Investing in your Community Risk Assessment
Using knowledge to reduce risk
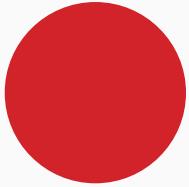
JOHN BONNEY

DAVID BLANKINSHIP

CRA
SoCal

PURPOSE OF THE WEEK

— TO DEVELOP YOUR UNDERSTANDIN OF COMMUNITY RISK REDUCTION AND ITS ENTIRE VALUE

— TO DEMONSTRATE HOW INFORMATION AND KNOWLEDGE IS KEY TO MAKING COMMUNITIES SAFER

— TO HELP YOU UNDERSTAND HOW TO CONSTRUCT A COMMUNITY RISK ASSESSMENT

— TO PROVIDE YOU WITH IDEAS AND TOOLS TO SUCCESSFULLY IMPLEMENT A CRA

— TO CONSIDER THE VALUE OF PARTNERSHIPS IN THE CRR PROCESS

— TO DEMONSTRATE HOW CRR IS ABOUT ORGANIZATIONAL CHANGE RATHER THAN JUST PREVENTION

— TO SHARE IDEAS AND EXPERIENCES

— TO EXPLORE, EXPERIMENT AND BUILD A NETWORK

Learning with & from each other

What we expect from you …

- Commitment & Hard Work
- Honesty and Openness
- Integrity
- Generosity
- Confidentiality
- Respect for Others

What You Can Expect From Us

All of the above plus …

- Care and support
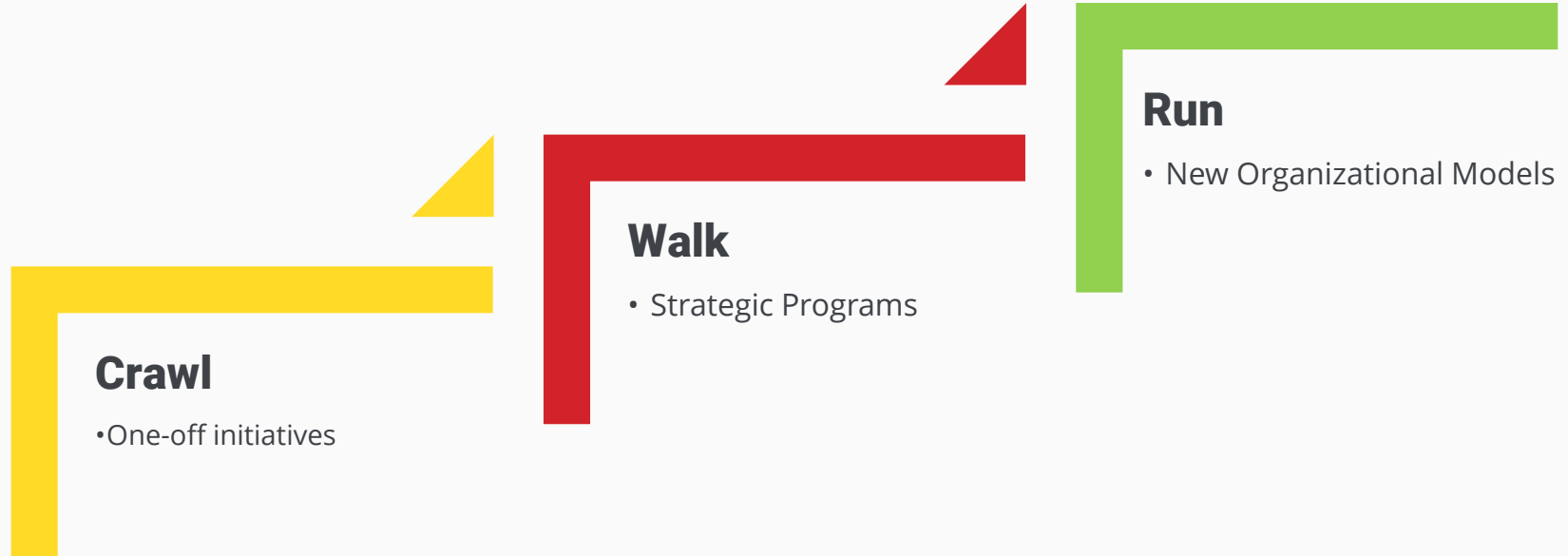- Encouragement and challenge

- Exposure to tools and techniques

- References, case studies and source materials

- Slide Deck, guidance notes, learning log

- The process of CRA construction

- Evaluation each day

- Each other!

- www.intterragroup.com/crr-downloadable-resources/

Run

- New Organizational Models

Walk

• Strategic Programs

Crawl

•One-off initiatives

CRR across the continuum

A cart by itself:	A cart before the horse:	A horse without a cart:	A one-horse cart:	The SUV:	IDEAL CRR: The Fleet
Little to no CRR. Activities are focused on suppression due to lack of funding, staffing, interest, &/or skills.	Some prevention activities take place but they are not aligned to a plan or supported by data.	A data-driven CRA outlines the risks the community is facing but the CRR plan has not yet been created.	The CRA is complete & drives some CRR planning but the work is driven by a very small group of fire department champions.	The CRA is complete and drives fire-focused CRR planning. CRR is included in the daily work across the fire department. Evaluation is a consideration.	CRR is a way of life in the community. The CRA considers a wide scope of hazards including but not limited to fire. Priorities identified in the CRA are addressed in the CRR plan. Stakeholders, partners, and residents are engaged in the process. Evaluation occurs on a regular basis.

Where do you stand?

NFPA.ORG | © National Fire Protection Association. All rights reserved.

BREAK

COFFEE

SECTION 1/2

WHY BOTHER WITH CRR?

DIMENSIONS OF VULNERABILITY

Very similar cultural and technological approach as USA until early 2000's

- Suppression Based-heavy investment

- Professional Judgment

- Limited Use of Data

- Silo Approach to activities

- Limited Approach to Partnership

- Performance Driven- Output vs Outcome?

- A strategic intent to "break the rules"

- Government catches up and mandates prevention

- The investment in information, knowledge systems and analysis

- A transformation of purpose, culture and structure

Primary Fires UK
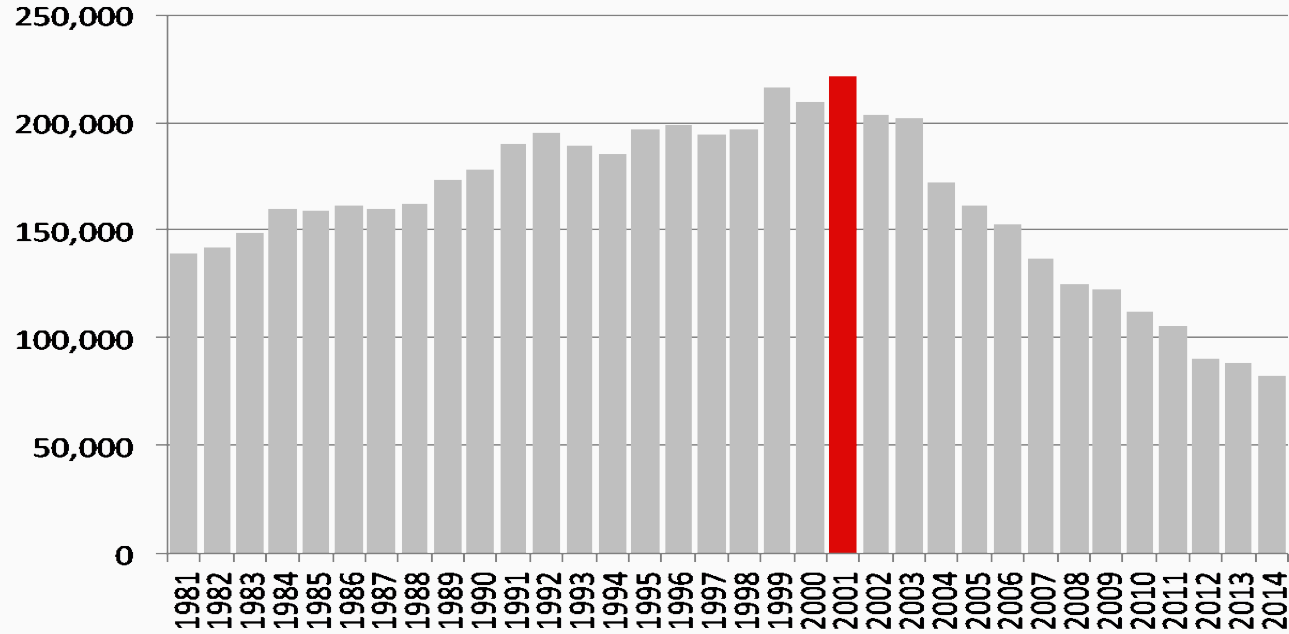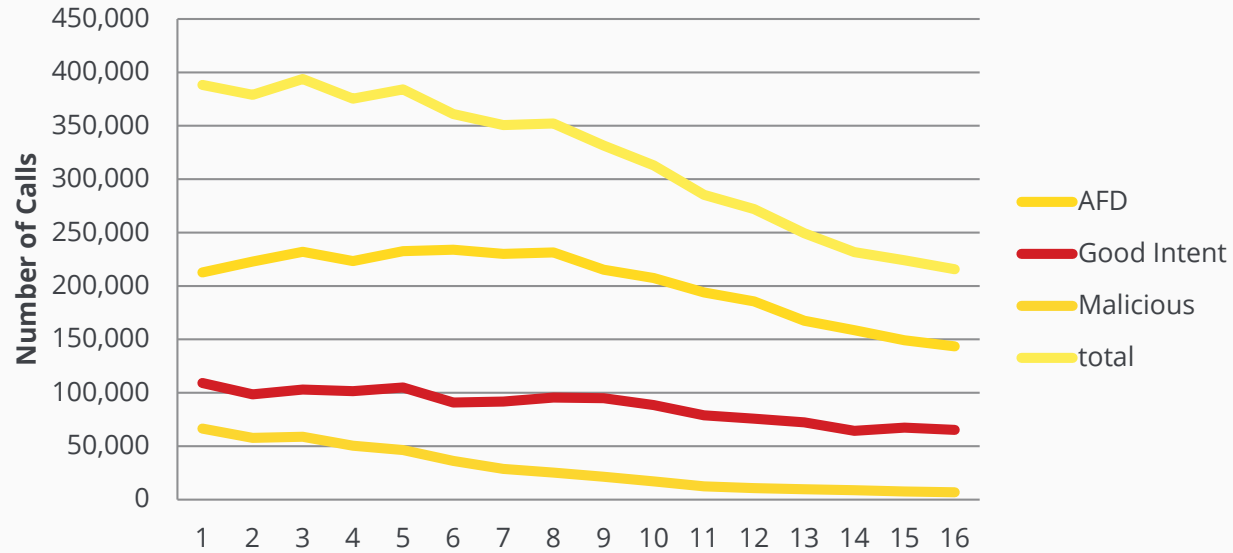
Figure 12. Fire Department Responses by Incident Type in 1984, 1994, 2004, and 2014
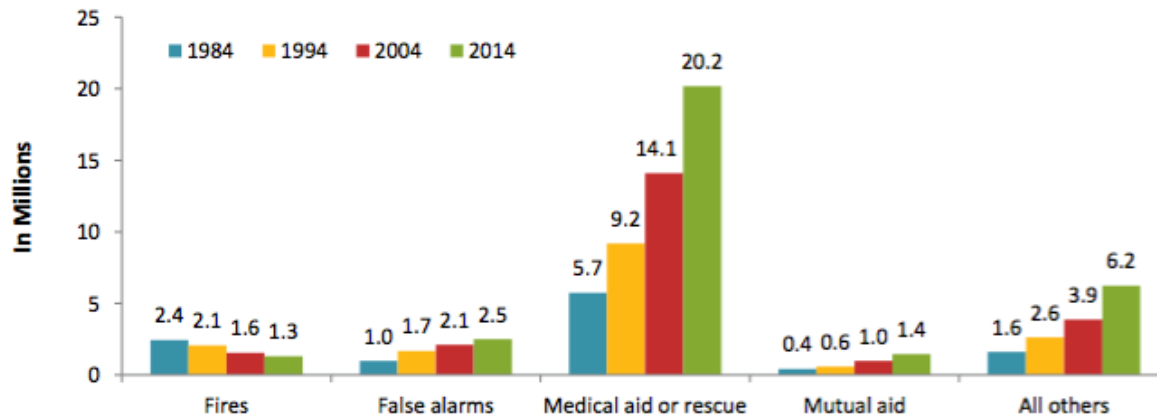
What Happened In The UK?

- 60% reduction in fire incidents
- Lowest fire death and injuries for 50 years
- AFA's down by 50%
- Arson down by 60%
- Some reductions of more than 75%
- Engagement of front-line staff
- Focus extends to other risks

- ... all done against real term budget reductions averaging 35% over the period

"An Integrated Risk Management Plan must set out the Authority's assessment of local risk to life and, in line with this analysis, how it is going to deploy its resources to tackle these risks and improve all sections of society …The IRMP should be a strategic, forward-thinking document with the approach and detail of business and change management plans."

National Framework for the Fire & Rescue Service 2004/5
UK Government Department for Communities &
Local Government

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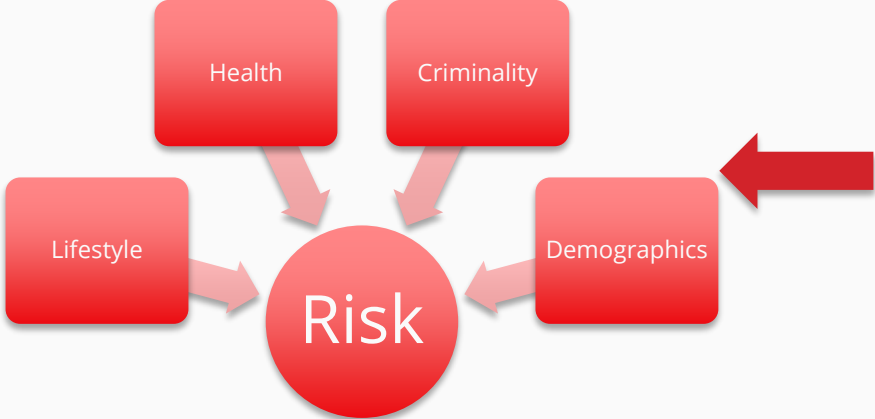Local Government

The 3 Key Drivers for Successful CRR

Consider your CRR program- What are the drivers?

BREAK

LUNCH

SECTION 1/3

Getting the focus right

What does CRR mean to you?

"Community Risk Reduction (CRR) is a process to identify and prioritize local risks, followed by the integrated and strategic investment of resources (emergency response and prevention) to reduce their occurrence and impact"

Vision 20/20

"Commencing with initiatives whilst worthy is the wrong starting point"

What is a Community Risk Assessment?
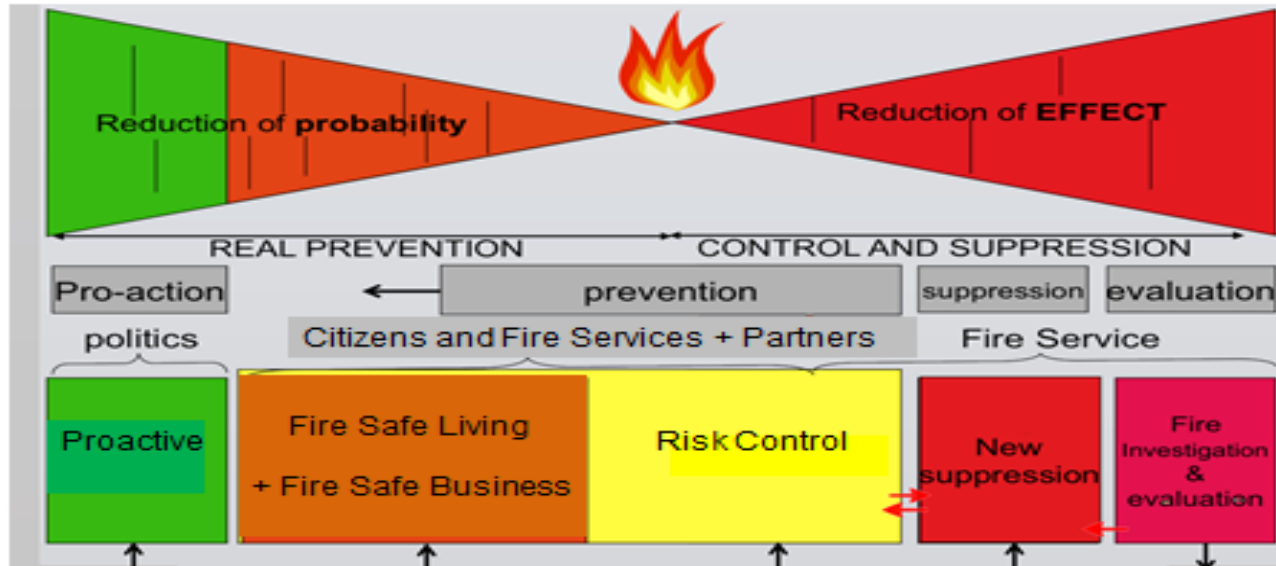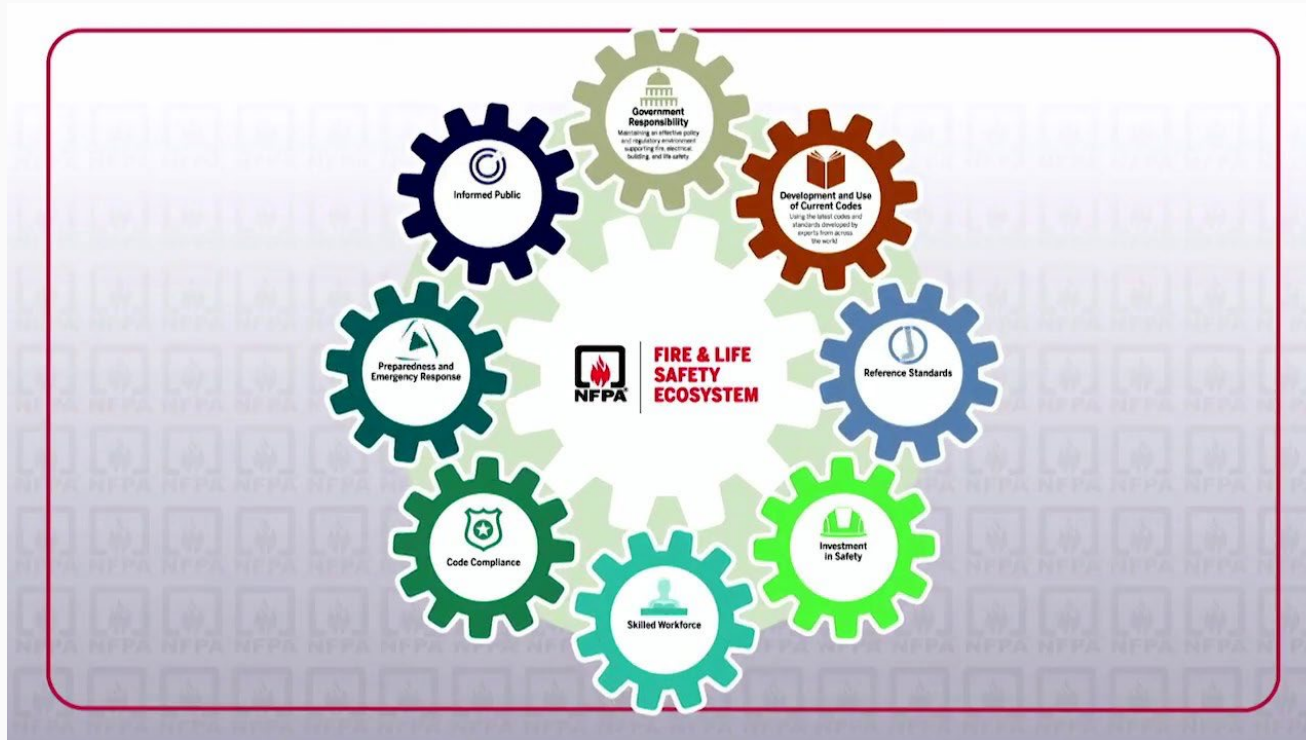
"a means of capturing the
risks found in your community in
such a way as to help you identify
priorities and actions to
make your community safer"

CRR COMMUNITY RISK REDUCTION

Community Risk Assessment
A GUIDE FOR CONDUCTING A COMMUNITY RISK ASSESSMENT

esri

Vision 20/20

Vision 20/20

National Strategies for Fire Loss Prevention

Alchemy MANAGEMENT SOLUTIONS LTD

Identify the Risk

- Acquire data that identifies the risk
- Develop a Community Profile
- Identifying causal factors & vulnerable populations
- Identify Target Hazards

Prioritizing the Risk

- Likelihood
- Impact
- Scoring Target Hazards

Putting it all together

Overlaying risk with community information
Community Risk Priorities

Acuity Model

What we know

What others know
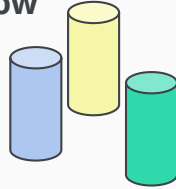
What this tells us

Incident data
Fire Investigation reports
Compliance reports

Life Style Data
Health indicators:
- Substance abuse
- Mental health issues
- Vulnerability
Crime Reporting

Correlation between:
- Lifestyle and incidents
- Health and fire risk

Plan and deploy

Evaluate
and learn!

Protection

Prevention

Response

Where?
How?
When?

Where?
How?
When?

Where?
How?
When?

Level Four Wisdom
Principles/Prediction

Level Three Knowledge
Patterns

Level two- Information
Relationships

Level One Data
Absolutes

Energy

Questions?

BREAK

COFFEE

51

SECTION 1/4

The Intelligent Organization

Data Holding Map

Intterra

Alchemy MANAGEMENT SOLUTIONS LTD

Control Vision System

HFRS Control Room | SCAS control

Over the Boarder incidents (inc Section 16)

Tape Storage

Control Management System (CMS)

AirBus Radio

Tom Tom's in officer cars (inc Boss Mobile) Webfleet tracker in each vehicle (information for accidents, timed runs, response patterns)

Medical Co-ro's use medical incident form

Vision event trigger populates basic data for crews to complete in **IRS**

KM Automated integration package pulls scanned form into DB and pushes information into IRS for submission & publishing by admin resource

Crews complete confirm and publish incident

- Voice Data (records to physical tape)
- Vision records incident
- Firewatch availability checked (Firewatch* integration to be completed 2017)
- Resources mobilised by event alert
- Alerters triggered - station teleprinters
- Radio Frequency (Talk Groups activated)
- SSRI triggers PDA (e.g. house fire 2 pumps)
- MDTs hit button to confirm mobilisation & rider numbers + incident arrival (manual intervention)
- Stop message requested from crews, applied by control for no futher appliances or support to attend incident
- Medical Response co-ro activated from Vision (IRS entry as 'special service')
- Accidents & Near Misses (recorded & HSE informed)

Gazeteer / CAD / Maps (ITN) / SSRIs, Hydra

Body Worn Video

MDTs used by crews (mobilisation/rider nos/arrival time, CAD, SSRIs)

BWV Data

Operational Risk Team (Response Management)

Fire Investigation Team updates to IRS

KM Automated health/validation check between Vision / IRS / IDT Frequency: 1 hour cycle OTB 1.5 hour cycle

KM Automated health/validation check between Vision / IRS / IDT Frequency: 2 hour cycle

KM R&I IDT Database Essential processes include validation processes with Vision (Health checks)

KM R&I Information Technicians Development & Delivery

CAD & SSRI's published to CMS server for MDTs to read

CFRMIS mobile

CFRMIS

KM Specialist printer/scanner for GIS and CAD

KM Virtual Server BI Tools & MS Development environment

R&I Info Tech Team

R&I Analysts / A Researchers / Support + CAD Team

KM Visual Studio integration package between FW & SAP

SAP

Firewatch

SAP
- HR Data
- Leave
- Sickness
- Shift
- Availability
- Payroll

Firewatch
- HSE Data
- Leave
- Sickness
- Shift
- Availability
- Data for RDS pay

Business Fire Safety

Community Safety

Admin Hub

Response Mgt

CYP Team

KM cross match MARAC data to CFRMIS for name match

CFRMIS: Reports, Workflows, Letters, Risk Scores, PORIS, VP Module, Ops Intel Module

- Business Fire Safety teams provide **KM** CAD technician with drawings for scanning and additional CAD work
- **KM** CAD technician develops drawings for SSRIs (published to CMS server for MDTs)
- Community Safety teams use for referencing vulnerable persons data and recording safe and well visits
- Admin Hub Staff record safe and well visits
- BFS teams and FF crews record SSRIs
- **Policies stored for (Response Mgt team) used by MDTs**

Protected I: drive folder for CS teams via station PC only unless passport

KM Bluelight partnership data

KM GIS ESRI Amazon cloud services (mapping software)

KM GIS Mapping Data sets

KM Data sets include: Police RTC, Exeter, IMD, Mosaic, LA data, HCC provided, Mapping/Boundary + others

KM MS Reporting Services

KM SAP front end reporting tool

Webfleet vehicle info

Non integrated Occupational Health System

KM Tool to record fitness assessments

Reporting Services pulls data from:
Vision
IRS
SAP
CFRMIS
BI Databases
Firewatch
Hydra

Other Data Sources: TranMan

- **KM** skilled Info Techs and BI developers create / delivery of reports and develop supporting tools for use on MS Reporting Services (including DBs and BI Development work)
- Examples include Performance Reports, RDS & 1st 2nd pump availability tool and integration products/packages (Medical co-ro processing)
- Data Recording tools (animal rescue, CYP database activity log)
- Develop mobile tools to assist FF (e.g. IRS interface / CS mobile working tools)
- Solutions written in MS Visual Basic, C#, MS SQL
- Links with core data systems
- **KM** R&I teams verify and provide data for **Performance Reporting** to ensure data consistency
- Skilled **KM Analysts** develop products for identifying Risk and supporting services (e.g. Command or SDR)

Document Owner: Dawn Capp
KM Research & Intelligence Manager

What types of departments do we typically see?

SOME QUESTIONS:

Which ones are the most successful?

What makes them the best?

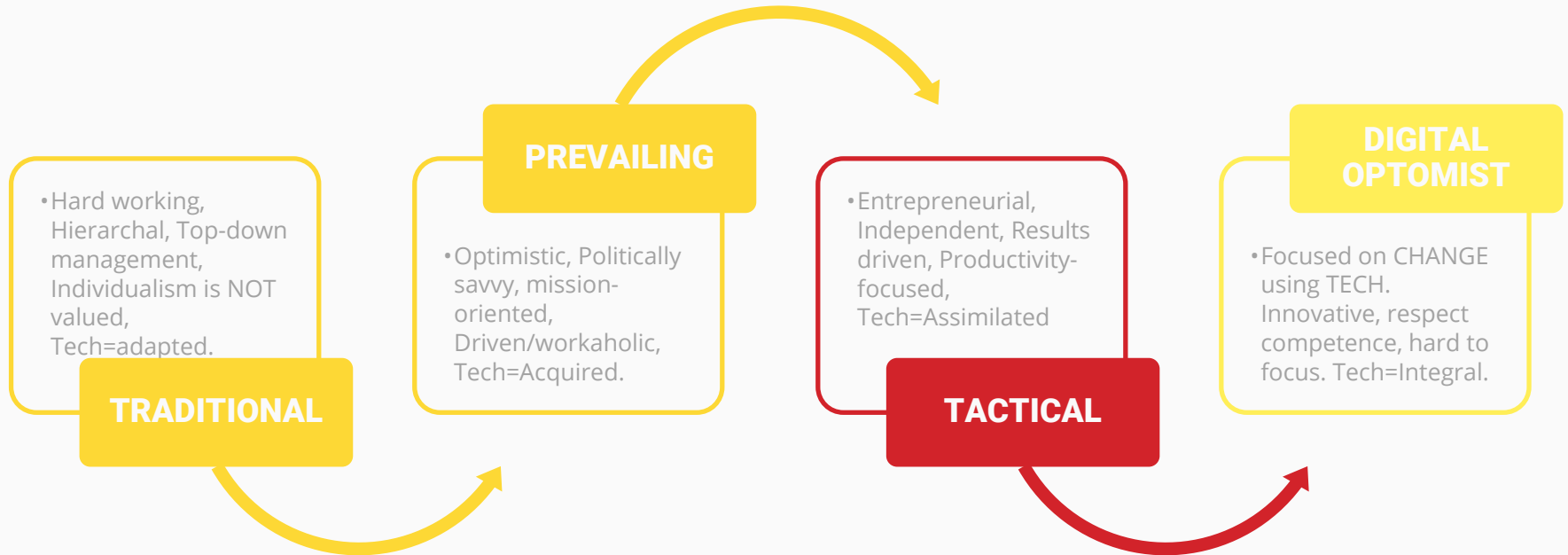How do they view data & information?
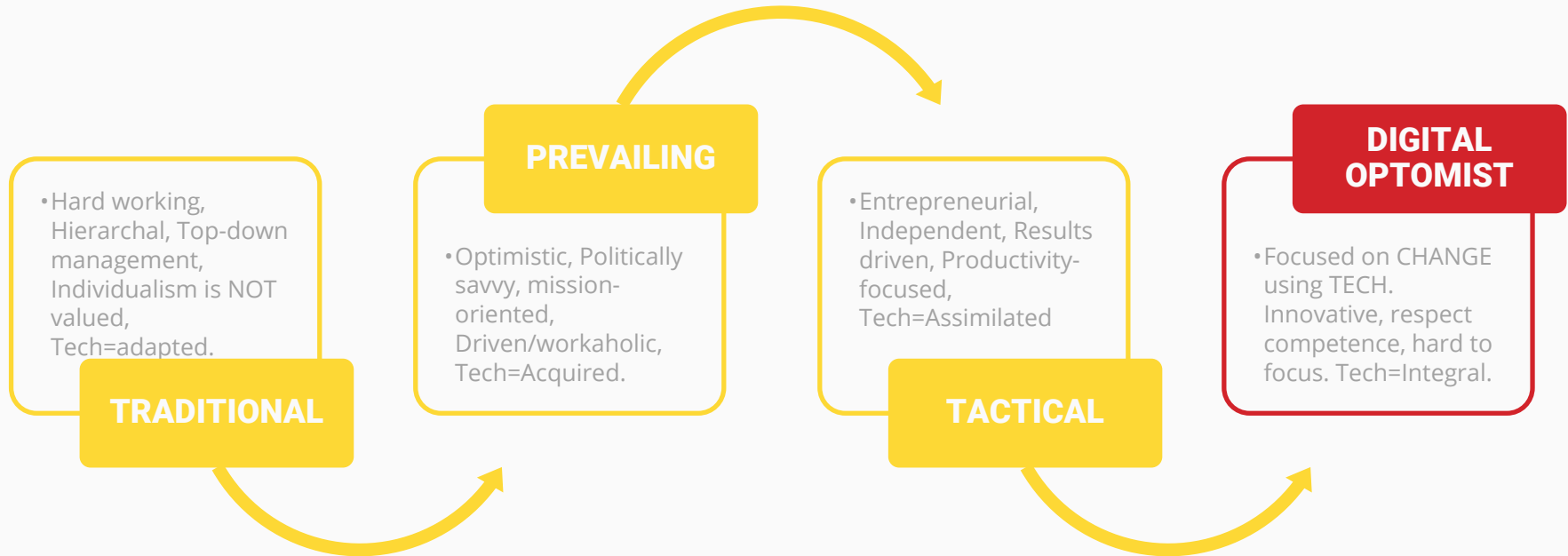
The Taxonomy of Fire Departments

TRADITIONAL
- Hard working, Hierarchal, Top-down management, Individualism is NOT valued, Tech=adapted.

PREVAILING
- Optimistic, Politically savvy, mission-oriented, Driven/workaholic, Tech=Acquired.

TACTICAL
- Entrepreneurial, Independent, Results driven, Productivity-focused, Tech=Assimilated

DIGITAL OPTOMIST
- Focused on CHANGE using TECH. Innovative, respect competence, hard to focus. Tech=Integral.

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- 4 keys to becoming a data organization.
  - What does it take to build analytics in a department?
  - Challenges you face.
  - What are some of the answers Fire Departments are seeking when they add analytics tools?
  - Red Flags to watch for.

What does it take to build analytics in your Department?

ONE

You cannot have a Analytics program if you don't have a problem to solve.

TWO

Quality of data is key – you cant get good answers to your questions if your data sucks.

THREE

Running an analytics program is different than any other function in a Fire Department.

FOUR

Find a partner to help integrate and de-conflict the data from CAD, RMS, and other systems.

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ONE

All Records Management Systems are not created equal

TWO

Limited access to personnel and resources can have a negative impact on your ability to be successful.

Some make it hard to get data out and share for analysis.

Communication between IT and the business requirements of the department can be challenging.

LESSONS LEARNED:

Challenges you will face.

ONE

All Records Management Systems are not created equal

TWO

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Communication between IT and the business requirements of the department can be challenging.

LESSONS LEARNED:

Challenges you will face.

THREE

They are seeking a systematic way to understand how to improve outcomes for the community.

TWO

They are looking for performance measurements.

ONE

Often, they are asking questions like, "How are our units performing relative to NFPA Standards?"

What are some of the answers Fire Departments are seeking when they add analytics tools?

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Red Flags to watch for when building a CRA program

FOUR
Analytics roles – present and future - are poorly defined.

FIVE
The organization lacks CRA translators and/or cultural adoption.

TWO
Not one has determined the value the initial use cases can deliver in year one.

THREE
There is no CRA strategy beyond a few use cases.

ONE
The executive team doesn't have a clear vision for how it will use CRA.

Knowing what you know

What do you know?

- How do you collect, process and store that data?
- Who uses it?

Community Risk Reduction

Investing in your Community Risk Assessment
Using knowledge to reduce risk

- Basics of CRR and why its important

- Experience elsewhere

- What is a CRA and why is it valuable?

- Intelligent organization

- Exercise to understand data and information handling

SECTION 2/1

Setting Direction

Key Drivers for Successful CRR

"Good strategy is not just about 'what' you are trying to do; it's also the 'why' and 'how'."

(Richard Rumelt 2011)

Something Worth Aiming For?
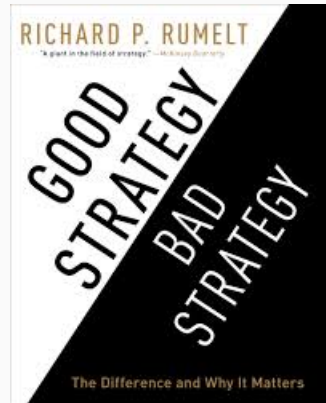
"The mobile solutions we have configured and tested are verifying the power of technology to give Firefighters access to the information they need thereby converting their role from "data entry" to 'information creators and collaborators'"

(Extract from *** FD Internal Report 2014)

"The xxxxxx xxxx Protection District has been established to provide all who have come in contact with the District: Professional Administration, Fire Prevention, Fire Suppression, Emergency Medical Services, Specialized Rescue Services, Hazardous Materials Response, Public Education, and Code Enforcement within the Statutory Limitations, Ordinances, and Resolutions. The District will Strive to provide services while attaining and maintaining the confidence and respect of the people it serves"

"PERFECTION OF MEANS AND CONFUSION OF ENDS SEEM TO CHARACTERIZE OUR AGE."

ALBERT EINSTEIN
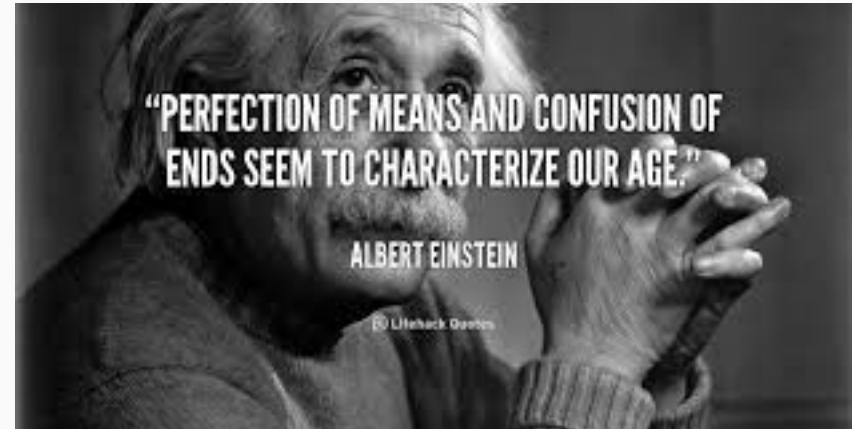
"We Make Life Safer"

"Making Kent Safer"

"Safer & Stronger Communities"

"Protect and Improve the quality of life for the people of Manchester"

Inttera   **Alchemy** MANAGEMENT SOLUTIONS LTD

What we know

What others know
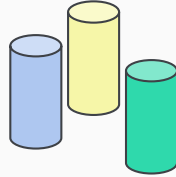
What this tells us

Incident data
Fire investigation reports
Fire safety infringements
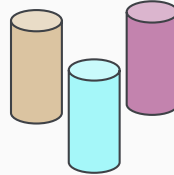
Lifestyle data
Health indicators:
- Substance abuse
- Mental health issues
- Vulnerability
Crime reporting ASB
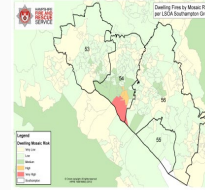
Correlation between:
- Lifestyle and incidents
- Health and fire risk

Plan and deploy
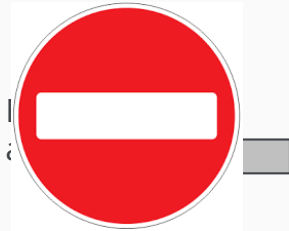
Protection   Prevention   Response resource

FIRE KILLS
YOU CAN PREVENT IT

Where?   Where?   Where?
How?   How?   How?
When?   When?   When?
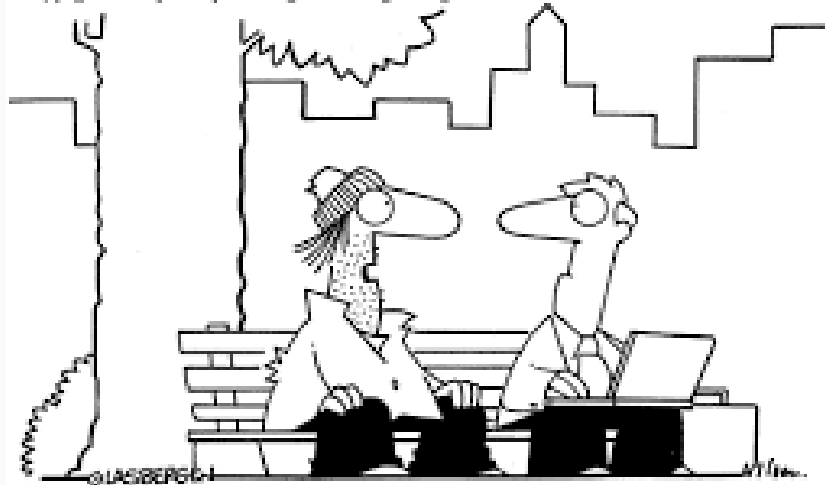
"I spent years on the Road To Success,
but I was driving in the wrong direction."

"The strategic intent for your community is the starting point for the CRA"

What are you seeking to achieve as a service (Naperville) ?

Consider the key activities that contribute to this?

Workbook + CRA 1

BREAK
COFFEE

SECTION 2/2

Gathering what we know

What do we know about Naperville?

Stage 2 component for Naperville CRA

It used to be a manufacturing town producing ball bearings.

But like many Rust-belt towns of the Midwest, it experienced industrial decline starting in the '80's.
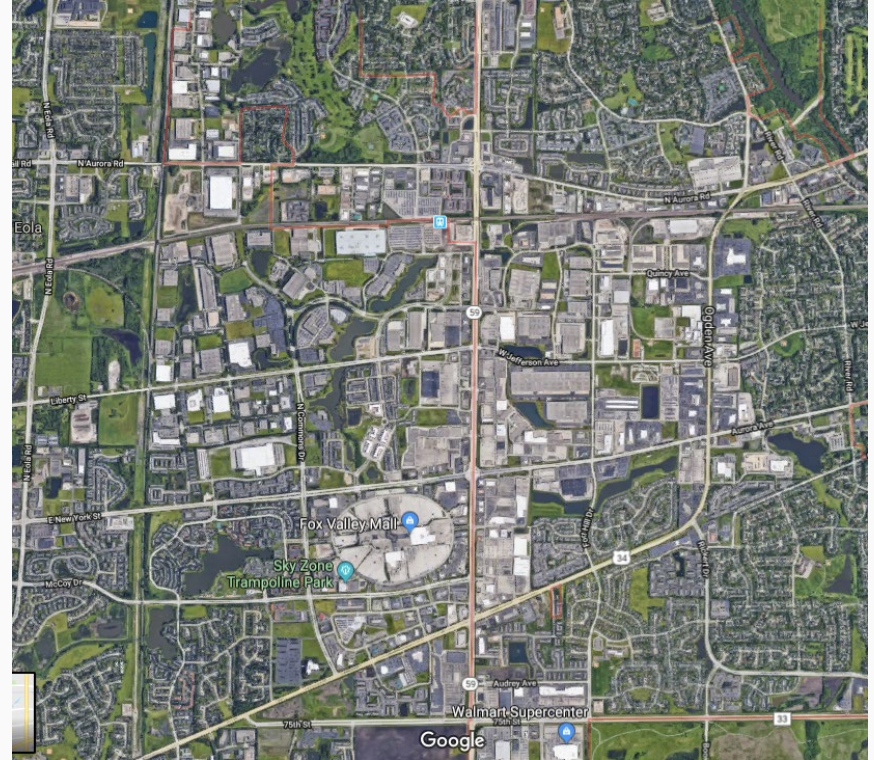
Naperville

IN PICTURES

Typical of many Midwest towns, the economics of manufacturing and globalization have impacted the life, demographics, and fabric of Naperville.

What does Naperville FD know?

Stage 2 component for Naperville CRA

NAPERVILLE
ANNUAL REPORT

HIGHLIGHTS

Two New Engines

1 Million Dollar SAFER Grant

Improved Curb to Balloon Time

New interoperability with Neighbors

Rising call volume

TOTAL RUNS 2013-2017

YEAR	Total Runs
2013	10,907
2014	11,541
2015	11,396
2016	11,634
2017	11,973

Increasing Fire Deaths

Naperville: By the Numbers

Median Household Income
$109,512

City Population
147,841

Median House Value
377,900

Median Age
35 years

Persons per Square Mile
3,708.8
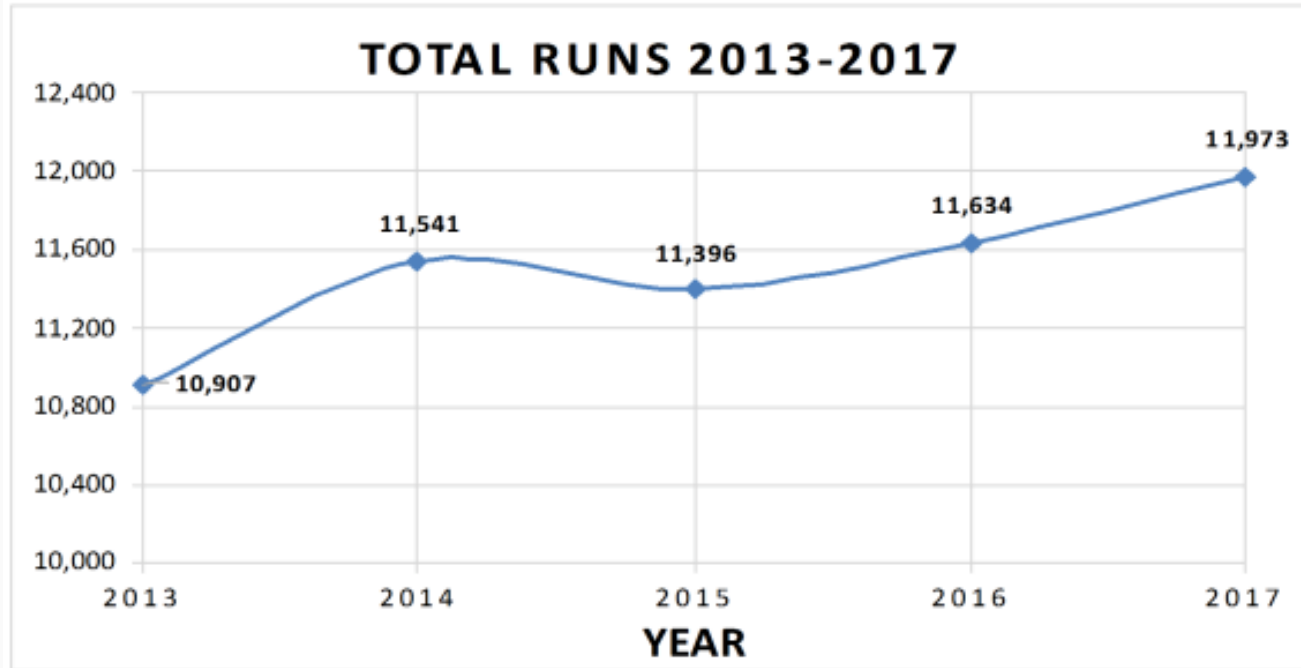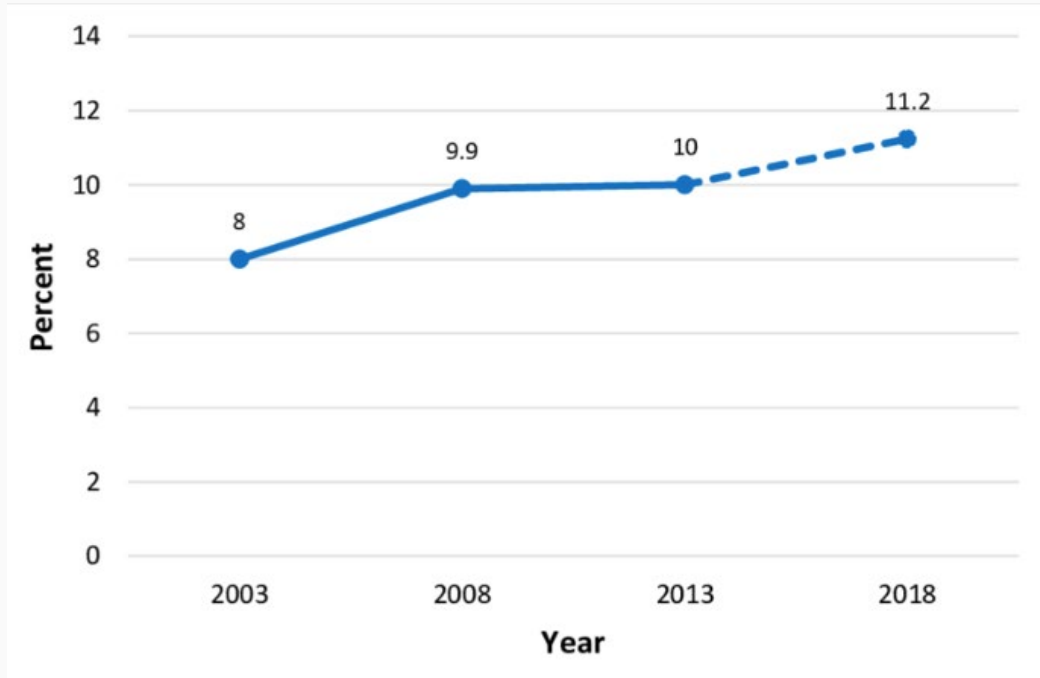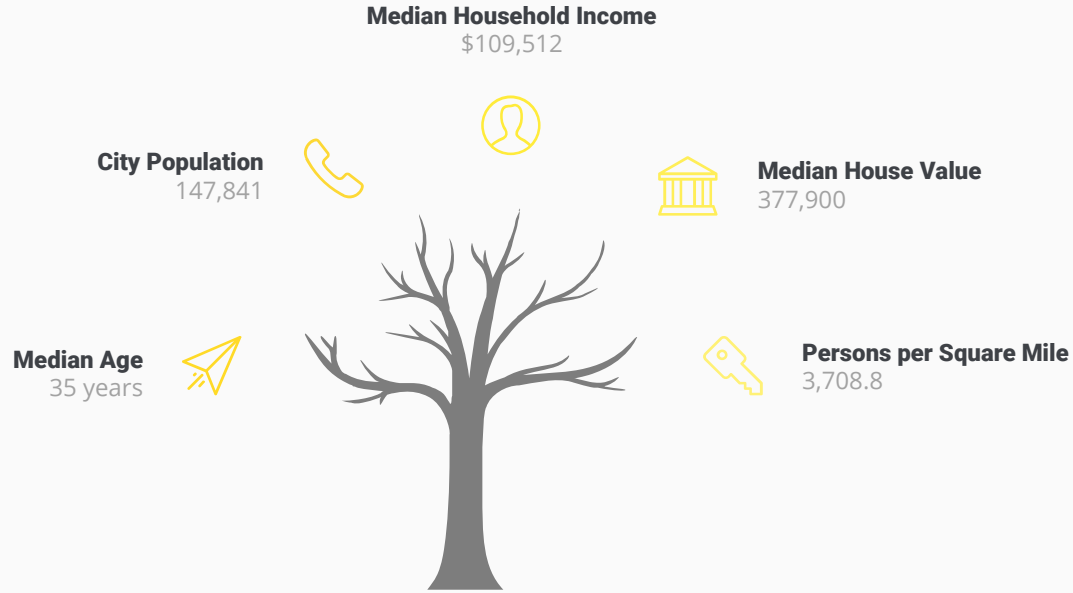
Demographics

White: 76.5% | Asian: 14.9% | Hispanic or Latino: 5.3% | Black: 4.7%

Naperville: By the Numbers

TYPICAL FD DATA

STATION INCIDENT STATS

Station	Incident Count	% of Total	% Emergent	% EMS/Rescue	% Fire/Explosion
109	216	0.086	1	0.713	0.028
	152	0.061	1	0.086	0.112
120	34	0.014	1	0.941	0
111	116	0.046	1	0.69	0.034
252	54	0.022	1	0.981	0
108	10	0.004	0.9	0.7	0
116	51	0.02	1	0.569	0.039
112	75	0.03	1	0.48	0.053
113	11	0.004	1	0.727	0.091
119	5	0.002	1	0.6	0
110	132	0.053	1	0.697	0.008
106	138	0.055	1	0.659	0.007
124	46	0.018	1	0.457	0.043
115	10	0.004	1	0.6	0.1
251	15	0.006	1	0.867	0
126	200	0.08	1	0.775	0.015
127	1	0	1	0	1
102	67	0.027	1	0.493	0.075
117	214	0.085	1	0.752	0.023
103	48	0.019	1	0.583	0.042
125	123	0.049	1	0.61	0.016
101	250	0.1	1	0.672	0.032
118	191	0.076	1	0.77	0.016
123	75	0.03	1	0.56	0.04
121	122	0.049	1	0.738	0.008
104	149	0.059	0.993	0.664	0.007

This data summarizes a station's incident volume by specific incident types based on the station ID that is passed with the RMS incident data. **Undefined** indicates that a 1st Due Station was not passed with the incident - if this category does not appear, there were no incidents with an undefined station.
The percent emergent is based on the value passed with the RMS incident data. The specific incident types are based on a final NFIRS disposition categories of **Fire/Explosion/OverPressure** (initial values 1,2) and **EMS/Rescue** (initial value 3)

Incidents by Day of Week

DAY OF WEEK COUNTS
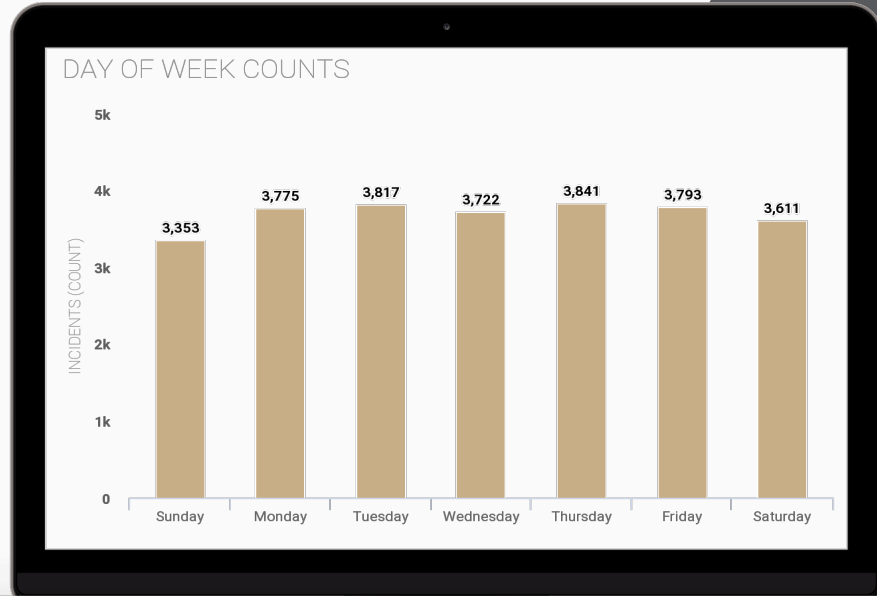
This chart is the total count of incidents by hour of day.

Naperville: By the Numbers

DOTS ON A MAP
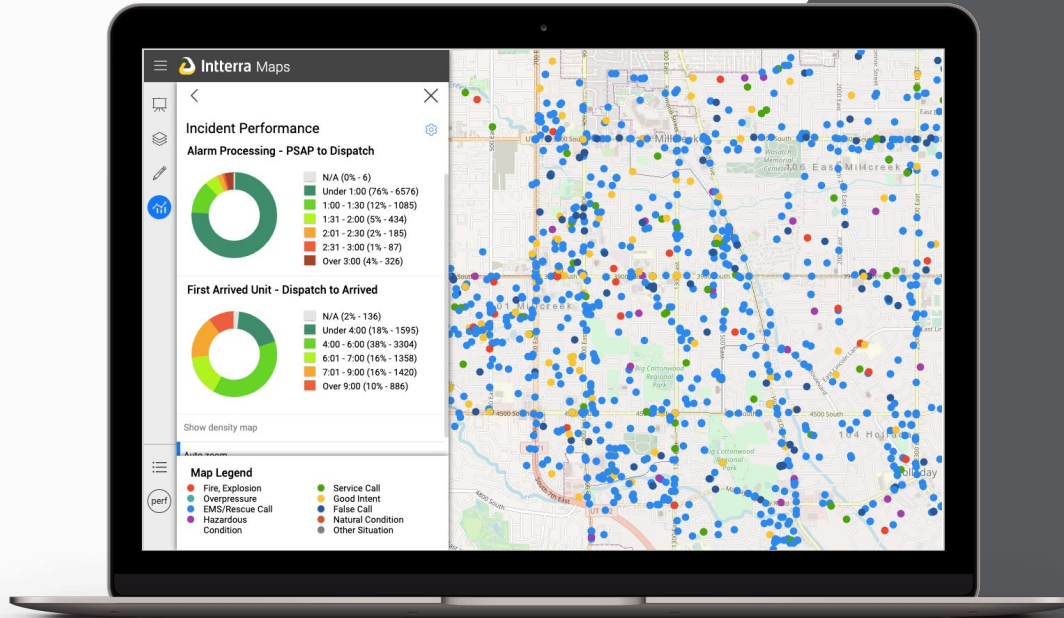
Look, this is where stuff happened.

# Naperville: By the Numbers

DENSITY MAP
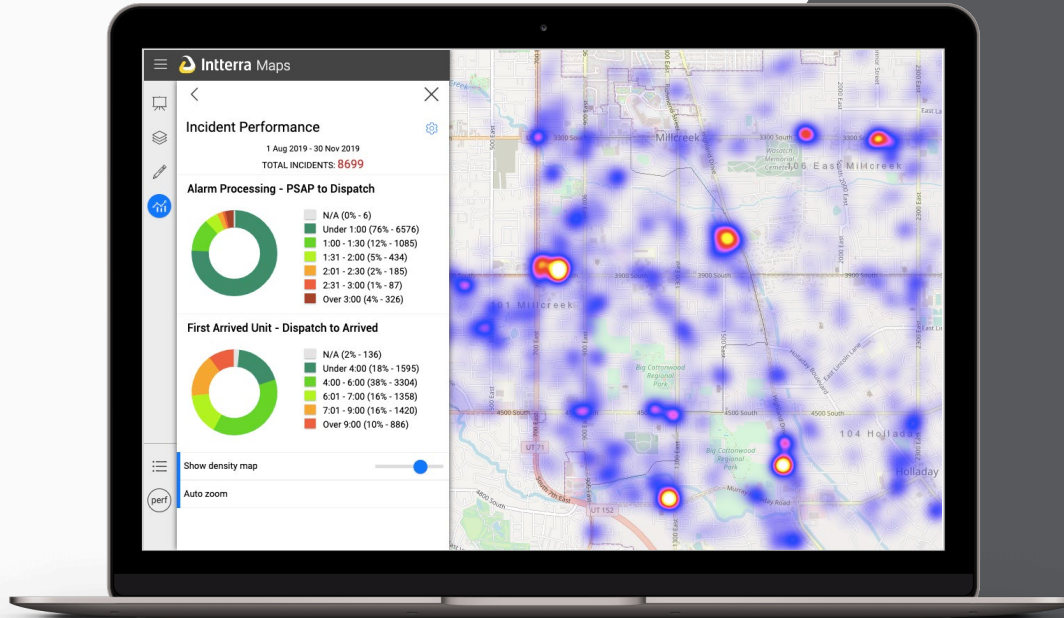
This is Naperville, you live in a different city. What else would you know about Naperville if you lived/worked there?

1. **Cooking Fires:** These are cooking fires occurring in residential properties and have shown a steady rise over the last fire years (> 25%). They are characterized by individual/s being involved and have led to a rise in the number of injuries and represent an increasing proportion of deaths. Cooking fires are the single largest cause of residential fires in Naperville at 32% and 25% of fire related injuries, they account for 60% of recorded residential fire deaths.

2. **Smoking:** This is the second most frequent cause of fire in the home and the second most likely cause of deaths and injuries.

3. **Serious Road traffic collisions:** These show a seasonal variation but over the last 5 years the numbers annually remain fairly consistent. However in the most recent year there has been a spike in the summer months, prior to this the Fall tended to be the period of higher frequency.

4. **Fire Alarm Calls:** Over the last fire years there has been a steady rise in AFD's while overall fires have been in decline. The frequency of these calls is creating a separate risk with the last 5 serious collisions of fire apparatus all occurred when they were responding to AFDs .This trend of apparatus accidents is growing relative to the rise of AFDs.

5. **Minor Arson:** Naperville ranks high in the state for low level arson per capita and this has been climbing slowly in the last 5 years. Predominantly in deprived areas of the city these fires tend to involve cars, street furniture, dumpsters etc. They are the most frequent type of non residential fires.

6. **EMS – Slips, trips, & Falls:** Of all acute calls slips, trips and falls is the most frequent category accounting for 21% of the total.

Cooking Fires Deaths & Injuries

Naperville: Risk #1 – Cooking Fires
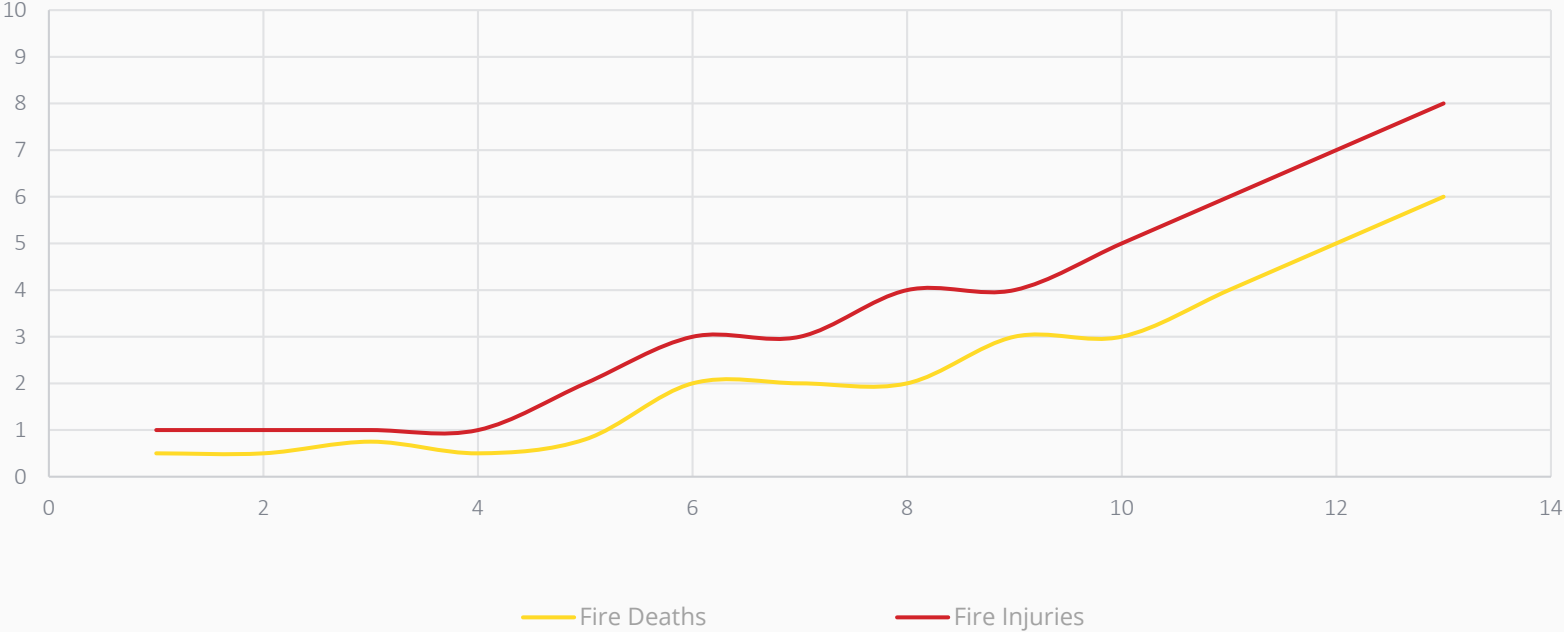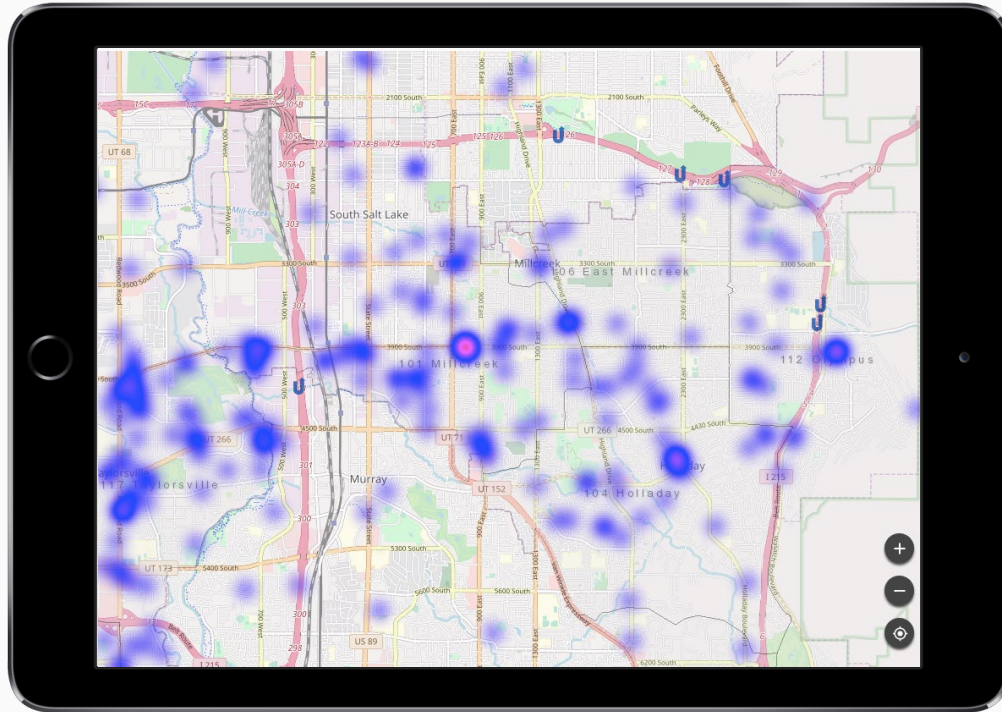
DISTRIBUTION

There is a background increase in these fire types across the city which seem to be randomly placed but there are also specific neighborhoods which have clusters of these incident types. These concentrations are in deprived neighborhoods but the more widespread distribution is less obviously associated with deprivation.
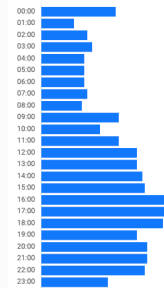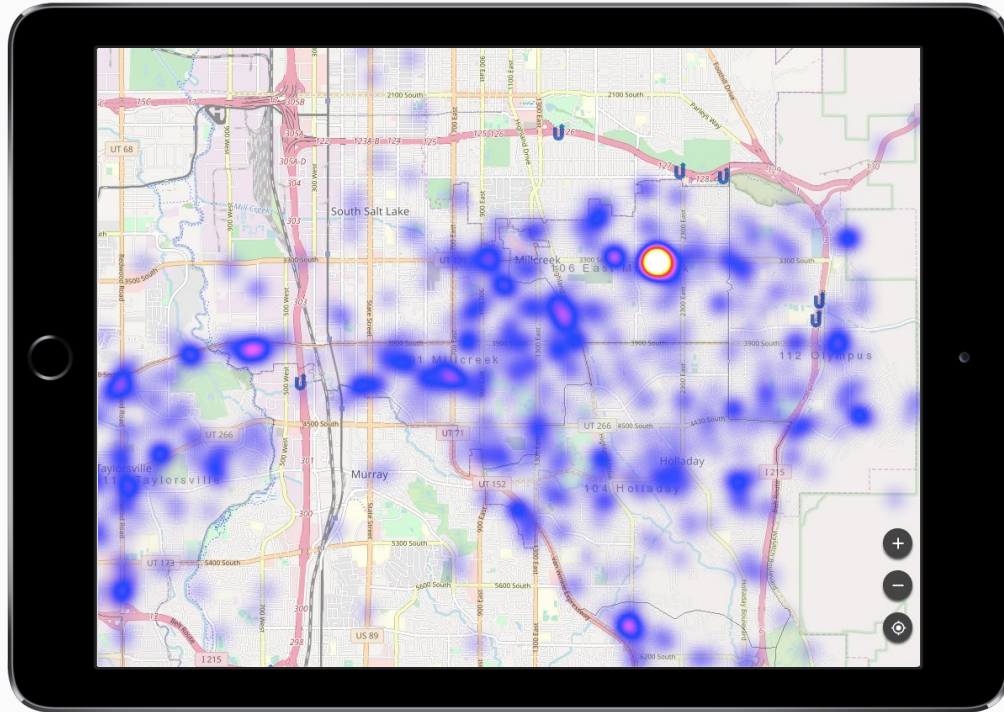
TIMING

For those areas with high concentration the incidents tend to occur between 1300hrs-1800hrs. The more generalized distribution is less defined and occur across waking hours up to 2300 hrs.

Naperville: Risk #2 – Smoking

DISTRIBUTION

Distribution tends to be fairly even across the city with a few areas of higher frequency – the distribution has some similarities with the heat map for risk #1.

Naperville: Risk #3 – Serious Road Traffic Collisions
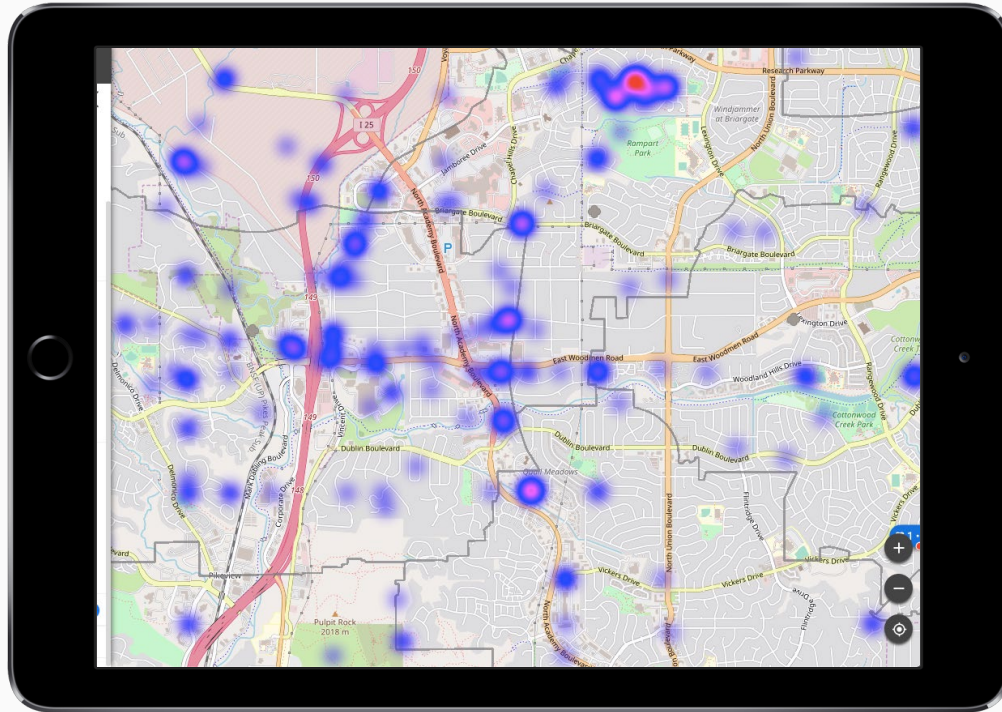
DISTRIBUTION

Distribution shows hotspots at the more complex highway intersections and certain points of fast minor roads with hidden dips and dangerous bends. There are some random occurrences as well. The recent spike however has a
more defined distribution and seems confined to specific roads and areas.

TIMING

The regular occurrences at specific intersections and roads are caused by
driver error/confusion caused by the road layout or hazardous nature of the
roadway. The most recent spike however is a very different demographic 17-24 year old males and females (the former often reported as driver and the latter as passenger). Information reveals some of these cars are stolen whilst others are registered to the victim.
The areas of incident in these cases are localities where groups of young
congregate, often more secluded parking lots. It is the roads to and from these points where the RTC's take place. The victims are not from this part of town but usually projects on the opposite side of the city.

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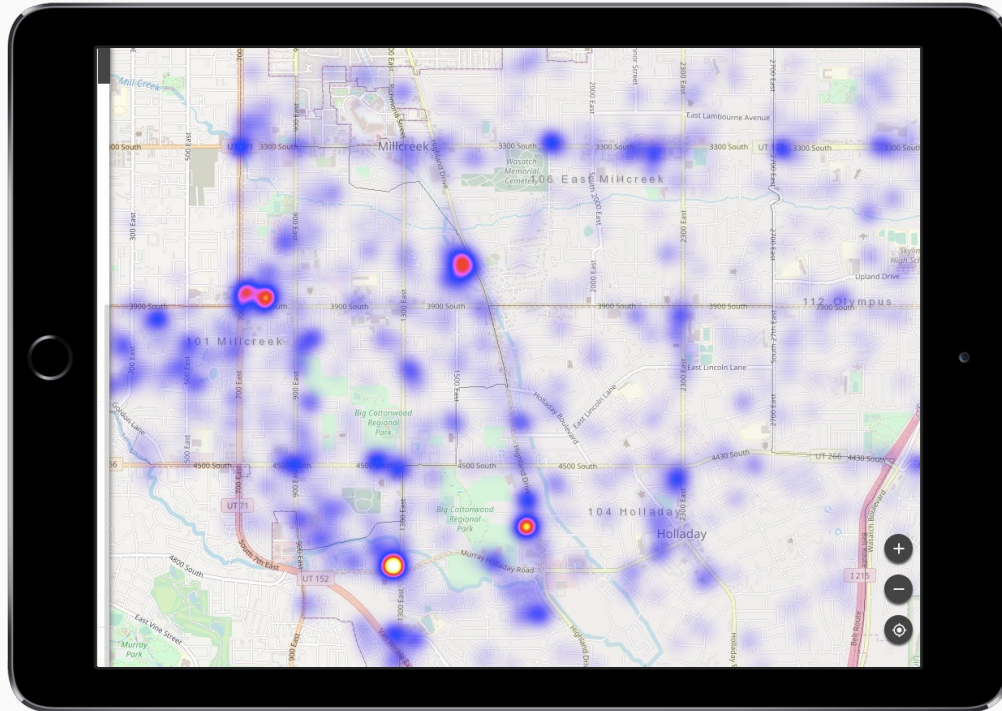
DISTRIBUTION

Distribution of AFDs is generally across those districts where building type requires alarms. Hence downtown areas, commercial and industrial zones, hospital and public buildings.

WHAT'S GOING ON?

While the heat map is helpful it fails to reveal a more specific fact. That some 20 named buildings account for some 30-32% all AFDs call. The top 20 offenders are two major hospitals, two poorly run homes for the elderly, a homeless shelter, two halls of residence for students/nurses, the remainder are business and commercial premises.

Naperville: Risk #5 – Minor Arson
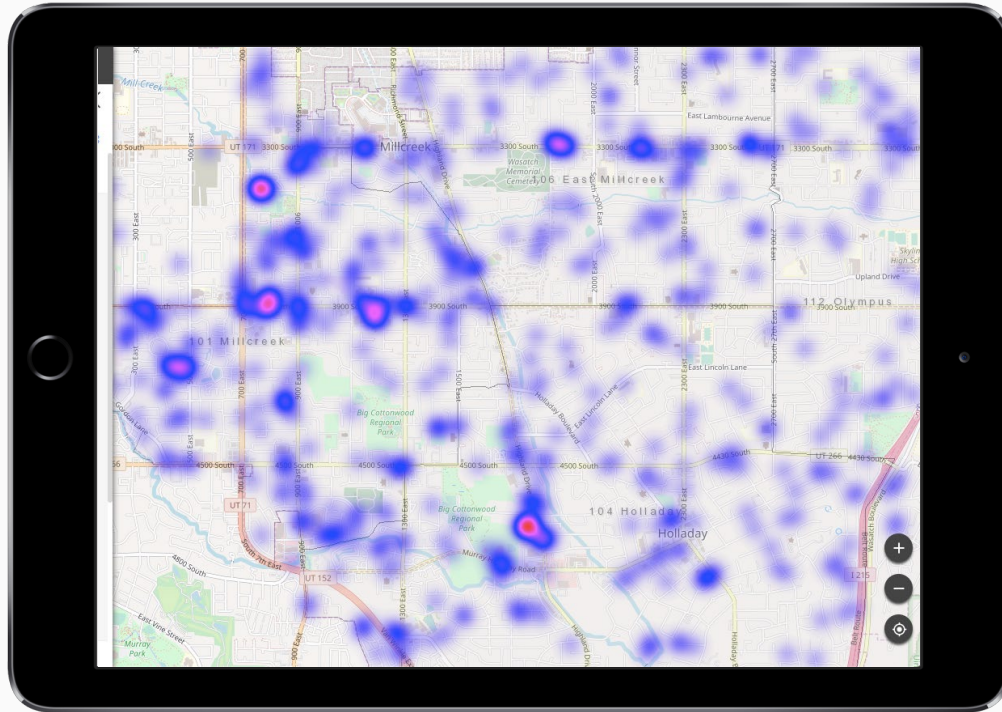
DISTRIBUTION

This is a persistent problem from the city and has been climbing slowly but inexorably over the last 5 years.

WHAT'S GOING ON?

Further research reveals that although the distribution predominates in deprived areas that are clustered around schools in poor neighborhoods. Furthermore evidence of time of these calls gives a further clue to the perpetrators. Frequency during time of day reveals that there is a strong correlation with school hours. With high frequencies occurring after school closes until 2100hrs.

Naperville: Risk #6 – EMS- Slips, trips and falls
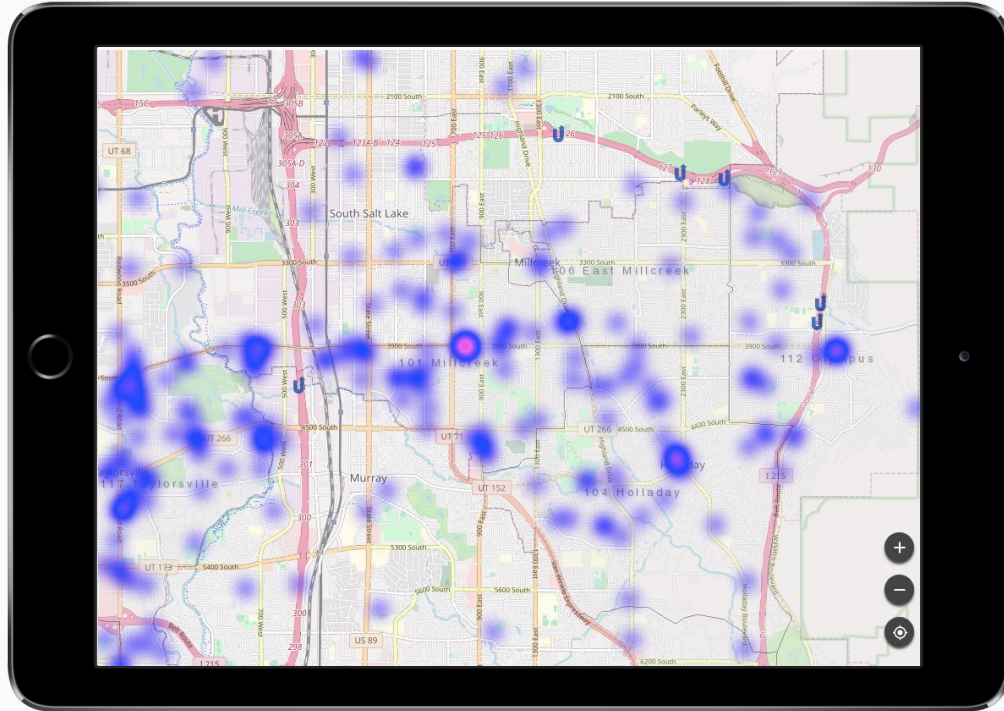
EMS call type: % frequent caller % run to hospital % of total EMS calls

2 / 8%

3 / 12%

20 / 80%
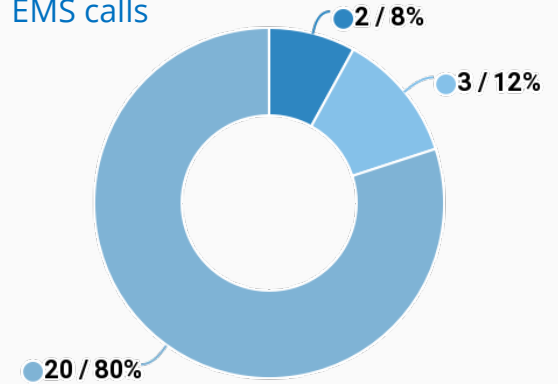
WHAT'S GOING ON?

Clearly the rise of calls correlates both to increases in this demographics group, low levels of health insurance. Public care services are operating with this group but their resources are limited. Hence wealthy neighborhoods are more likely to be a position to pay for private care services, stability aids and have health insurance.

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Given what you know about Naperville, what other information would you like/need to know to understand about YOUR activities to deal with these risks even better.
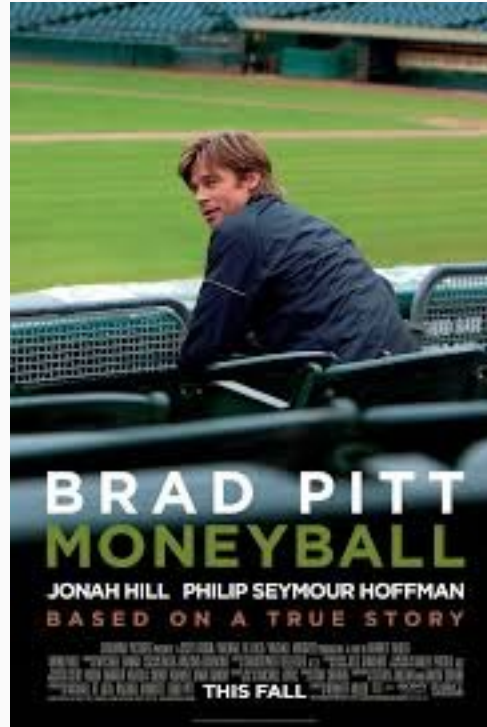
BREAK

Lunch

SECTION 2/3

A word about relationships and organizations
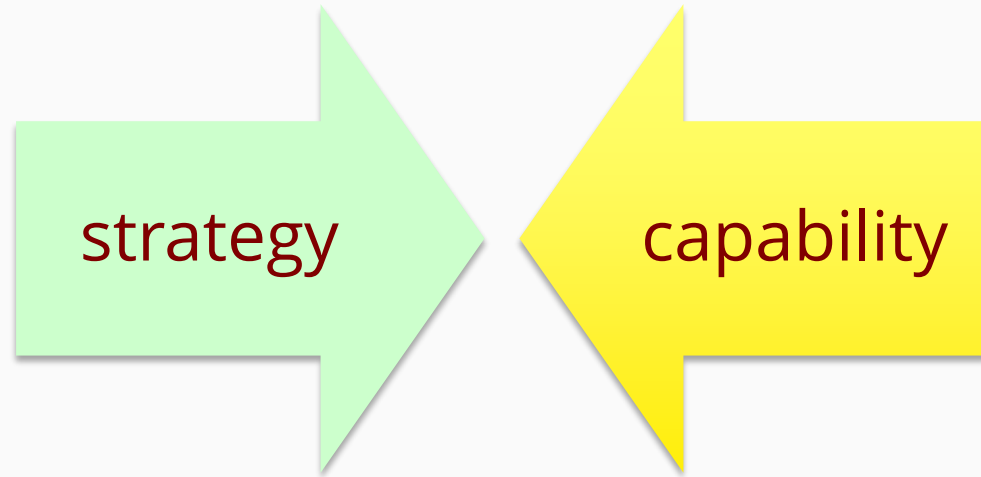
Bad Questions

Valueless Answers

Where is the most risk?

Here is the biggest fire

Who has the most fires?

The forestry service

What causes most fires?

Lighted matches

Who is at most risk?

55 year olds have the most fires

When do most fires happen?

At night

What does the data tell me?

What do you want to know?
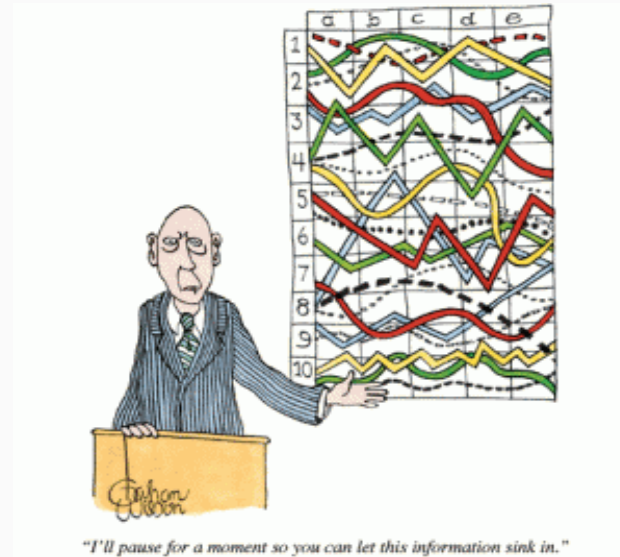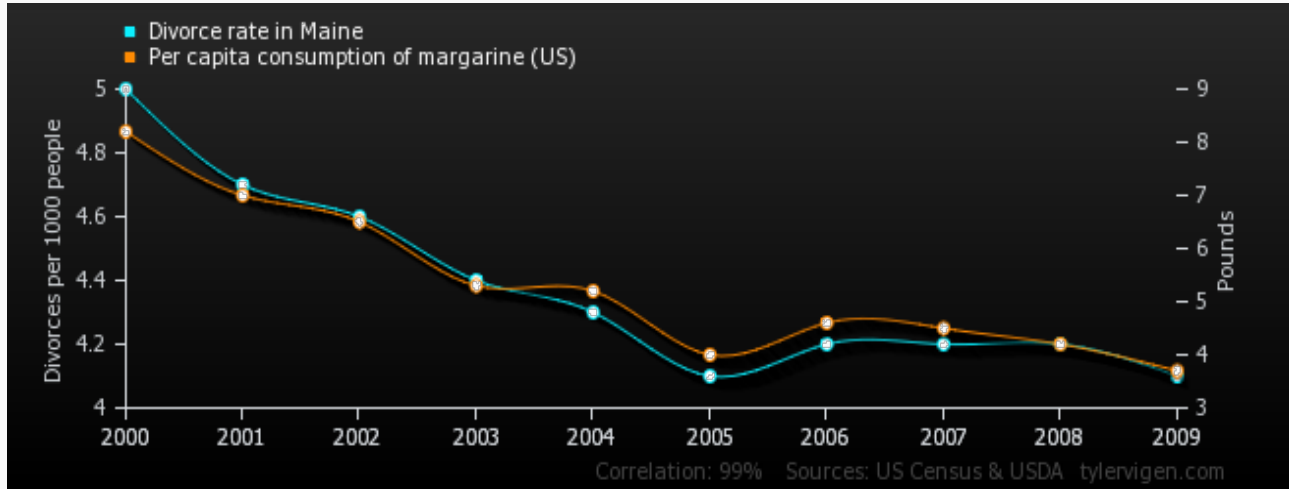
What cars have the most accidents?

Red ones!

D'OH!

A Productive Axis

What could you do to help the other do their job better?

What could they do to help you do your job better?

Strategic

Analytical
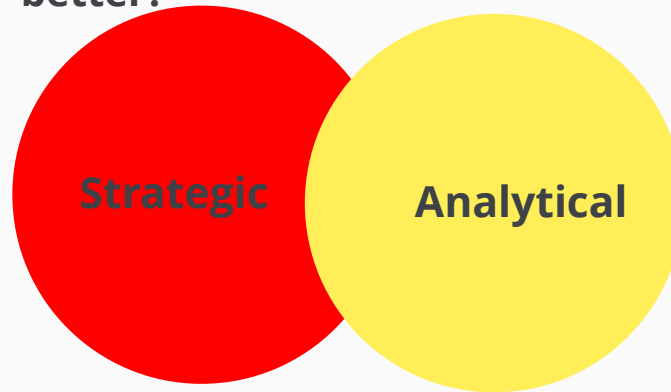
"I'll pause for a moment so you can let the information sink in"

Spurious Correlations
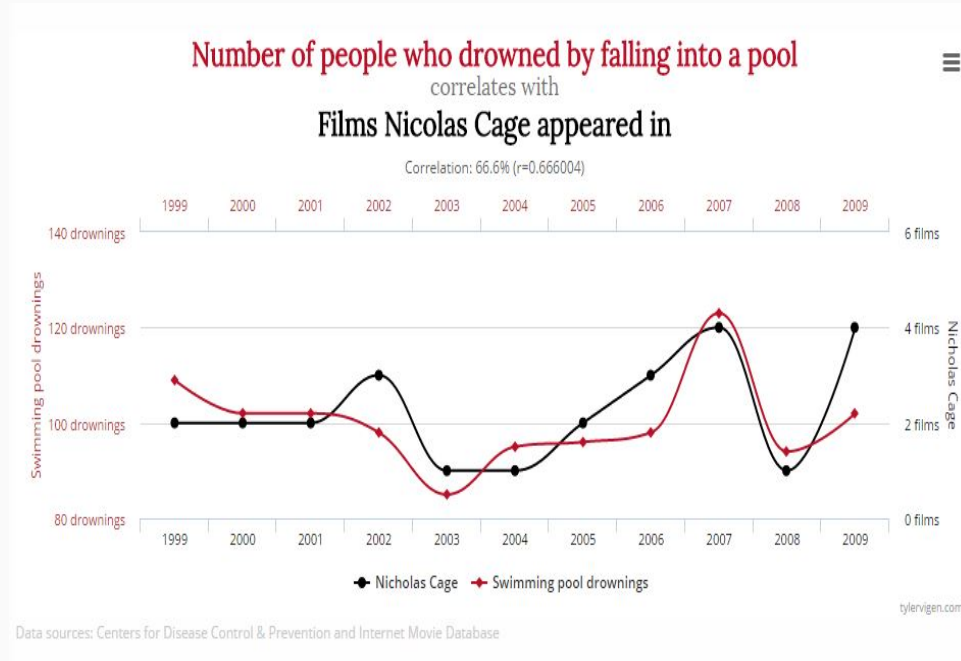
BREAK

Coffee

SECTION 2/4

Intterra's golden rules for positive relationship

Building good relationships between analysts and the rest of the organization.

1 **LEADERS INTENT**
Executives need to develop a clear vision for how the organization will focus on CRA.

2 **IDENTIFY AND FOCUS ON SPECIFIC PROBLEMS**
The data can show you what the problems are, and information can help the organization focus on solving them (and measuring them)

3 **CRA CANNOT BE A HOBBY**
An organization should focus on driving down risk. That is not an undertaking for one or two people in an organization.

4 **IF IT'S ABOUT USING DATA, WHAT'S YOUR PLAN?**
Data needs to be available for analysis, and building a program means identifying data both internally and externally and actually designing to use it.

A GOAL WITHOUT A PLAN IS JUST A WISH

Thinking about Naperville what would perfect look like?

Where does it sit on the scale 1-10?

X + 1