

Visualizing Fire Department Responses with CartoDB



Paul Wickman
@PW_FlatRockGeo
paul@flatrockgeo.com

THREE STORIES

Vegetation Fire

Incident 2014-0047384

[http://fox5sandiego.com/2014/05/14/fire/
engine, # ladder, # ambulances](http://fox5sandiego.com/2014/05/14/fire/#engine,%20#ladder,%20#ambulances)

IMAGE

Medical Emergency

At 8:23am ...

- <http://www.firedispatch.com/today.asp>

IMAGE

My Accident (show pics)

amazed how quickly they got there

....

To Remind you this is isn't about data or databases. It about peoples lives,

It's about a government's ability to serve and protect it's citizens and their stuff



- https://en.wikipedia.org/wiki/May_2014_San_Diego_County_wildfires
- Here we are showing a large response to a large vegetation fire 2015-0033119
- Or a large structure fire 2015-0033113
- Other news
- <http://fox5sandiego.com/2014/05/14/fire/>
 - Incident 2014-0047384

VISUALIZE

Stories are powerful, what's your story?

People are not static

Tools like CartoDB can make it ...

Decision makers - chiefs, city councils, citizens

RESPONSE TIMELINE



TIMELINE OF A RESPONSE

Dispatched

Duration Turnout

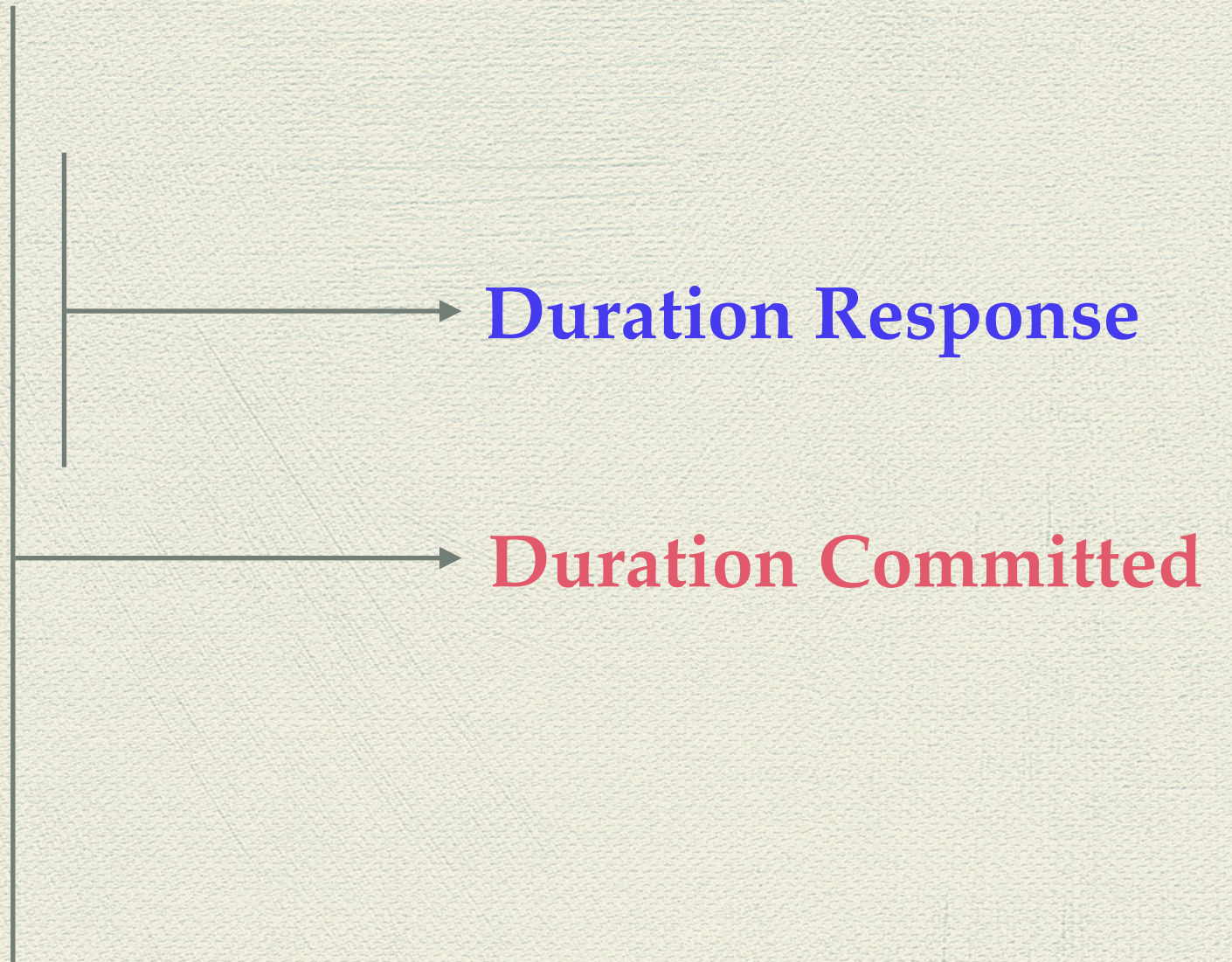
En Route

Duration Travel

On Scene

Duration On Scene

Available



Transport Depart

Transport Arrive
FOS4G
SEOUL 2015



MODELED RESPONSE
VERSUS
ACTUAL RESPONSE



Source Data

- SanGIS - Roads and stations
 - Station location for #6 incorrect
- Response data from Northcomm, 2003 - 2015
 - 185,000 local unit responses
 - 130,000 response time less than 8 minutes
 - See other presentation for more details on this data

Modeled Data

- Each road segment. For example, FromCumul_Cost=3.53 and ToCumul_Cost=4 means the enroute time from the station could be anywhere from ~3 minutes 30 second to 4 minutes.
- Travel Rings

REAL VERSION MODELED

- Each road segment. For example, FromCumul_Cost=3.53 and ToCumul_Cost=4 means the enroute time from the station could be anywhere from ~3 minutes 30 second to 4 minutes.

REAL VERSION MODELED

- Combination of QGIS, PostGIS, ArcMap and CartoDB
 - This project could not be done (easily) with any single tool.
- Comments and Challenges
 - Struggled a bit with a few things (namely, extract vertices of a polygon into individual points)
 - QGIS plugin for Carto was so helpful!
 - Everything I wanted to do could be done in PostGIS / CartoDB - the more this can be done the more Carto can be an analysis tool
 - En route time rings had to be clipped (st_difference)
 - Saving routes
 - Carto could use something like pgAdmin.
 - Kickstarter to develop it? 1st - A single in quarters unit responding to an incident within it's modeled polygons and

REAL VERSION MODELED

Caveats

- One-Click Mapping saves so much time - not a magic bullet but it fires the gun and fires it. It's still up to you to refine it.
- Unit routes assumed (don't have access to unit GPS logs)
 - So looking at some of the actual values prove this (in some cases it's obvious that no way the route I'm showing is what was actually taken)
- Travel polygons modeled w/ Arc Network Analyst based on San Diego GIS street data, modified with local knowledge weights, impedance, etc.
- ST_Segmentize(), ST_Line_Interpolate_Point(), ST_Difference()
- Only showing responses where units are "in quarters" in order to plot routes against polygons



FireStats, Paul Rottenberg

EF Geographic, Elise Fisher

Carlsbad Fire Department and NorthComm Dispatch

CartoDB and Community,

Kudos Ltda., QGIS Plugin

Esri Network Analyst

