The Latest in Automobile Remote Sensing

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Paul Pisano, Gabriel Guevara (FHWA)

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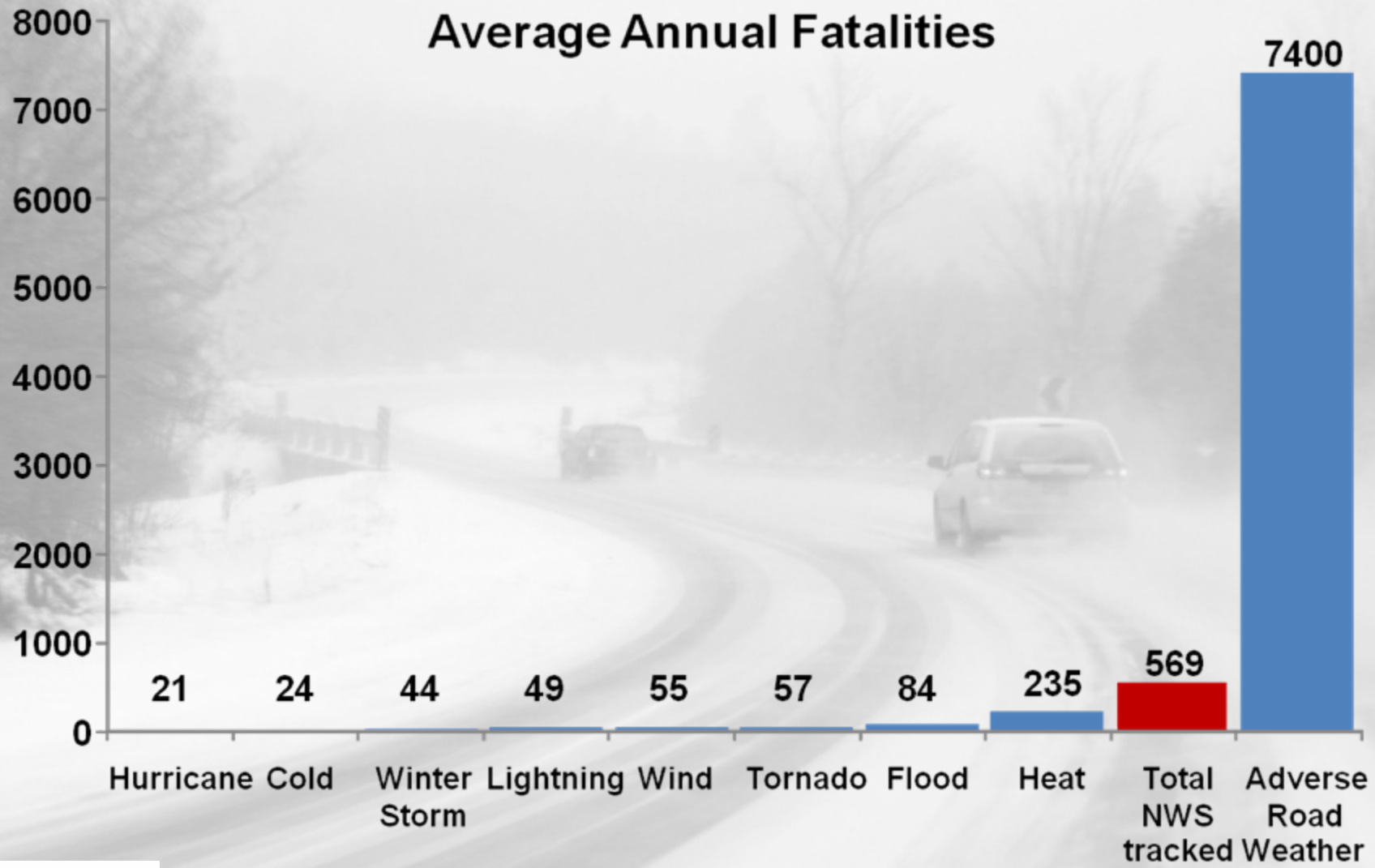
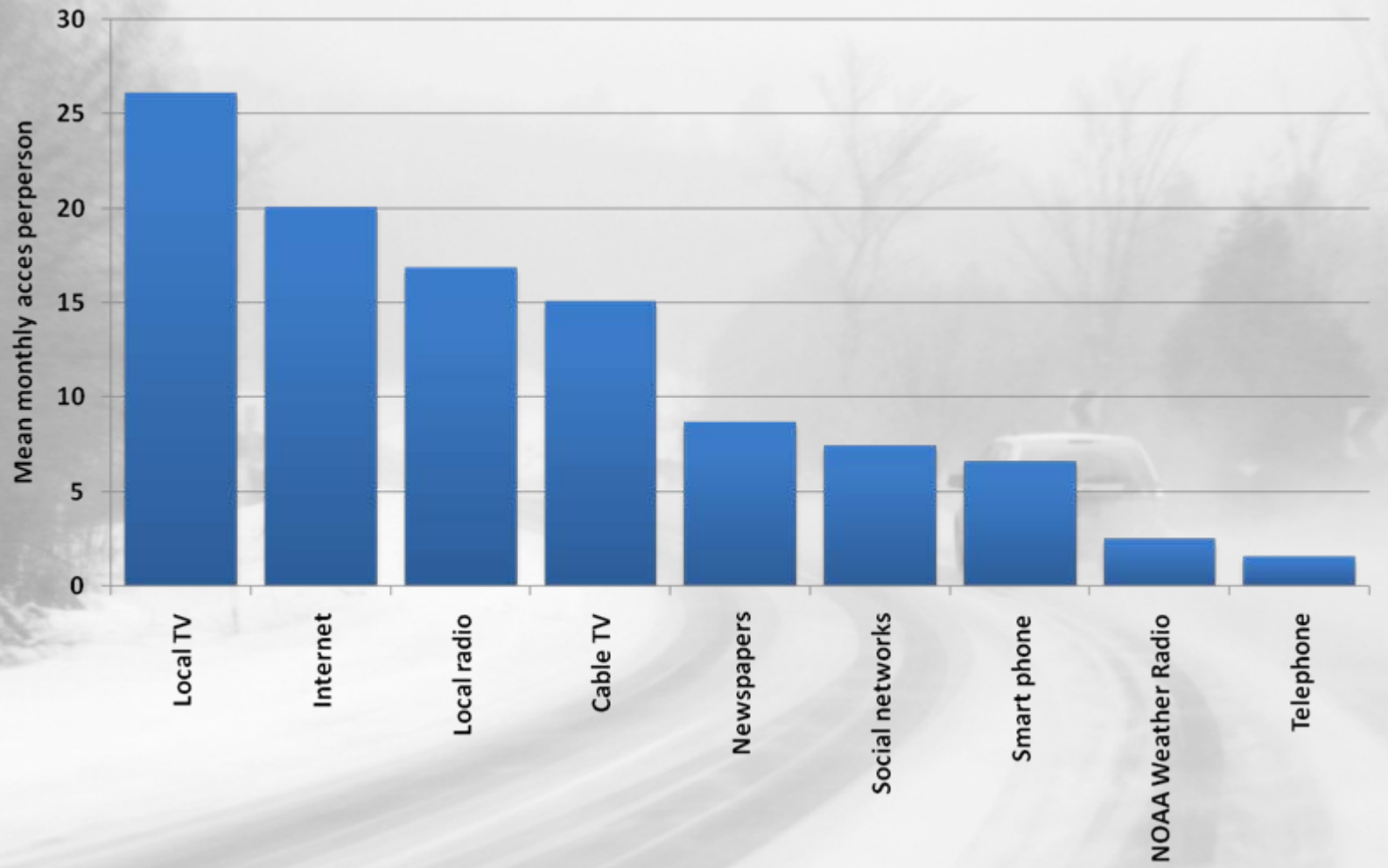
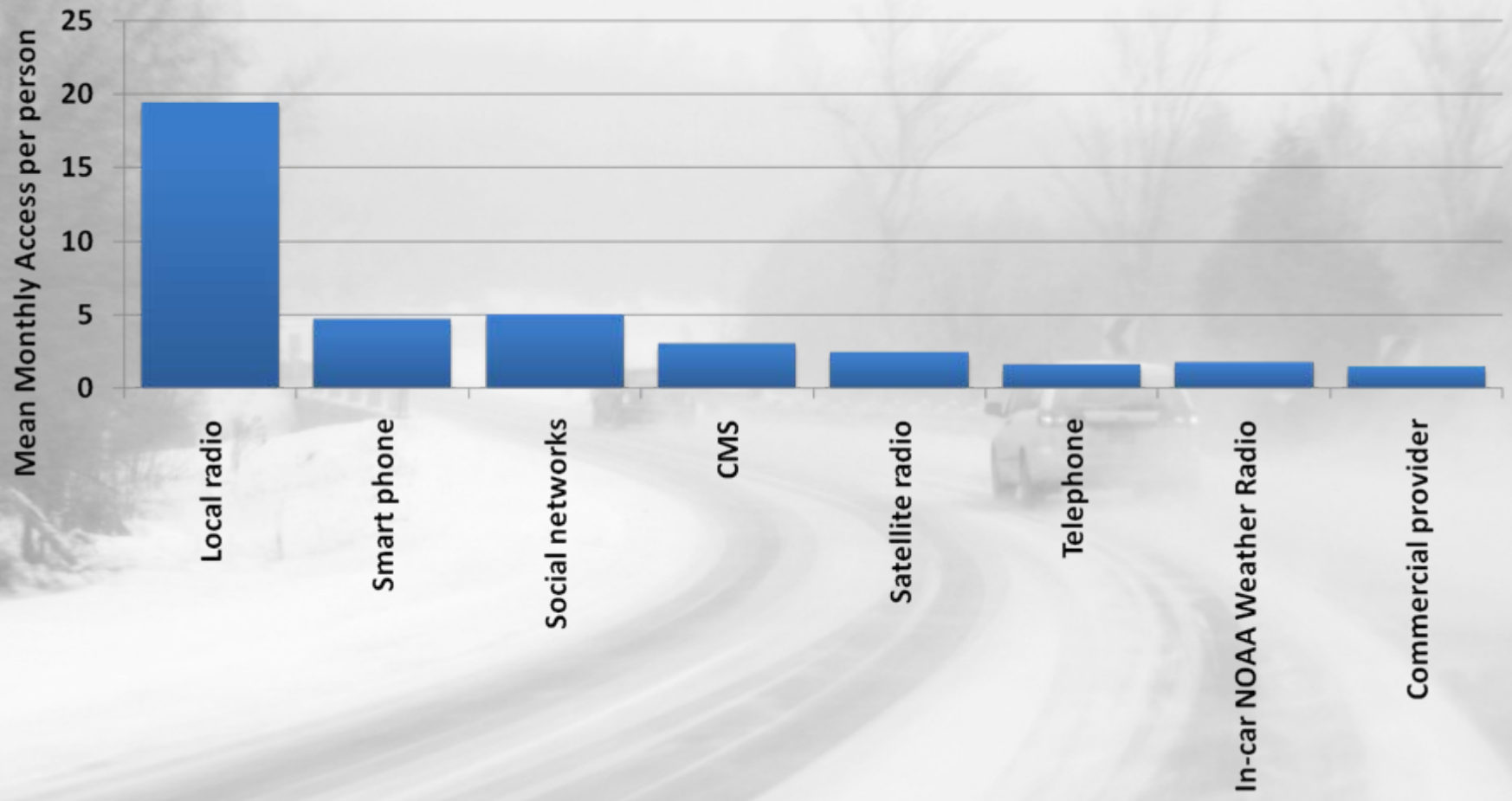
Motivation


Average Annual Fatalities
8000
7000
6000
5000
4000
3000
2000
1000
0
21
24
44
49
55
57
84
235
569
7400
Hurricane
Cold
Winter Storm
Lightning
Wind
Tornado
Flood
Heat
Total NWS tracked
Adverse Road Weather

Information Gathering



Information Gathering - Autos



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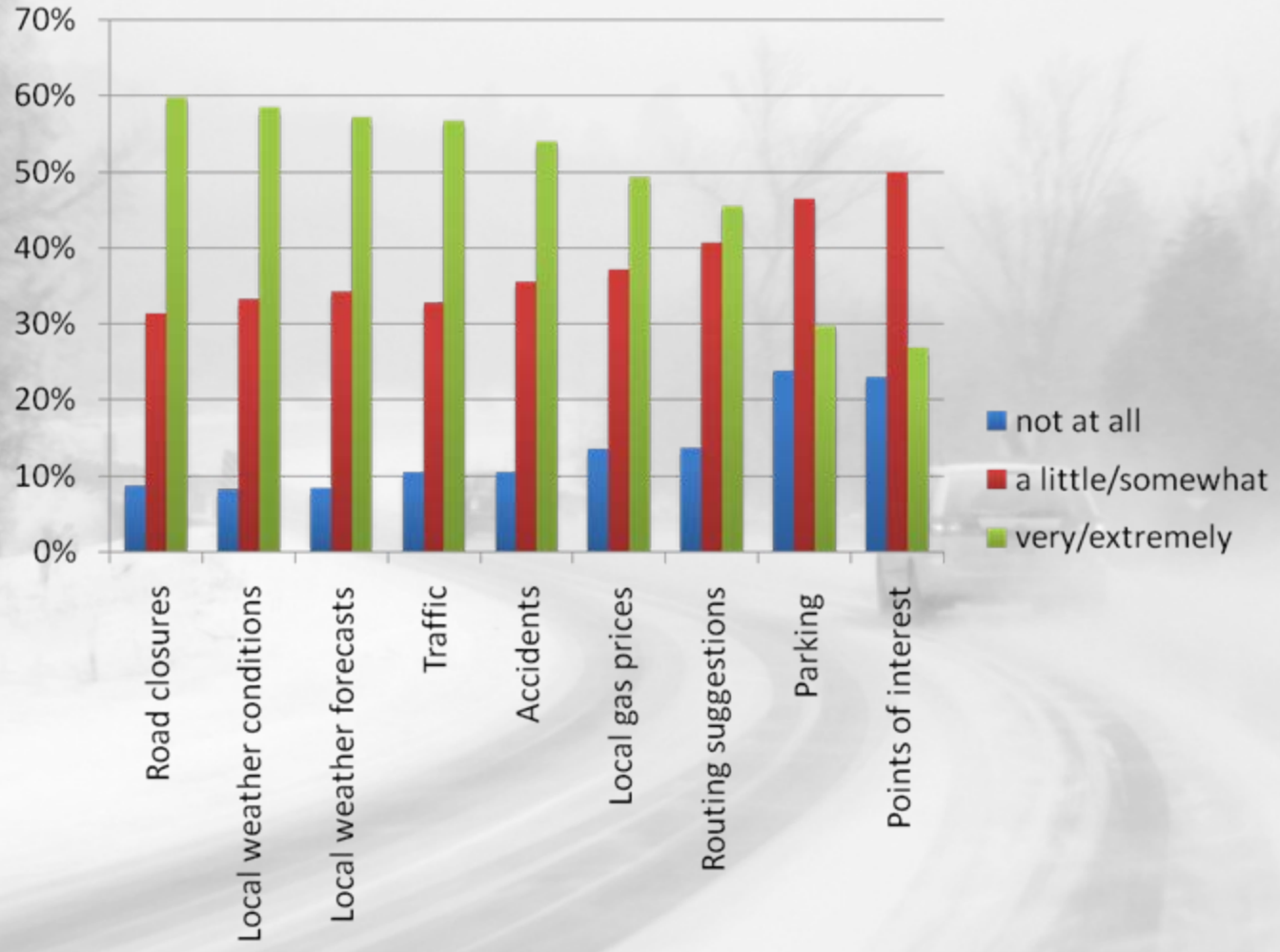
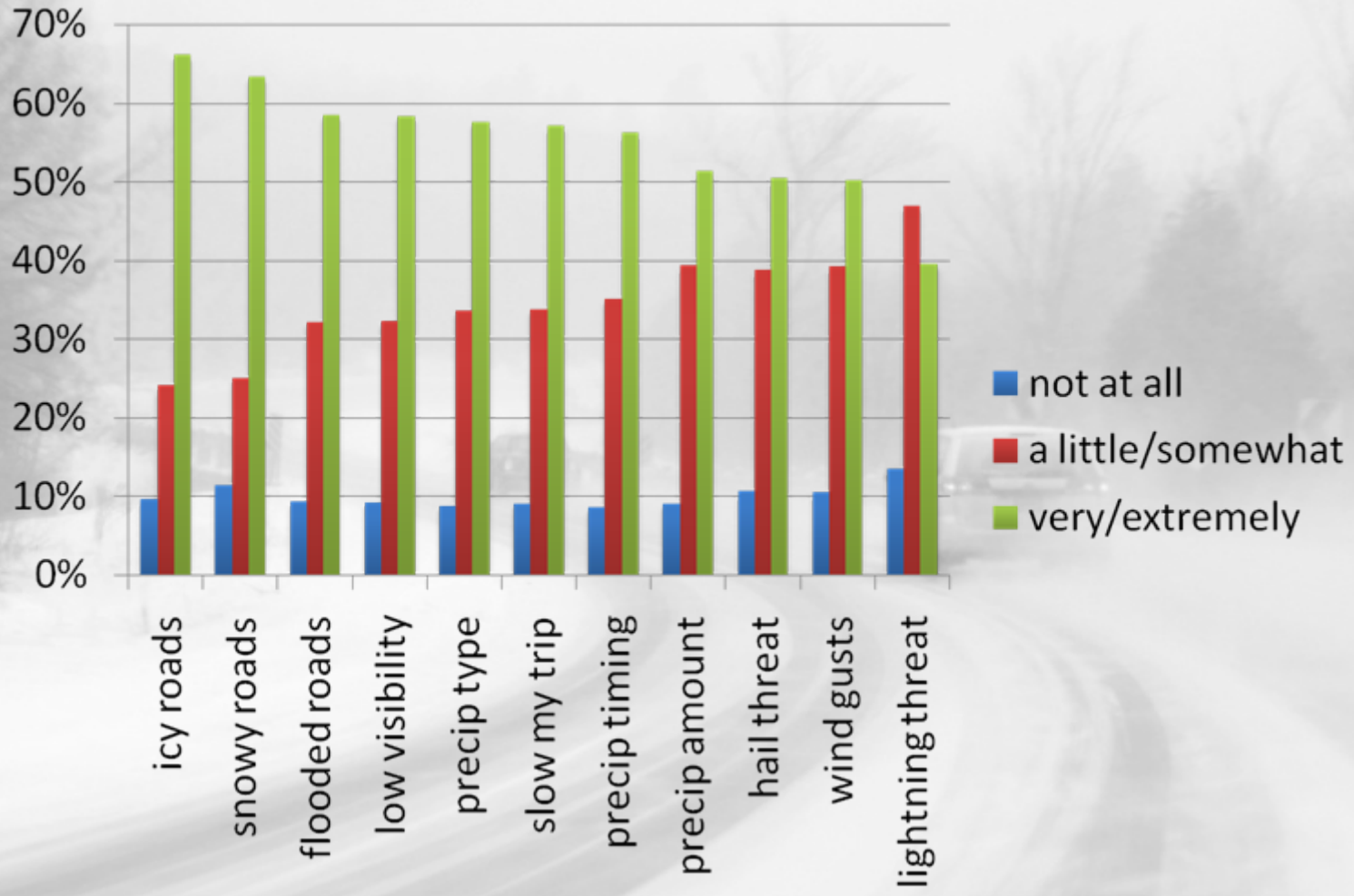
Consumer Interest



Types of Wx Information



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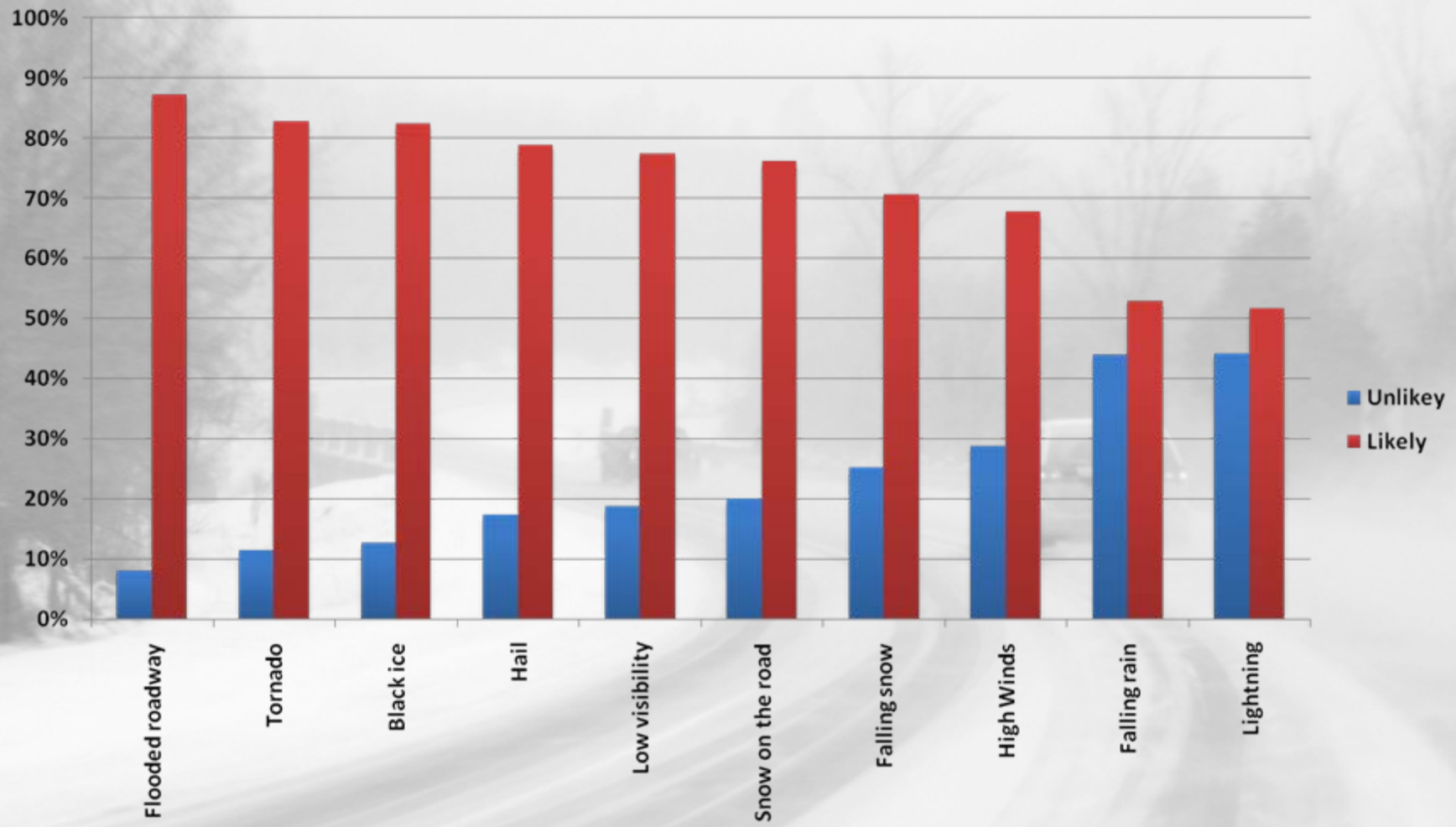
Decisions, decisions…



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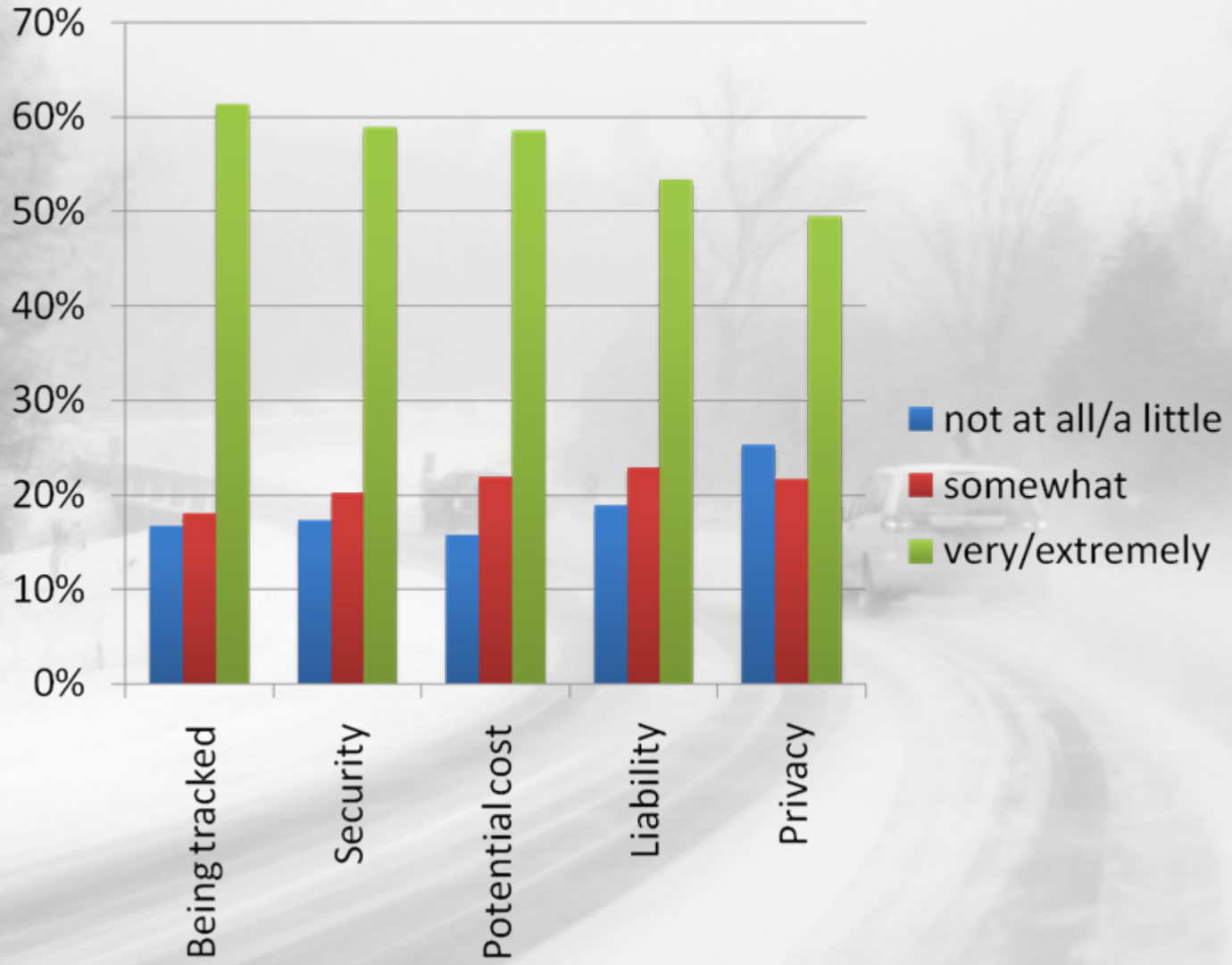
Concerns?



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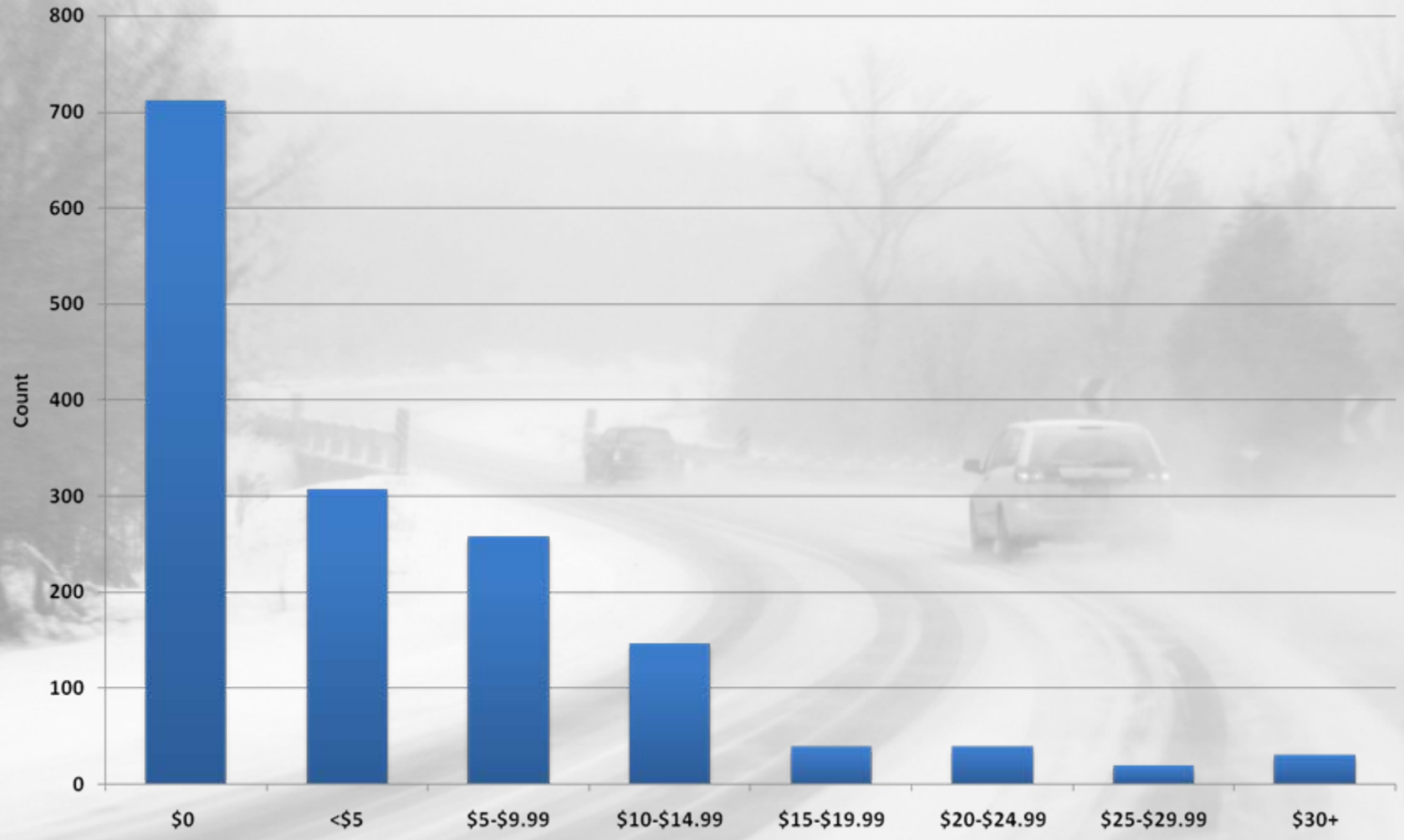
Willingness to Pay?



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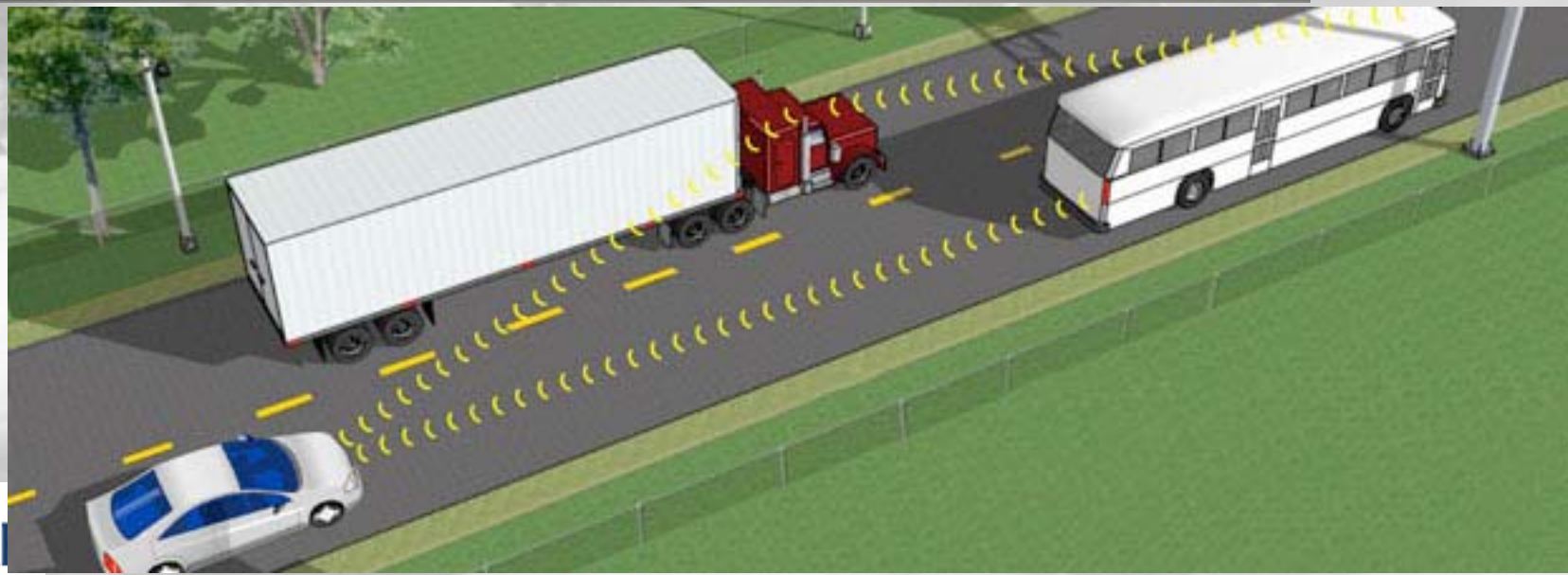
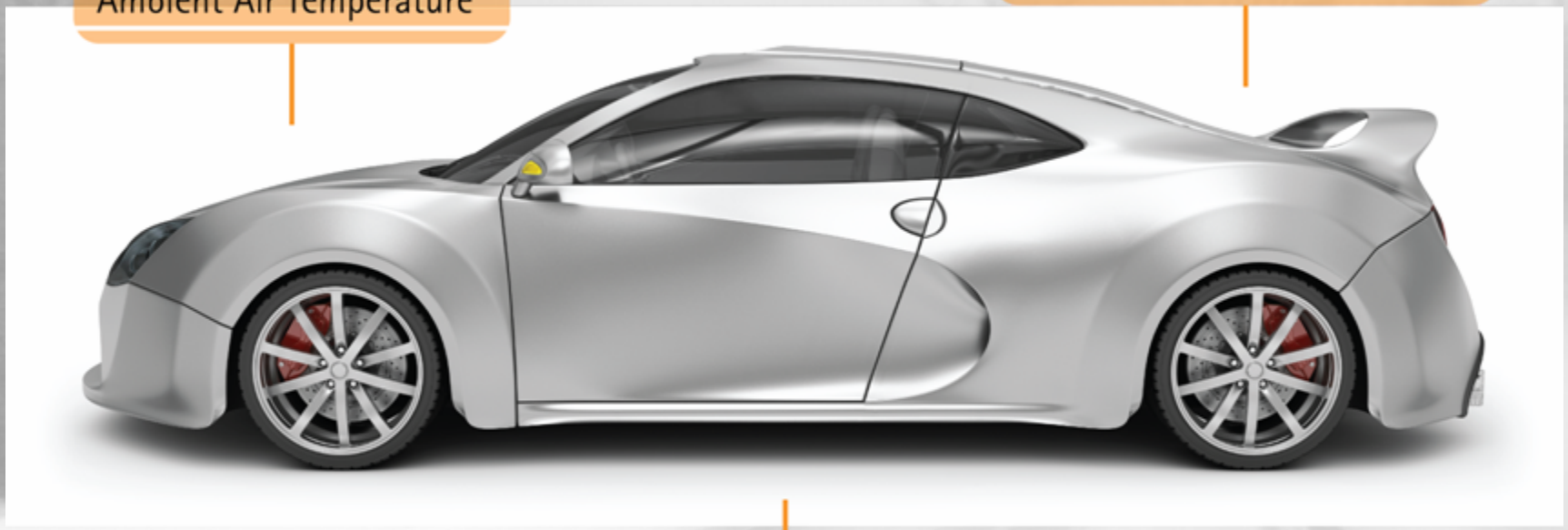
What is Telematics?

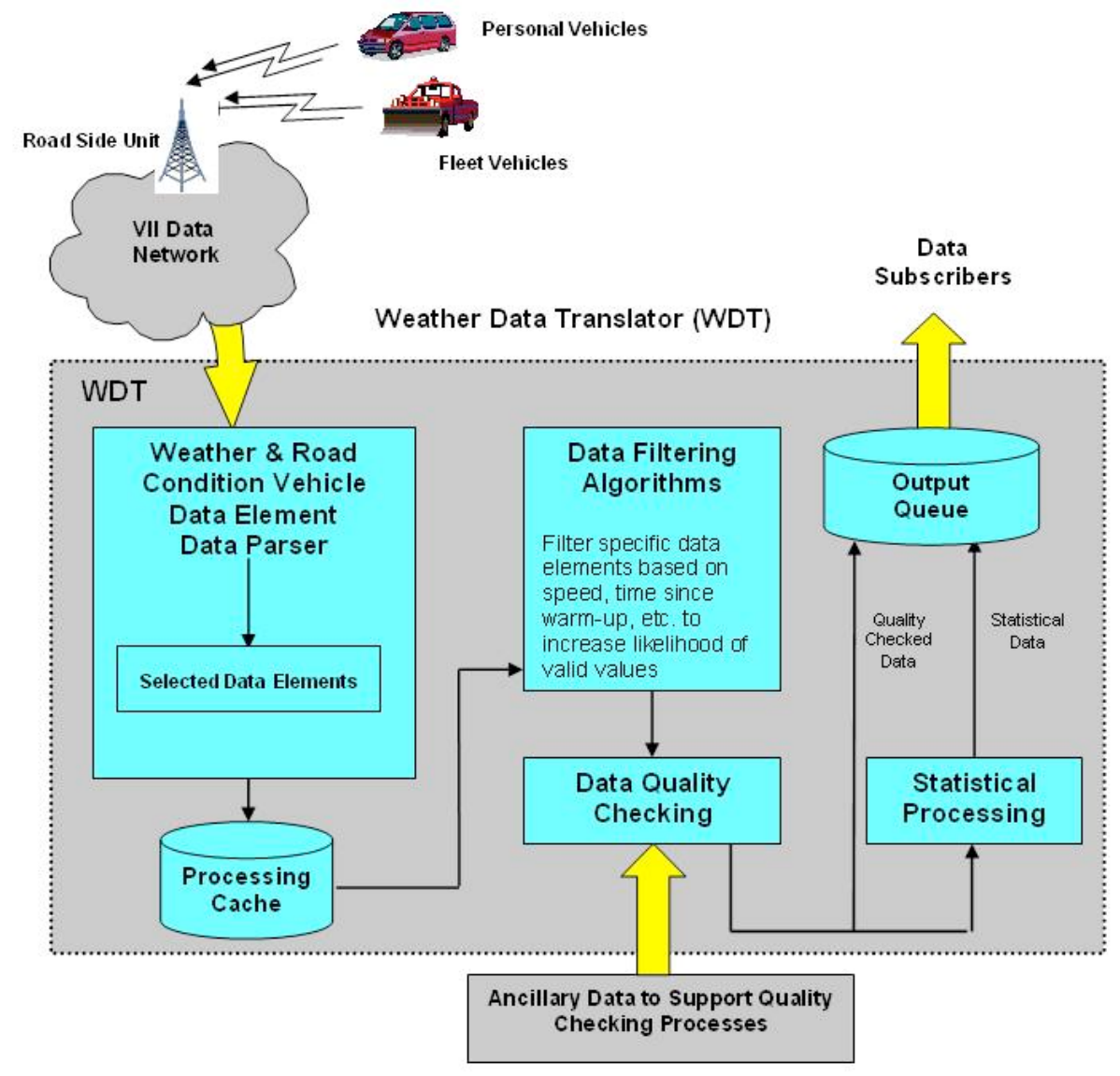


NCAI

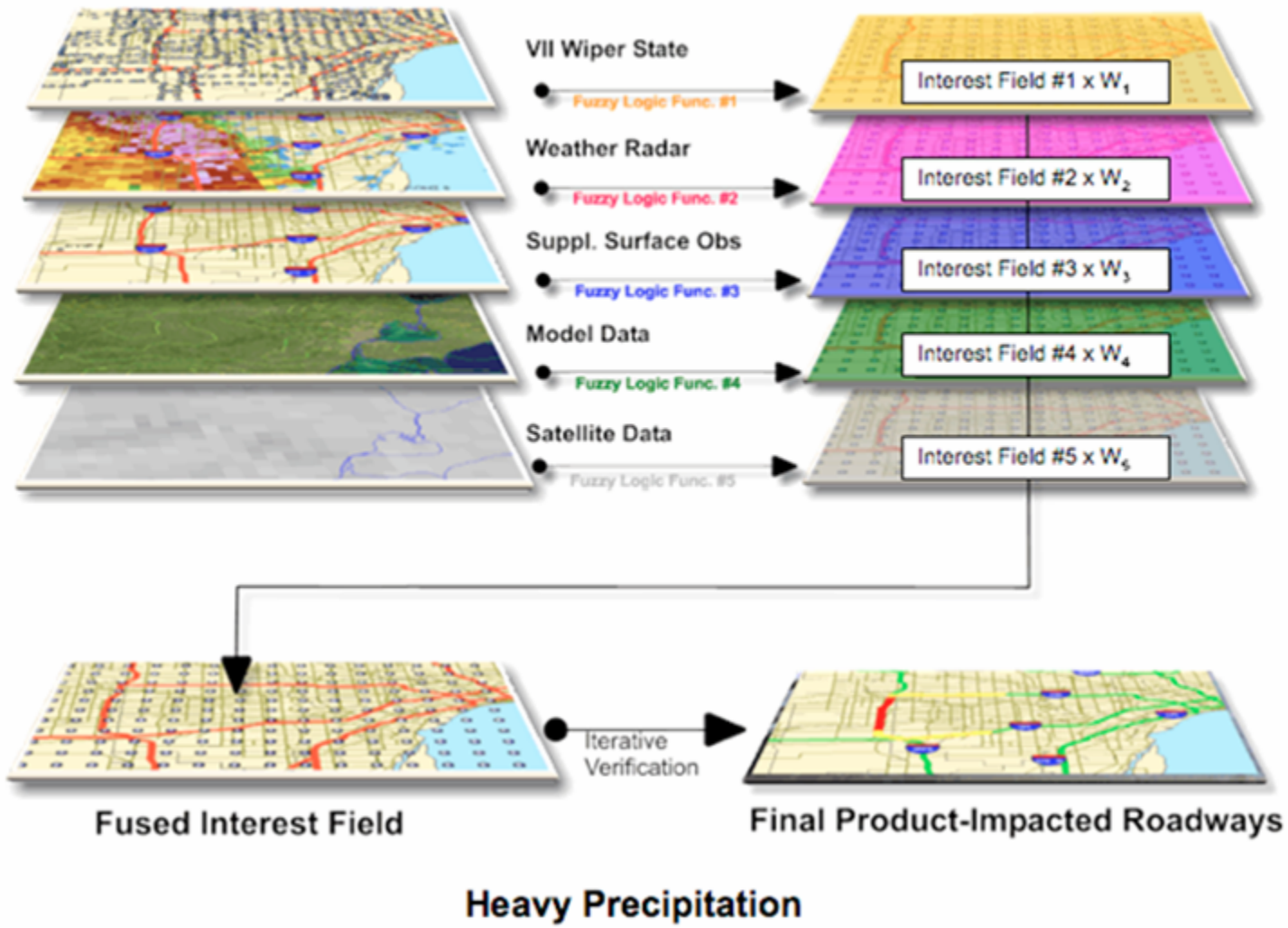
Vehicle data



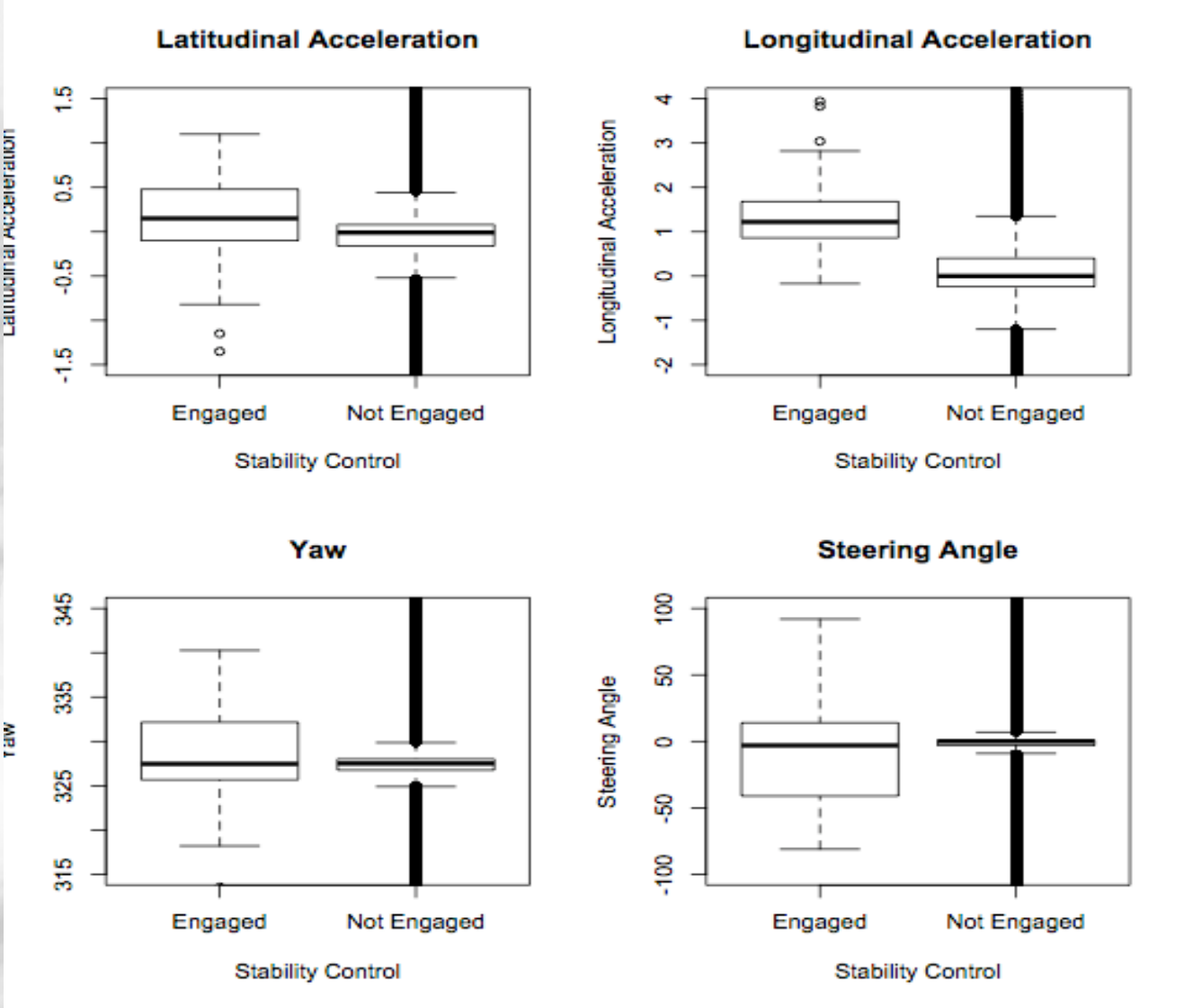
VDT Concept


Personal Vehicles
Road Side Unit
Fleet Vehicles
VII Data Network
Data Subscribers
Weather Data Translator (WDT)
WDT
Weather & Road Condition Vehicle Data Element Data Parser
Selected Data Elements
Data Filtering Algorithms
Filter specific data elements based on speed, time since warm-up, etc. to increase likelihood of valid values
Output Queue
Quality Checked Data
Statistical Data
Data Quality Checking
Statistical Processing
Processing Cache
Ancillary Data to Support Quality Checking Processes

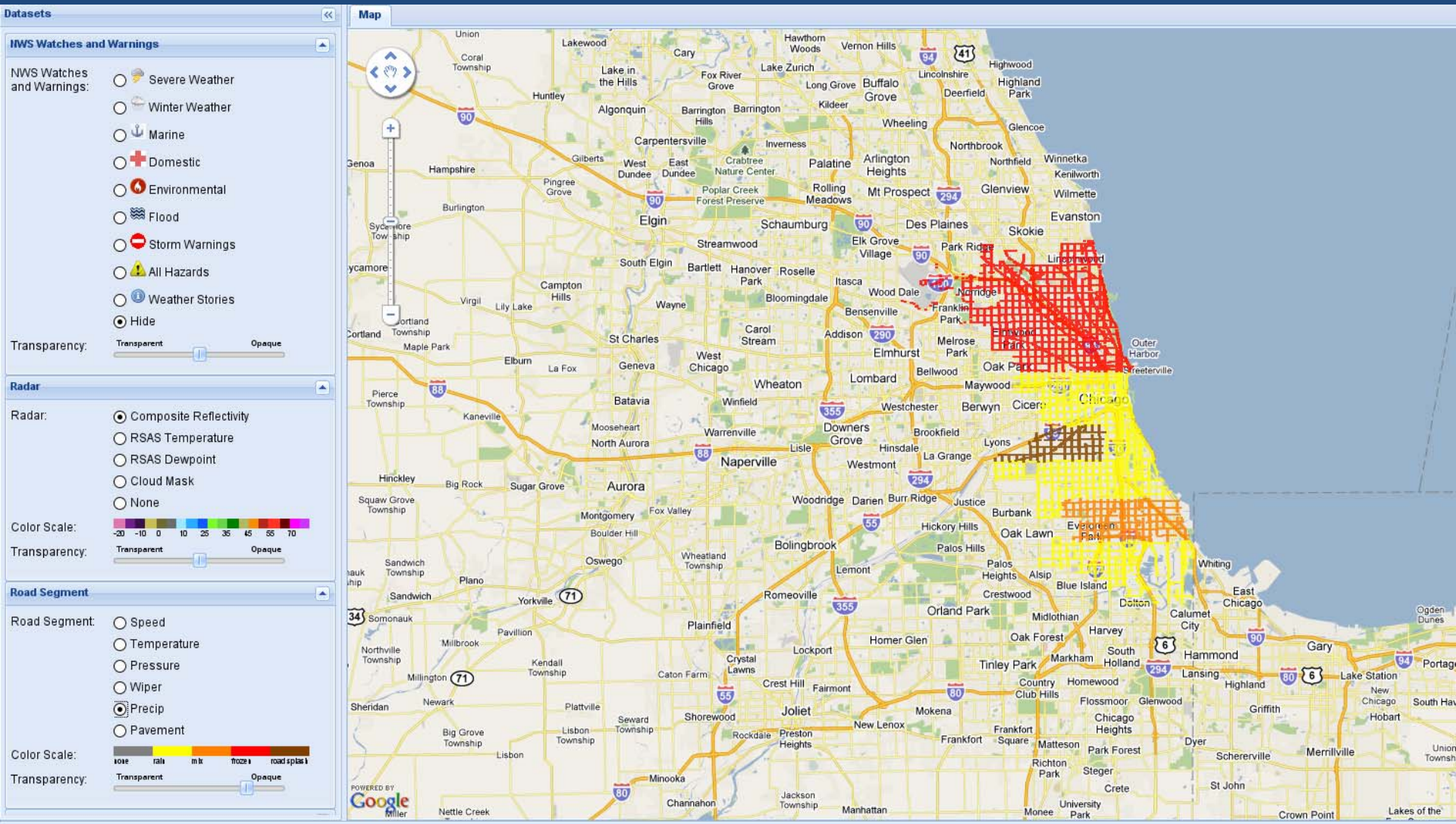
Algorithms


VII Wiper State
Fuzzy Logic Func. #1
Weather Radar
Fuzzy Logic Func. #2
Suppl. Surface Obs
Fuzzy Logic Func. #3
Model Data
Fuzzy Logic Func. #4
Satellite Data
Fuzzy Logic Func. #5
Interest Field #1 x W1
Interest Field #2 x W2
Interest Field #3 x W3
Interest Field #4 x W4
Interest Field #5 x W5
Iterative Verification
Fused Interest Field
Final Product-Impacted Roadways
Heavy Precipitation

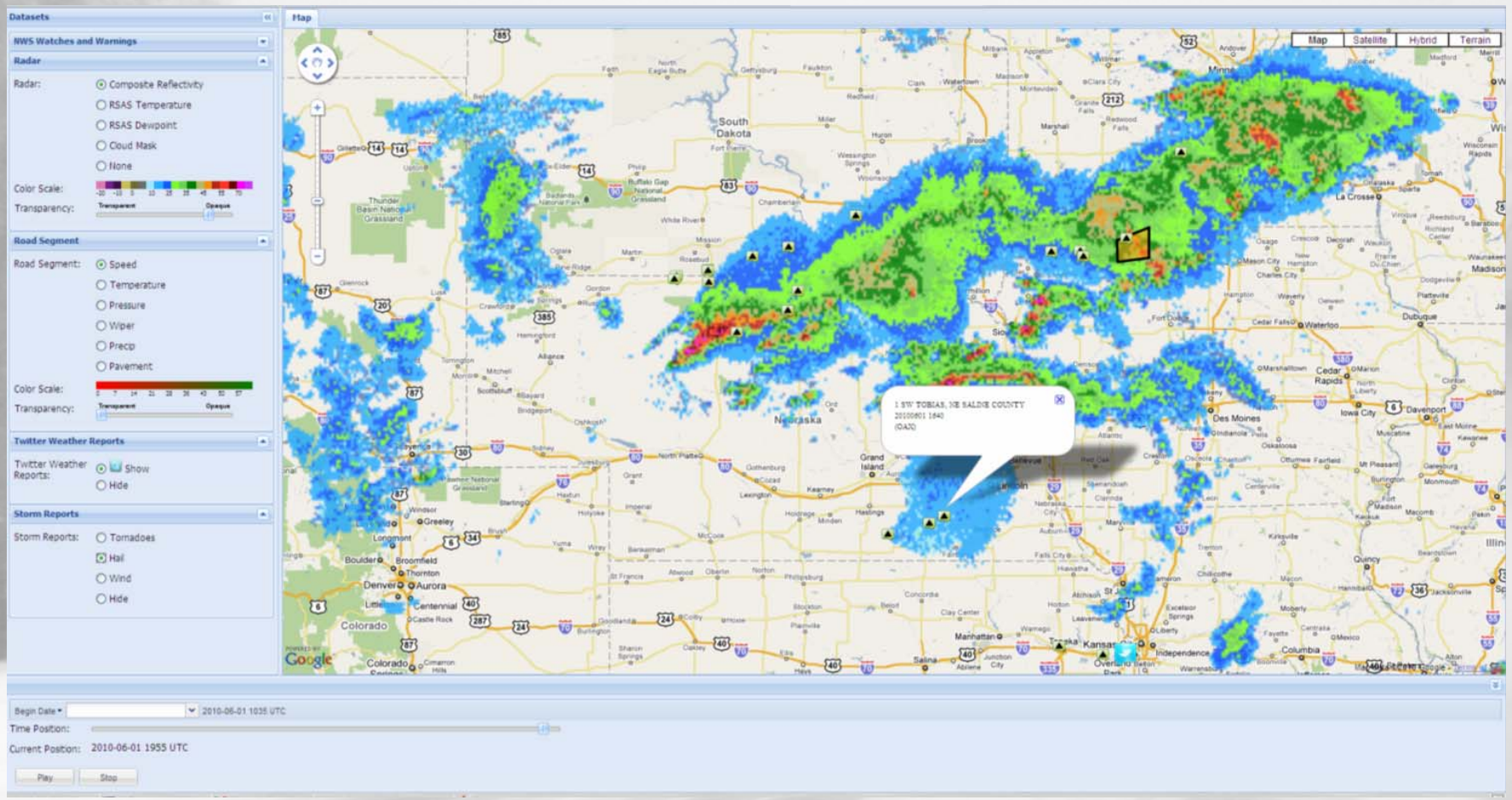
Hidden information



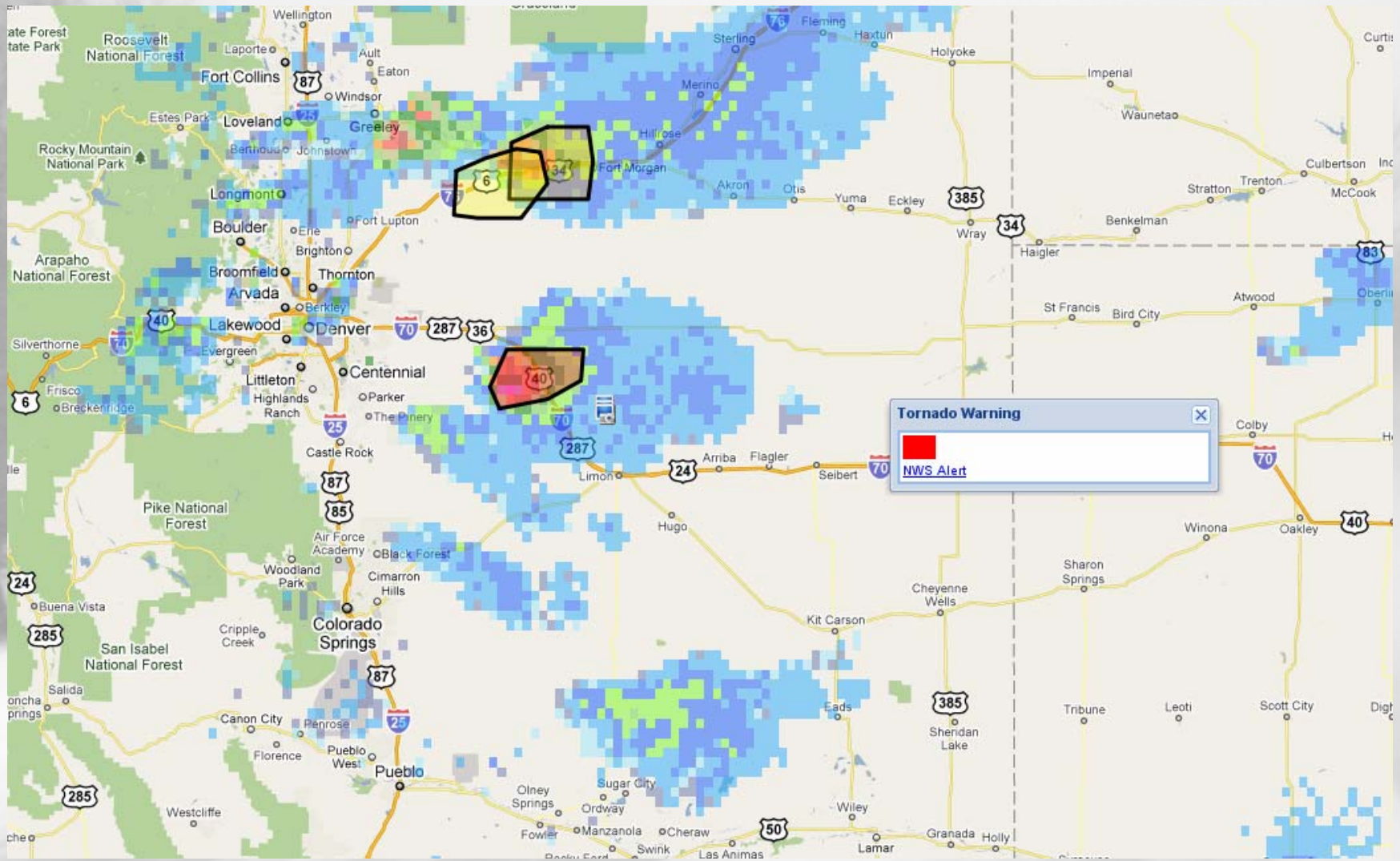
Display


Datasets
NWS Watches and Warnings
NWS Watches and Warnings:
Severe Weather
Winter Weather
Marine
Domestic
Environmental
Flood
Storm Warnings
All Hazards
Weather Stories
Hide
Transparency:
Transparent
Opaque
Radar
Radar:
Composite Reflectivity
RSAS Temperature
RSAS Dewpoint
Cloud Mask
None
Color Scale:
-20 -10 0 10 25 35 45 55 70
Transparency:
Transparent
Opaque
Road Segment
Road Segment:
Speed
Temperature
Pressure
Wiper
Precip
Pavement
Color Scale:
Transparency:
Transparent
Opaque
Map
Chicago
Elgin
Aurora
Naperville
Joliet
Schaumburg
Des Plaines
Evanston
Skokie
Oak Lawn
Orland Park
Hammond
Gary
Lake Station
Lansing
Highland
Griffith
Merrillville
Schererville
Dyer
St John
Crown Point
Lake Michigan
POWERED BY Google

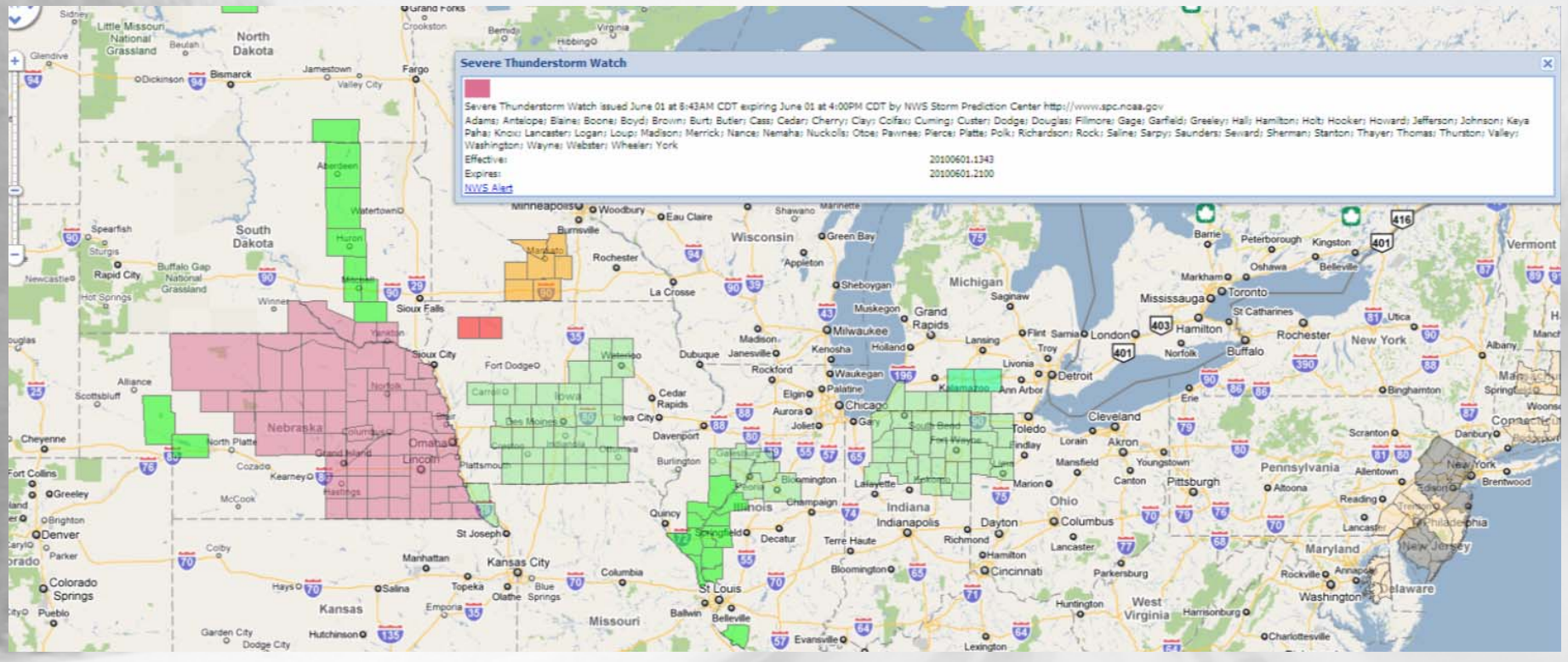
VDT display


Datasets
NWS Watches and Warnings
Radar
Radar:
Composite Reflectivity
RSAS Temperature
RSAS Dewpoint
Cloud Mask
None
Color Scale:
Transparency:
Transparent
Opaque
Road Segment
Road Segment:
Speed
Temperature
Pressure
Wiper
Precip
Pavement
Color Scale:
Transparency:
Transparent
Opaque
Twitter Weather Reports
Twitter Weather Reports:
Show
Hide
Storm Reports
Storm Reports:
Tornadoes
Hail
Wind
Hide
Map
Map
Satellite
Hybrid
Terrain
South Dakota
Nebraska
Colorado
Kansas
Des Moines
Cedar Rapids
Iowa City
Davenport
Dubuque
La Crosse
Waterloo
Quincy
Denver
Aurora
Boulder
Broomfield
Thornton
Greeley
Longmont
Centennial
Castle Rock
Grand Island
Hastings
Manhattan
Topeka
Independence
Columbia
Google
Begin Date
2010-06-01 1035 UTC
Time Position:
Current Position:
2010-06-01 1955 UTC
Play
Stop

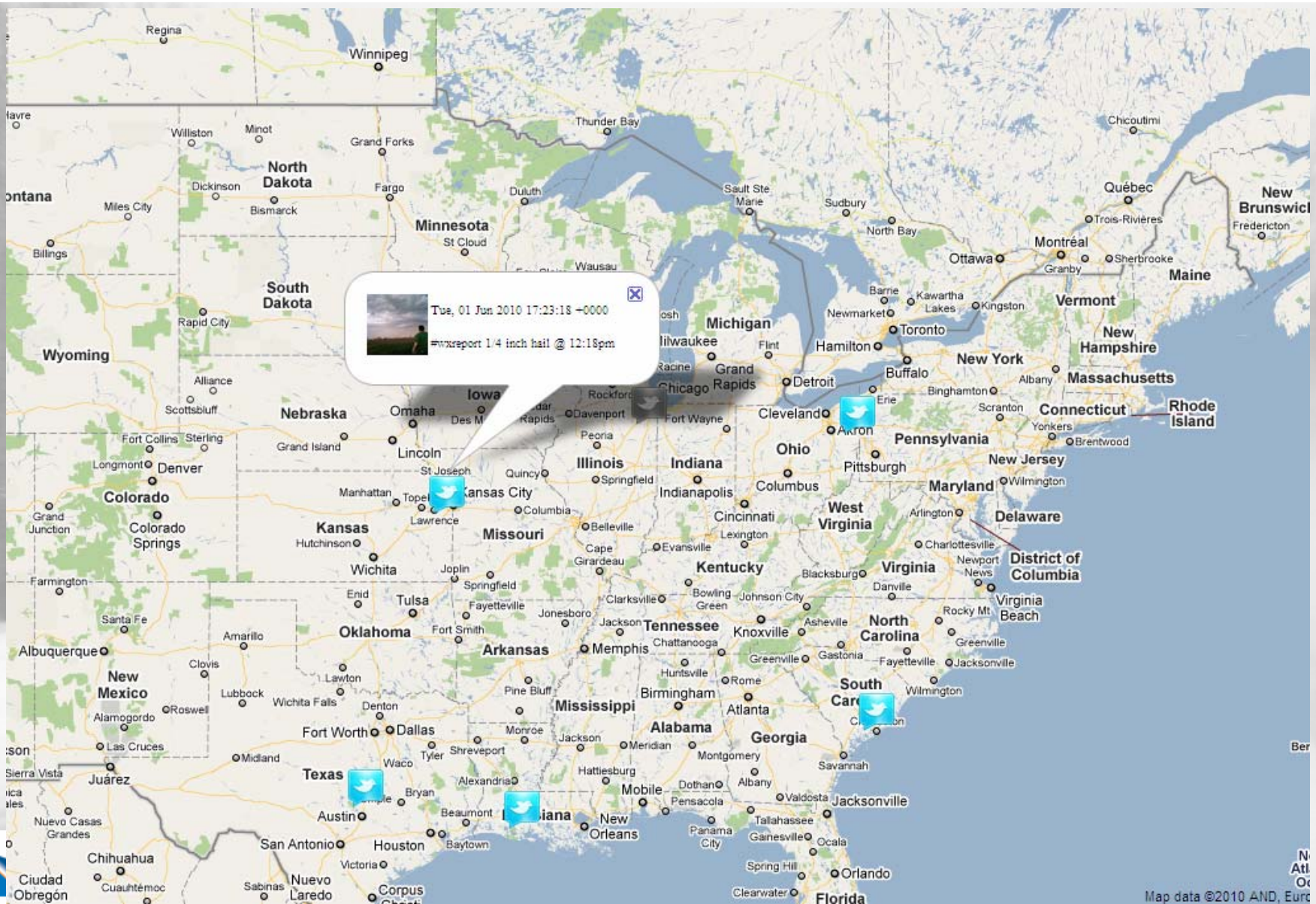
NWS Polygon Warnings



NWS watch / warning information



Twitter Feeds



Thank you

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