MOBILE BIG DATA CARS, PHONES, AND SENSORS

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Cellular

Source: http://www.maclife.com

2011 – 5 billion

- More than # of ~~o~~brushes, or electricity (source IEA)
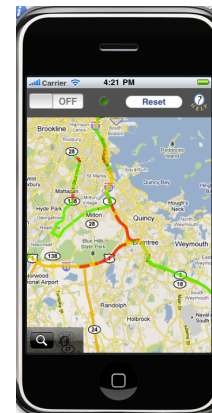
- 1 billion "mob~~ile~~"~~s~~

- Incredible source of data → many new applications

  - *Sensor data* – positions, movement, orientation, proximity, activity

CarTel: Sensing Roads With Phones

"Crowdsourced" collection of data from roads

Commute portal – personal & social

Murano Wed Jul 16 08:57:23 20	13 m 12 s	7.4 km	Path	Raw Points	Delete	None
Murano Tue Jul 15 21:28:22 20	5 m 54 s	3.3 km	Path	Raw Points	Delete	None
Murano Tue Jul 15 18:14:52 20	22 m 30 s	10.8 km	Path	Raw Points	Delete	None
Murano Mon Jul 14 19:01:40 20	10 m 18 s	7.3 km	Path	Raw Points	Delete	None
Murano Mon Jul 14 19:01:01 20	37 s	1.3 km	Path	Raw Points	Delete	None
Murano Mon Jul 14 14:42:47 20	57 m 39 s	69.8 km	Path	Raw Points	Delete	None

<< Prev 10   Next 10 >>
Show calendar view for these drives

Select cars to show: ☑ Murano
(At least one car must be selected)

Showing all drives (no filters set)

Add location filter: MIT ▾   Add
Additional filter: [   ] Weekdays ▾ Set

Plot [Travel time ▾]
calculating the [Total ▾] over my drives,
showing the results by [Day of week ▾]

Compare my driving to: [None ▾]
Reload Graph

FusionCharts Evaluation - An InfoSoft Global Creation

CarTel is a collaboration between Profs. Madden, Balakrishnan, and their students. See http://cartel.csail.mit.edu

From Personal to Societal: Roads

Raw Data: Locations & Sensors (Raw Data)

Personal Aggregates: Traffic, Potholes, Accidents, Risky Maneuvers

Societal Aggregates: Road / City Safety Scores; Driver Risk / Safety Scores; Insurance Scores

From Personal to Societal:
Medical Monitoring & Outpatient Care

Smartphone platform shows promise as 'artificial pancreas' to control diabetes

KP discharge app is early step in future care vision

Columbus orthopaedic center debuts smartphone app for patients, other physicians

Mental health goes mobile

Teledermatology may be reliable in triaging inpatient dermatology consultations

Derm Consult for Inpatients? There's an App for That

Raw Data: Images, sensor data, text

Personal Aggregates: Health metrics (e.g., activity level, disease severity, etc.)

Societal Aggregates: Expected progressions by demographics; public health and disease tracking

From Personal to Societal: Exercise

Raw Data: Heart rate, power, speed, steps, …

Personal Aggregates: Performance (vs friends)

Societal Aggregates: Performance by demographic; wellness across groups, etc.

Privacy vs Public Good in Sensors and Smartphones

- Societal apps all have privacy concerns

- Medicine, Safe Driving, Public Health are all areas where there are (potentially) compelling benefits
  - Ex: reducing risky driver behavior
    - (McGehee et al '07 report 72% reduction in teen driver risky maneuvers when being monitored)
  - Ex: eliminating or reducing hospital stays
  - Ex: improving overall health of population will dramatically reduce costs

- No clear cut answer: we (society) has to decide what we are comfortable with