifying neighbourhoods, working class enclaves, apartment towers for low-income tenants, and seniors' high-rises.

When I asked the station captain about patterns, he chuckled and stated there weren't any that he could see. "You'd think there might be," he said, "but it's all hit and miss." Some weeks, the station responded to four or five fires while during other weeks, none at all. But the captain (who didn't want his name used) did allow that weekends are somewhat busier than weekdays, and pointed out that high-rises always generate more false alarms. Most of the calls involve medical emergencies — a result of the fact that in Toronto, firefighters can get to an emergency scene far faster than paramedics and ambulances, simply because there are more fire stations located across the city.

But after analyzing the response data for that station for the month of January 2007, I found that some patterns did become apparent. There were, not surprisingly, significantly fewer calls in the middle of the night and in the early morning hours. And, Friday seems to be the busiest day of the week.

Other emergency response categories reveal long-term patterns that are not likely apparent to those working on the front lines. A five-year City of Toronto analysis of pedestrians involved in traffic collisions (2000-04) illustrates that there were, on average, fewer injuries and fatalities on weekends, and that the frequency of such accidents also peaked on Fridays, as one might expect.

But when the city tracked the time of day that pedestrian collisions were most likely to occur, the results were somewhat surprising. While most accidents occurred in the later afternoon hours, the most consistently dangerous period was 3:00–4:00 p.m., just before rush hour. One can speculate as to the reasons: Is this when couriers and delivery vehicles are hustling to finish the day's business? Does the spike have something to do with thousands of children spilling out of schools at that time? Is it a time of day when many seniors

→ TORONTO FIRE STATION #345, DUFFERIN STREET, SOUTH OF DUPONT
→ JANUARY 1 TO JANUARY 31, 2007.

TOTAL RESPONSES — 194
AVERAGE PER DAY — 6.25

NUMBER OF CALLS BY TIME OF DAY:

0:00-3:59	4:00-7:59	8:00-11:59	12:00-15:59	16:00-19:59	20:00-23:59
22	18	43	39	37	34

AVERAGE # OF CALLS BY DAY OF WEEK:

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
4.8	6.8	7	5	8.3	6	6

MORE FREQUENT DESTINATIONS:

LANSDOWNE & DUPONT	DUFFERIN SOUTH OF BLOOR
LANSDOWNE & BLOOR	OSSINGTON & BLOOR
RANKIN CRESCENT	BRANDON & LIGHTBOURNE

→ TORONTO FIRE SERVICE STATISTICS

	TOTAL UNIT RESPONSES	EMERGENCY INCIDENTS
2003	306,560	133,267
2004	293,023	130,500
2005	303,606	140,516

CATEGORY OF INCIDENT

MEDICAL CALL	51%
FIRE ALARM RINGING	21%
VEHICLE INCIDENT	8%
FIRE	7%

IN 1998 AND 1999, TORONTO HAD 28 AND 33 FIRE-RELATED FATALITIES,
RESPECTIVELY — A LEVEL THE TORONTO FIRE SERVICE DEEMED TO BE FAR
TOO HIGH. AFTER MOUNTING AN AGGRESSIVE PUBLIC SAFETY AND FIRE
CODE ENFORCEMENT CAMPAIGN, THE ANNUAL DEATH TOLL DROPPED TO THE
HIGH TEENS, WITH THE NUMBER OF SO-CALLED "PREVENTABLE FIRE DEATHS"
AVERAGING 14.6 PER YEAR SINCE 2001. OVER THE SAME PERIOD, HOWEVER,
THE CITY EXPERIENCED A SHARP SPIKE IN THE NUMBER OF FALSE ALARMS —
JUMPING FROM ABOUT 25,000 PER YEAR IN THE LATTER 1990S TO 35,000
BY THE MID-2000S.

(SOURCE: TORONTO FIRE SERVICE 2005 ANNUAL REPORT)

emerge for a walk? The tables don't offer explanations. They merely suggest the presence of invisible currents of activity within the city that seem more likely, on average, to generate injury and death.

The fire trucks hurtling by my coffee shop also made me wonder whether or not there are geographical patterns to these runs. Using the addresses listed on the table provided by TFS and Mapquest, I mapped the location of all the responses by Station 345 during the month of January (see map). Going down the list and marking each call with a circle and a number, I quickly noticed how the calls clustered at certain intersections. A handful of addresses kept coming up, day in and day out — 1101 Lansdowne Avenue, 55 Rankin Crescent, 1238 Bloor Street West, and so on.

This was a revelation. I had always assumed the distribution of fire and medical emergencies was more random. The map suggests otherwise, and it lets us in on something that seasoned fire fighters know about their districts: there are some municipal addresses that generate 911 calls regularly and others that don't.

The densest clusters on the map correspond with high-rises. Mathematically, this makes sense: there are likely many more dwelling units, each with a kitchen and its own set of potentially faulty electrical fixtures, in a single 30-storey apartment building, than on several blocks of a residential neighbourhood with single-family homes. Yet some of the high-rises in the Station 345 district are rundown apartment blocks managed by slum landlords who do little to maintain the premises. The low-income occupants contend with drug dealing and gang activity. Unlike a luxury condo or rental apartments catering to more affluent tenants, such buildings probably have more than their fair share of aging, unsafe appliances, old wiring, and other fire traps associated with poor upkeep. The same is true for basement apartments that may not meet city building and safety codes. Where there is little security, there are likely more intruders. Lastly, low-income families tend to experience more health problems that could trigger a medical emergency. Numerous epidemiology studies have confirmed that poverty is related to a wide range of health issues, from diabetes and other conditions associated with poor nutrition, to various respiratory illnesses caused by living in poorly ventilated, mould-infested housing.

The map doesn't tell the whole tale, of course: many of the circles indicate false alarms that occur far more frequently in multi-unit residential buildings. Toronto Fire Services was willing to release the response data, but for privacy reasons, would not provide the codes indicating the reasons for each call. Nonetheless, the map, despite its incompleteness, suggests a story or many stories. And now, when those fire engines charge by my coffee shop in that curiously predictable morning pattern, I realize that the wailing of their sirens isn't merely the jarring music of lousy luck.