



The Way Forward:

Initiatives driven by data from
train-pedestrian fatal collisions in
Metropolitan Chicago 2004-2012

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Data set . . .

- Illinois Commerce Commission data
- **338 fatalities** in 334 collisions between moving trains and non-motorized persons
- No on-train fatalities in these incidents
- Nine-year period **2004-2012**
- **6-county Chicago metropolitan area**
- “Railroads” only, does not include Chicago Transit Authority rail rapid transit service

84% of all Chicago railroad fatalities ...

Pedestrians/Pedal Cyclists

Pedestrians	327
Pedal cyclists	<u>11</u>
	338

One every 10 days

Other Fatalities

Vehicle occupants	39
Vehicle suicides	2
Employees	6
Contractors	8
Passengers on trains	4
Misc. other	<u>5</u>
	64

Categorizing the 338 fatalities . . .

Apparent Intentional Deaths (Suicides)		Unintentional Deaths	
Stations & adjacent grade crossings	13%	Station platforms and crosswalks	6%
Freestanding grade crossings	15%	Grade crossings	15%
Plain track	19%	Plain track (“trespassers”)	32%
Total	47%	Total	53%

Half are apparent suicides . . .

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Railroad staff “gatekeeper” training may not be very effective . . .

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Re-engineering stations and crossings tackles only 20% of the problem...

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About a third are “trespassers” . . .

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Why are “trespassers” on the track?

- Taking a short-cut
- Theft / vandalism
- Thrill seeking
- Illegal transportation
- Loitering
- Hanging out
- Illicit activities
- Homeless

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The reasons for trespass were not part of this data set or study . . . but knowing the root cause of the “problem” will determine the “solution”

Not entirely a male problem . . .

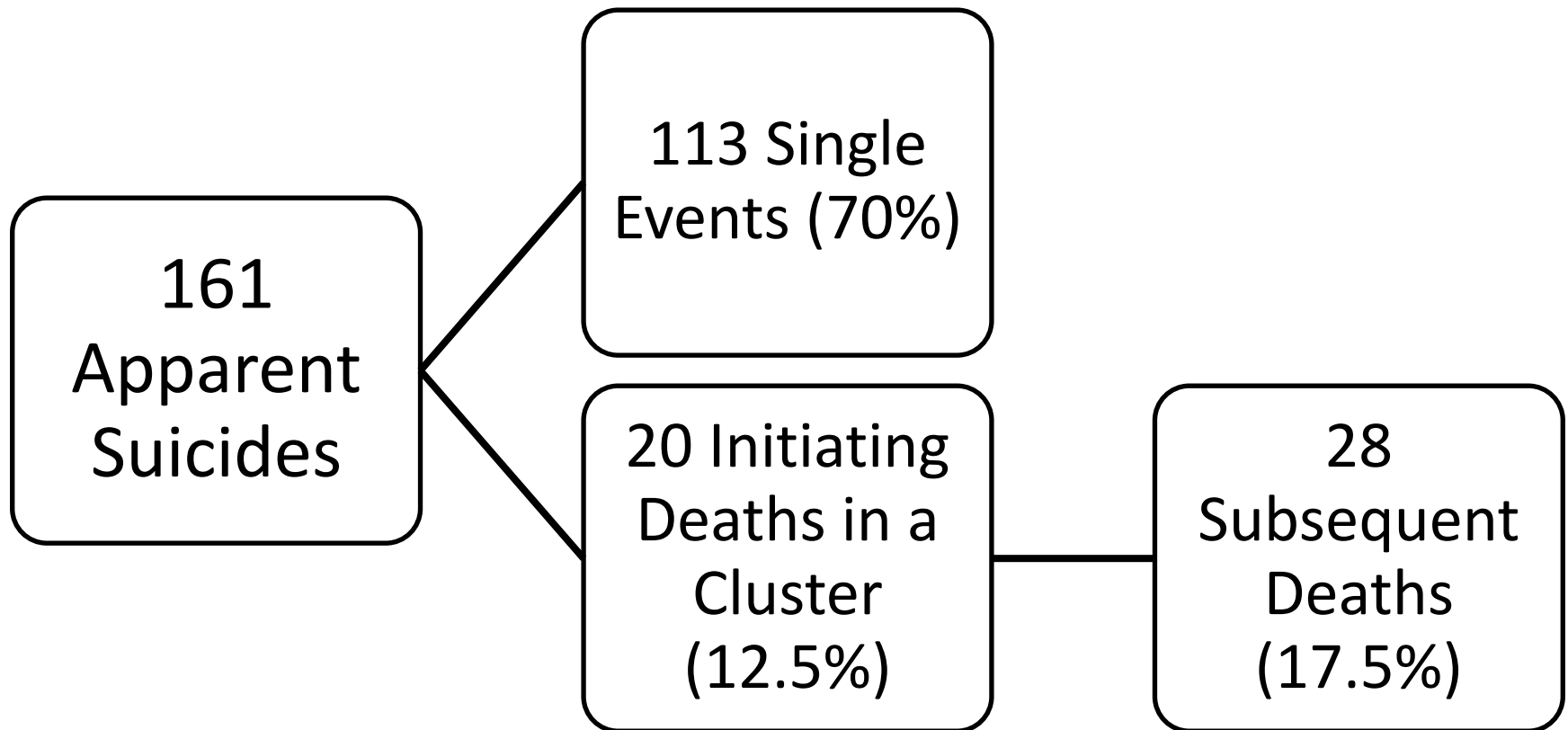
Unintentional at stations and crossings	57% male
Unintentional on plain track (“trespassers”)	80% male
Apparent suicides	73% male

In Chicago it is an “older crowd” . . .

Annual Risk per Million	Unintentional Stns & Xings	Unintentional on Plain Track	Apparent Suicides
0-9	0.1	0.1	
10-19	0.8	1.1	3.9 (13-19)
20-29	1.5	1.5	2.7
30-39	1.1	2.4	2.2
40-49	1.2	2.7	3.2
50-59	0.9	1.5	2.6
60-69	0.7	0.8	2.5
70-79	1.2	1.1	1.4
80+	1.3	0	0

Some contagion of apparent suicides

Clusters are in same or adjacent municipality within 120 days



Highly-publicized suicide May 7, 2010

18 weeks	Jan 1 – May 6	May 8 – Sept 10
2004	4	8
2005	6	5
2006	8	5
2007	4	6
2008	6	8
2009	11	2
2010	5	
2011	5	4
2012	8	9

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95% above average.
 Poisson probability
 of 13 or more = 1 in 50

Regression analysis . . .

- 216 rail-served suburban municipalities (not the City of Chicago)
- Three separate regressions for:
 - Unintentional: Stations and Crossings
 - Unintentional: Plain Track
 - Apparent Suicides
- Negative binomial technique
 - Dependent variable is count of fatalities
 - Exposure variable is municipality's population

Findings on unintentional deaths . . .

- Fewer access points (stations and public crossings per square mile) reduces unintentional fatalities
- Plain track risk increases with line speed
- But unintentional fatality risk does not increase with train volume (evidence of “risk compensation”?)

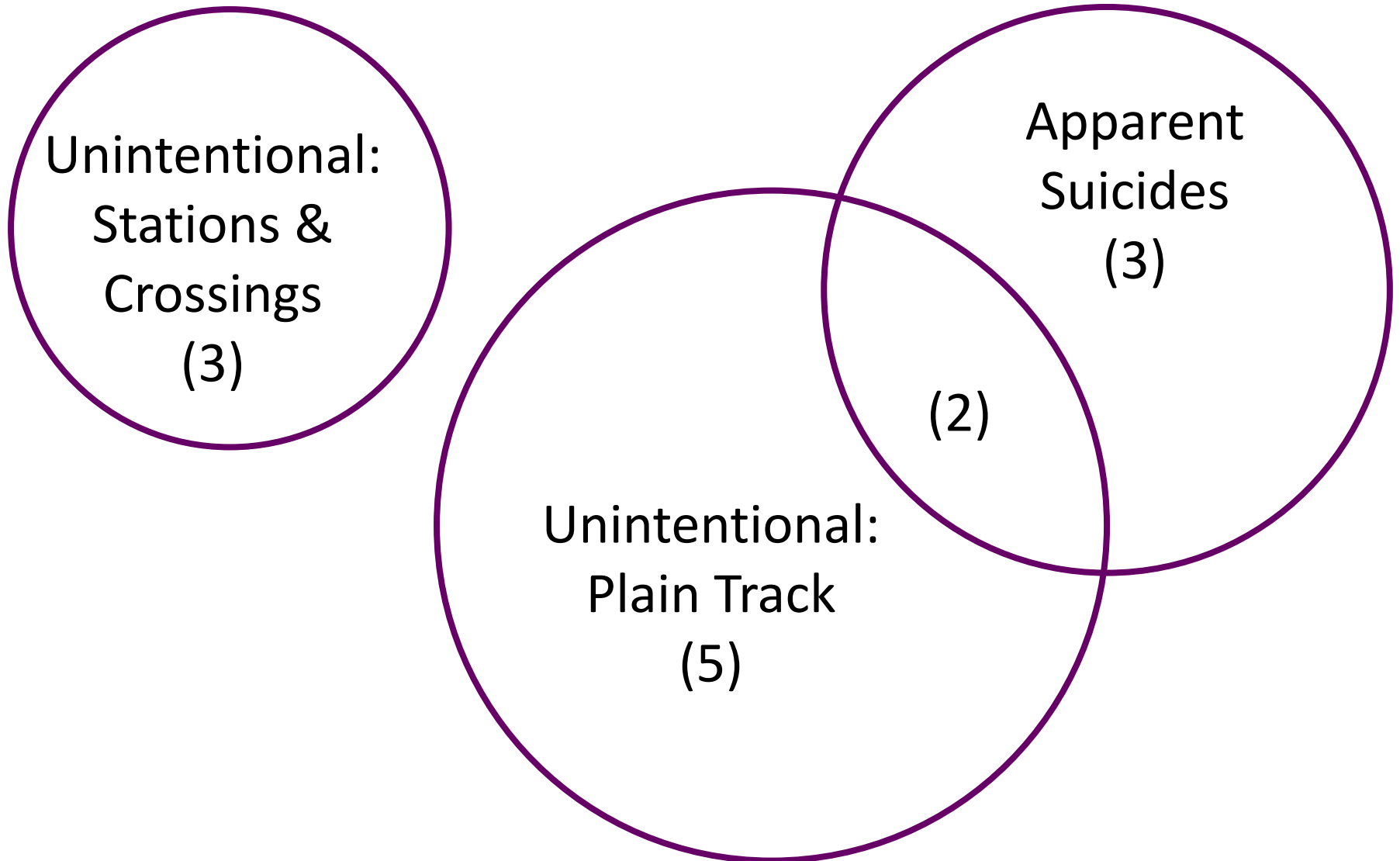
Findings on apparent suicides . . .

- Fewer access points (stations and public crossings per square mile) not a significant deterrent. Decedents may travel to find an access point.
- Attracted to busy lines with passenger trains running to a published schedule
- Generally (but not exclusively) in higher-income areas

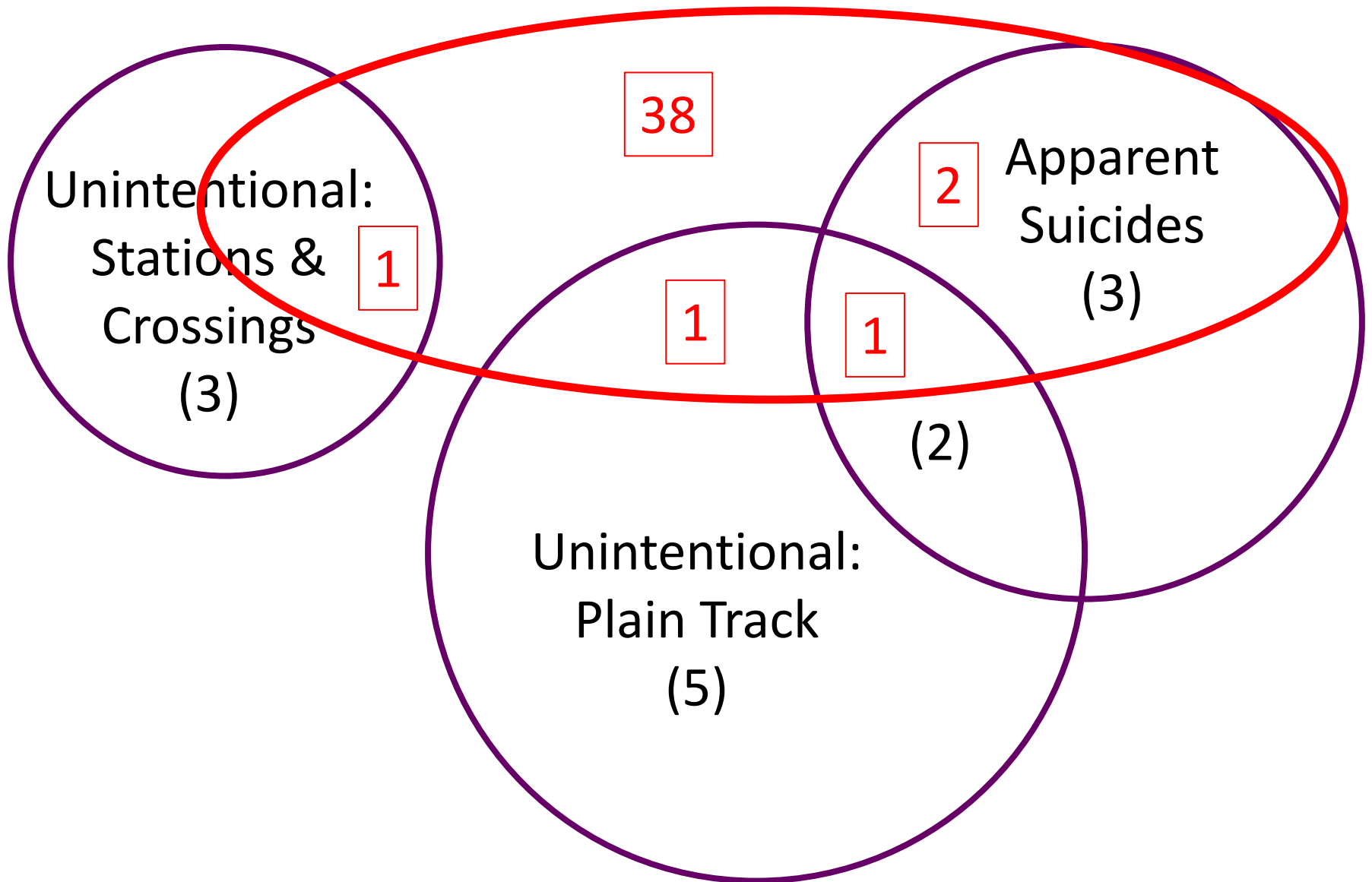
Identifying “hot spots” . . .

- Rates per 10,000 population can identify high risk communities
- Extreme outliers in regression analysis also identify communities where actual risk is considerably higher than would be expected given train volumes and train types

Extreme outlier municipalities . . .



In top 20% of Operation Lifesaver activities



Take aways . . .

- Vast majority of railroad deaths (84%)
- Typically middle-aged, not minors or seniors
- Fewer access points reduce unintentional fatality risk, but not so for apparent suicides
- Apparent suicides
 - are 47% of the total
 - attracted to busy lines with published schedules
 - generally in higher-income areas
 - 17.5% are subsequent deaths in a cluster

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