The Actuarial Profession
making financial sense of the future

How's my driving

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TRACKER Company Overview

- Formed in 1993

- c. 250 staff based at Uxbridge HQ / field based

- TRACKER has two principle business streams

  – UK Stolen Vehicle Recovery (SVR) market leader with over 1million systems installed

  – More than 50k GPS/GSM vehicle tracking units installed

- Acquired by RBS Insurance in 2005

Fleet Telematics – the basics

- GPS/GSM telematics products accurately provide real time and historic data on vehicle location, speed and driving style

- A fleet of 20,000 vehicles will generate more than 2 million updates every day

Fleet Telematics – the basics

Availability of location and journey information is well known

Fleet Telematics – the basics

Today's more sophisticated systems utilise traffic data and Streetview mapping convex hulling, clustering, polygonal geofences……

What is 'standard' GPS telematics data?

- Vehicle telematics units gather data every minute of every journey, data includes;
  - Time & date
  - Location
  - Speed
  - Direction
  - Status (moving or stationary)
  - Journey start - Journey end
  - Idle (for fleets)
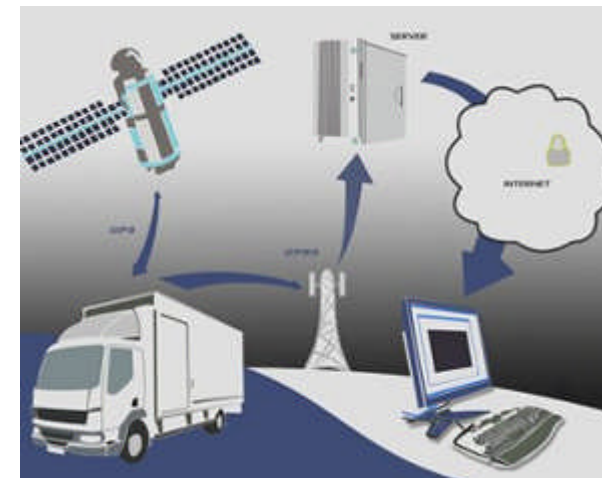
Latest generation telematics adds relative values

- Vehicle telematics units gather data every second of every journey, to measure;
    - High resolution location
    - Acceleration
    - Braking
    - Cornering / swerving / lane changing
    - 3 axis motion sensors add directional G force (often used in 'accident' detection)
    - Sophisticated mapping data adds road type and road speeds

Typical factors underwriters use to rate

- Vehicle (insurance group)

- Driver age

- Driver gender (until 2012)

- Home postcode

- Annual mileage

- Vehicle usage (SD&P, SD&P plus commuting, Business use)

- Driver history (claims history, NCD, convictions)

- Vehicle modifications

- Driver profession

Many of these are used to predict likely driving behaviour based on demographics: If gender prediction has been ruled as 'unfair', how many of the rest are also unfair?

What is Insurance Telematics?

- Data driven, with the policyholder's car fitted with a data collection device

- PAYD or PHYD

- Rating based on individual actual behaviour, not assessment of demographic factors

- Location and 'accident' data used to support claims

- Designed to calculate premiums based on risk, but also to potentially manage those risks

Market for Insurance Telematics

- First significant deployment Norwich Union /Aviva in 2004
- Test Achats challenge & subsequent gender equality rules
  - Dec 2012 deadline
- Several early adopters already in the UK market
- Direct Line have launched a 12 month pilot with '000s of drivers

"We believe that the race to launch mainstream telematics solutions has now started. Those insurers who can deliver the right propositions by December 2012 will share an attractive market of women, infrequent drivers and other low risk categories. Those who stand on the sidelines will pick up the rump of high risk drivers who can derive little benefit from telematic solutions."

Oliver Wyman

Moving from theory to reality - *assessing the driving behaviour of the actuarial profession !*

Stephen Jones

Simon Sheaf

David Brown

Richard Bulmer

Jon Collins

Colum D'auria

Tony Lovick

Sameer Keshani

Stuart Shepley

Duncan Anderson

Kathryn Morgan – *vehicle sold*

Martin White – *unable to arrange install*

Our trial showed a 'surprising' spread of results !

# Basic time and distance data over trial period
(24 days 12 Sept 11 – 5 Oct 11)

Alias	Miles	Hours	Journeys
Tigh	70.2	6.0	17.0
Boxey	114.3	6.1	24.0
Starbuck	153.4	8.1	23.0
Serina	235.4	8.6	28.0
Roslin	236.7	22.8	44.0
Apollo	250.9	9.4	49.0
Athena	298.1	9.8	48.0
Adama	402.5	15.5	75.0
Baltar	444.1	19.8	84.0
Boomer	618.6	23.5	48.0
Cylon	1433.5	37.7	106.0

So perhaps Boomer and Cylon should be paying more for their insurance than Tigh and Boxey ???


Total miles driven
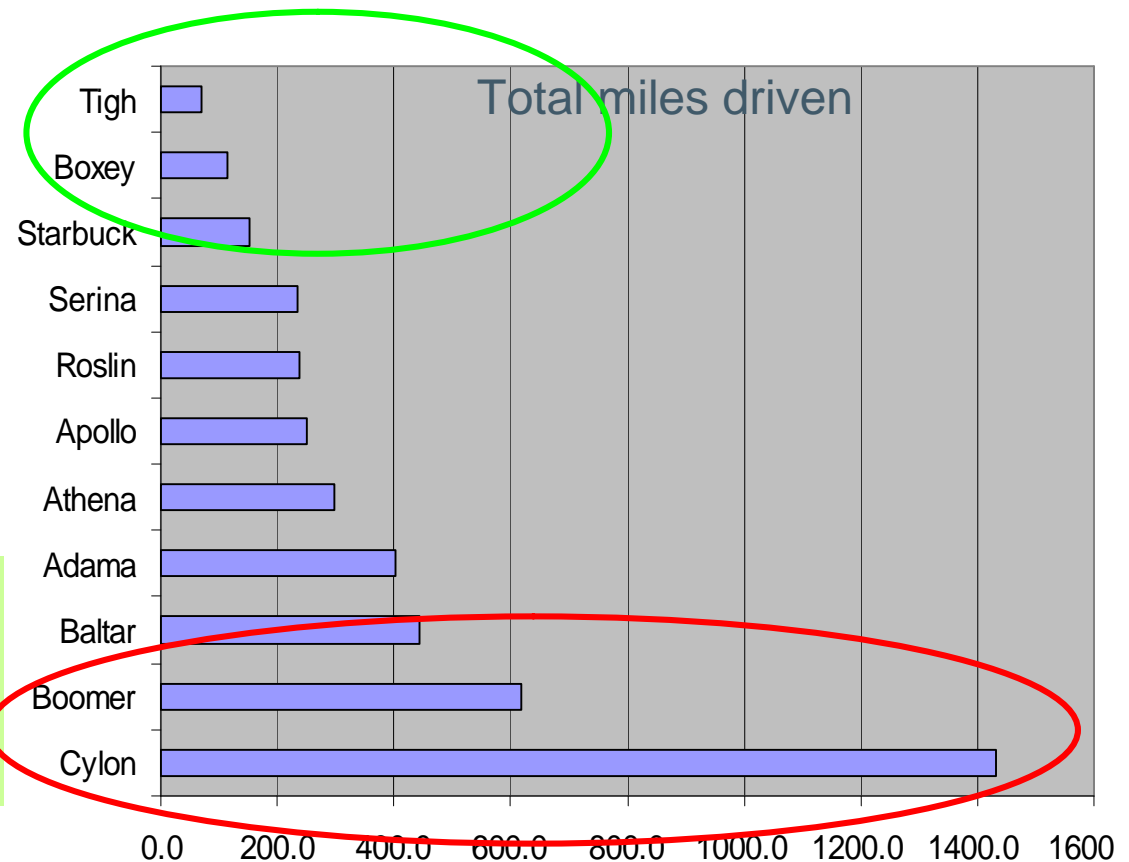
Looking at driver behaviour - acceleration, braking , cornering and speeding events

Now it seems that Cylon is still risky but Boomer looks less so and how about Adama ????
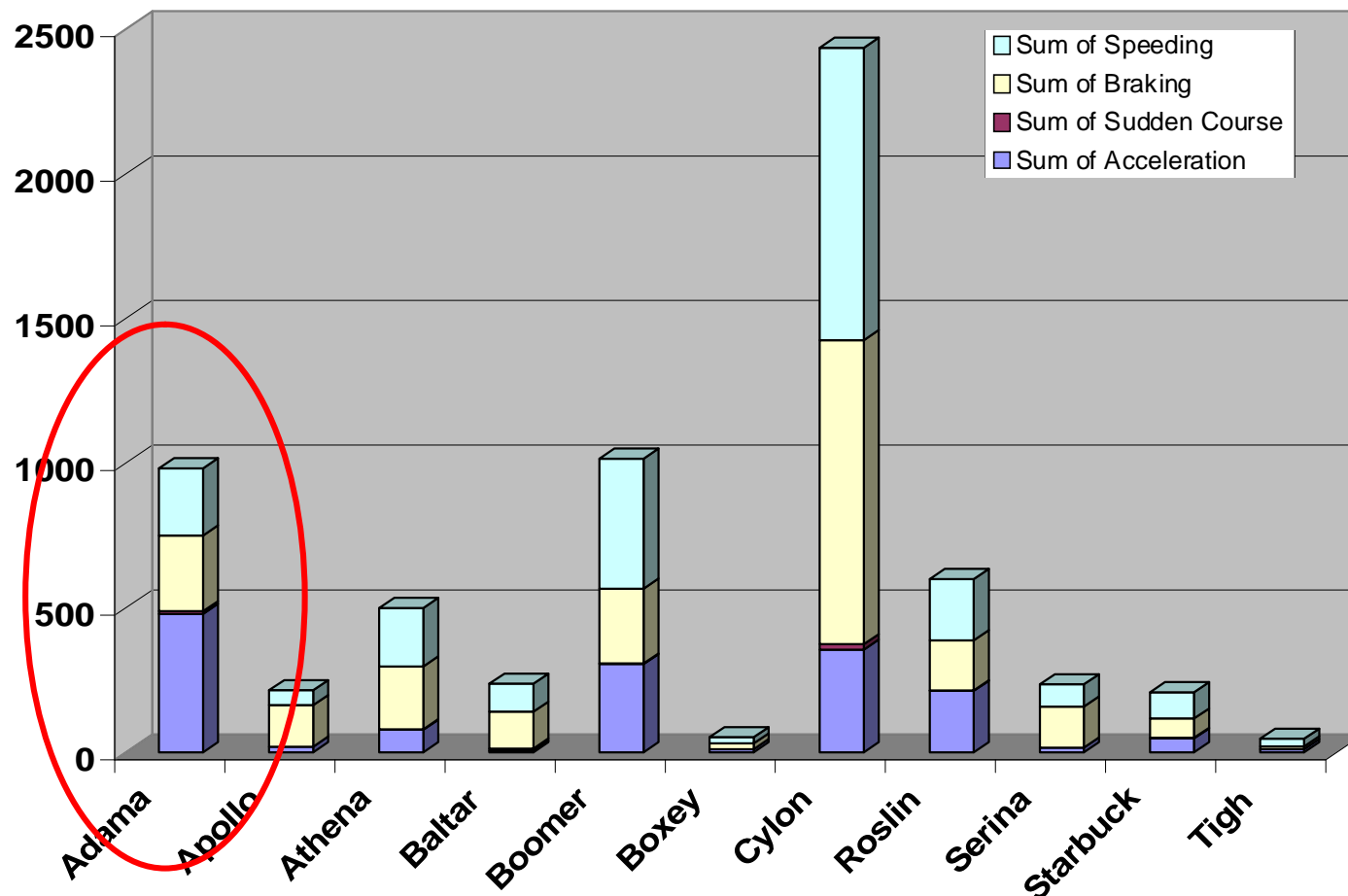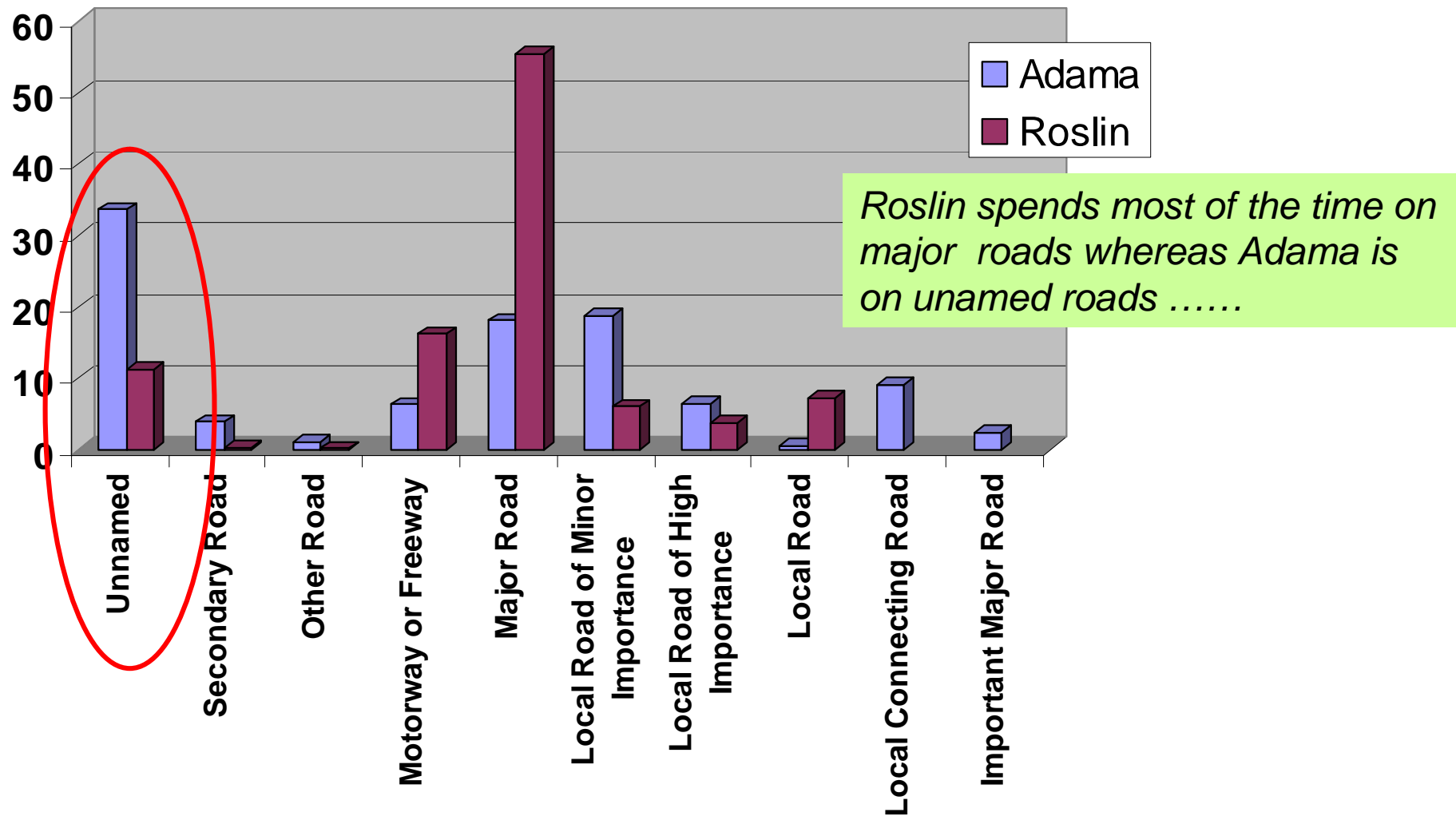
Total number of acceleration, braking and cornering and speeding events per mile driven

Once distance driven is taken into account we have a different picture with Adama and Roslin exhibiting more risky behaviour than Cylon

Pilot population mean = 1.4 events per mile
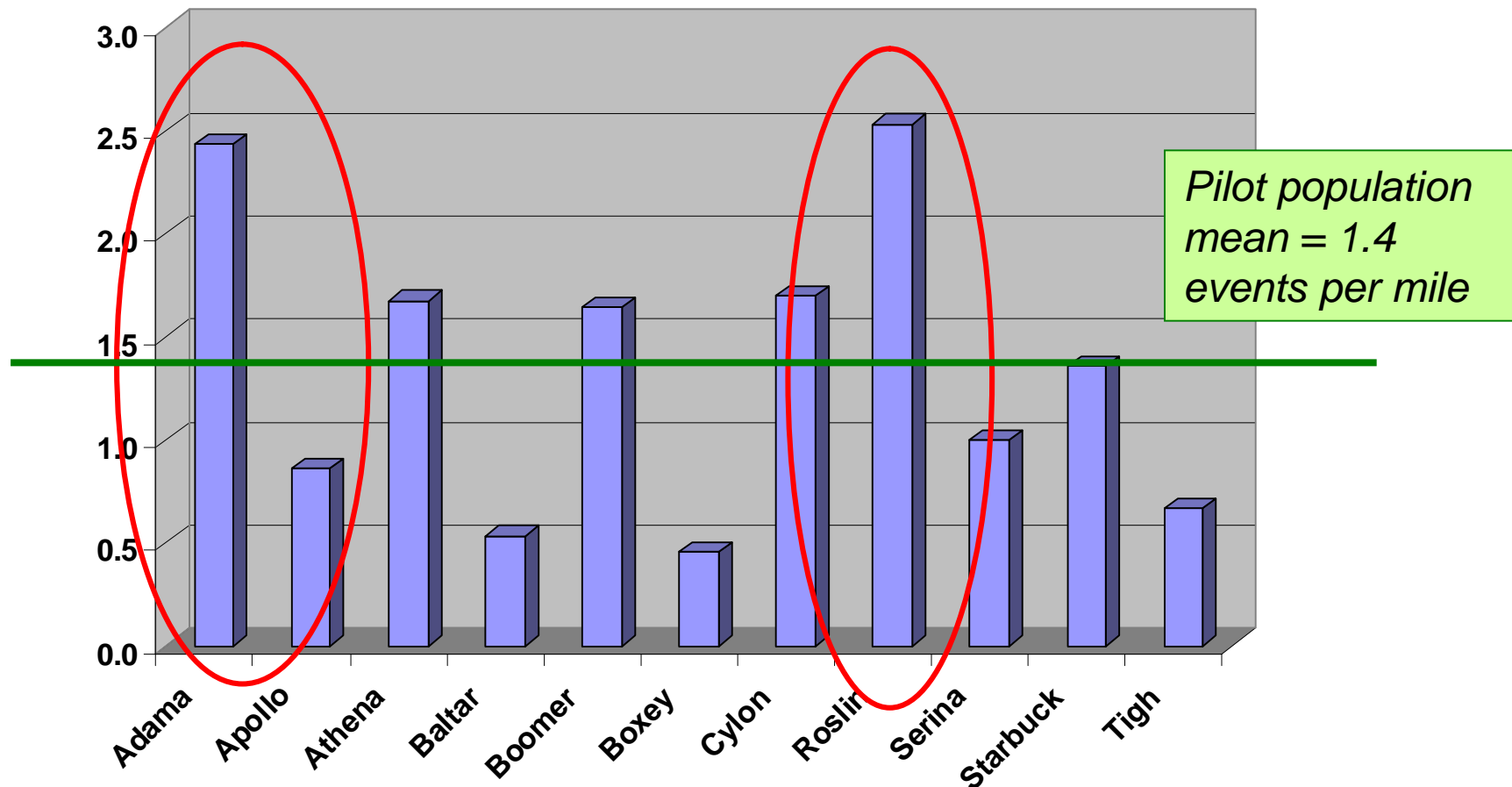
Looking further into the data - taking into account road type

Roslin spends most of the time on major roads whereas Adama is on unamed roads ……

Looking even more closely at Adama's odd data

A normal day shows 2 to 8 events per hour when driving .

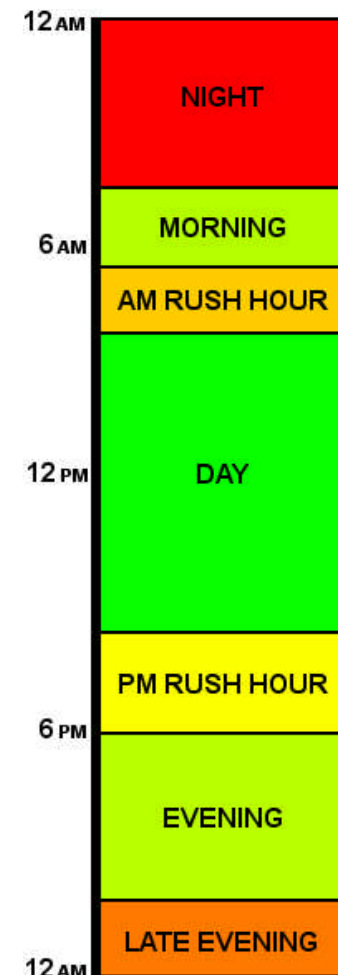*However one particular day shows a peak of 250 events per hour !!*

Telematics events per hour - average day

Telematics events per hour (day two)
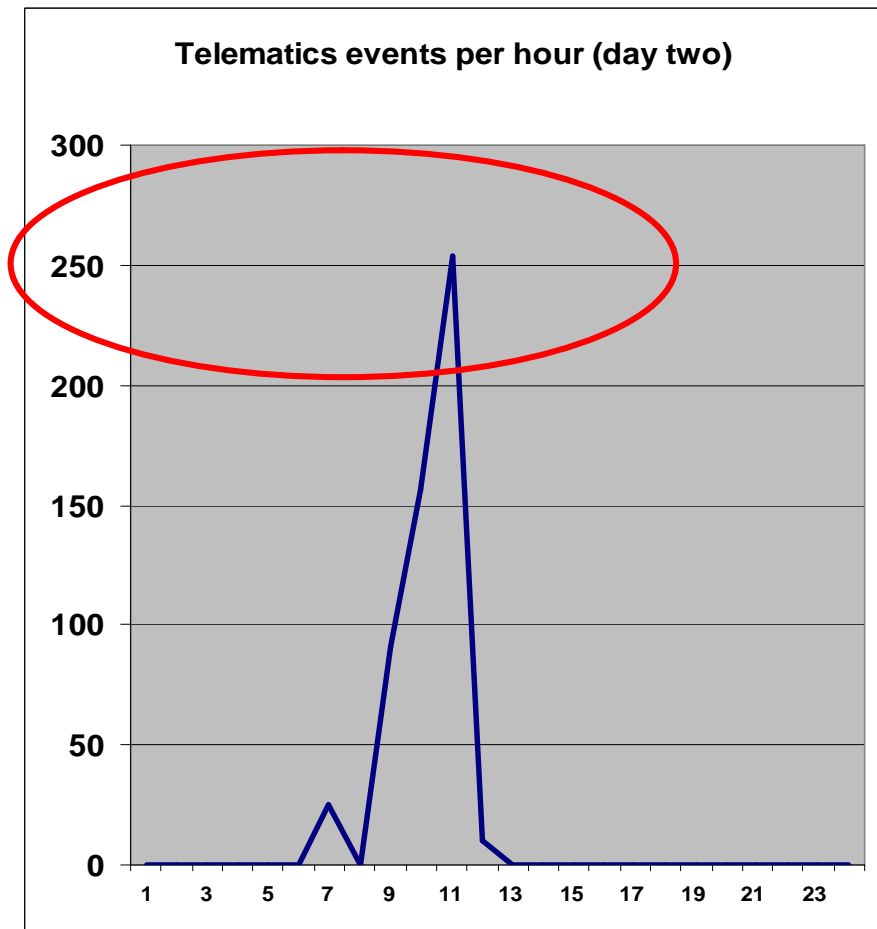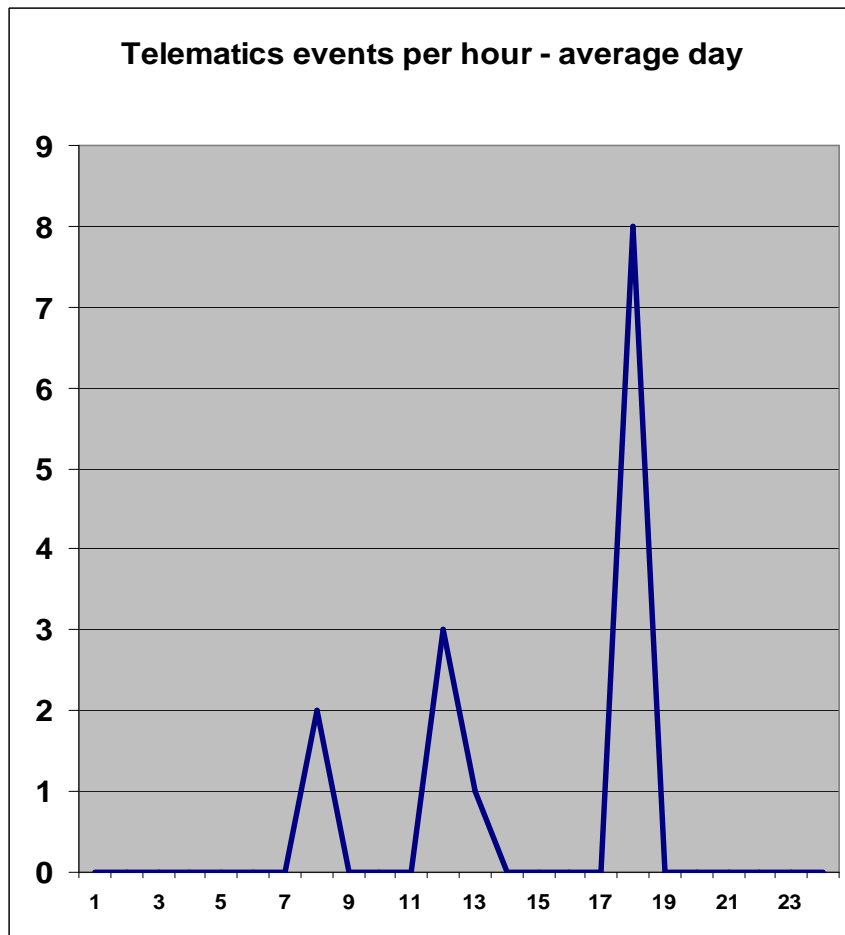
Reviewing the location data shows….

In summary

Telematics provides a sophisticated approach based on individual behaviour:

- Allows underwriters to define risk levels associated with
    - driving at different times of day
    - different road types
    - overall mileage
    - actual driving behaviour
    - any combination
- Ensures that the insurer always has accurate information. Not based on customer's estimate at inception
- Could provide the customer with the opportunity to reduce their premium by improving their behaviour
- Can provide the insurer with the ability to manage claims more efficiently

Time	Period
12 AM	NIGHT
6 AM	MORNING
	AM RUSH HOUR
12 PM	DAY
	PM RUSH HOUR
6 PM	EVENING
12 AM	LATE EVENING

2011 Inaugural BADs
(British Actuarial Driving awards)

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Red Bull award for highest percentage of motorway driving

3rd Place – Apollo – 14%

2nd Place – Athena – 17%

1st Place - Boomer – 21.5%

2011 Inaugural BADs
(British Actuarial Driving awards)

GATSO 'seen most often' award

3rd Place – Roslin – 212 events

2nd Place – Adama – 232 events

1st Place – Cylon - 1011 events

2011 Inaugural BADs
(British Actuarial Driving awards)

Insurance industry award for 'Customer we'd most like to have'

3rd Place – Tigh – 0.67 events per mile

2nd Place – Baltar – 0.53 events per mile

1st Place - Boxey – 0.45 events per mile

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