'Seatbelt' App Documentation

The App uses graphics to enable visualisation of the effect of the introduction in 1983 of legislation requiring compulsory use of seatbelts in passenger cars in the UK.

The charts are based on monthly totals of fatalities and serious injuries to occupants of cars over a sixteen year period from 1969 to 1984. The seatbelt legislation was introduced on 31 Jan 1983. The data is from the 'Seatbelts' dataset in the 'R' datasets package.

The App is controlled by three sets of radio buttons to select **x-axis** data, **y-axis** data and **chart style**, and a slider control to set the **start point** for the analysis.

Y-axis data :

- Total casualties
- Driver casualties
- Front seat passenger casualties
- Rear seat passenger casualties

X-axis data :

- Long term annual trends in casualty rate
- Seasonal trends in casualty rate
- Casualty rate as function of average mileage (kilometres)
- Casualty rate as function of petrol price

Chart style selection :

- Default chart style using 'qplot' (ggplot2 package)
- Simplified chart with large caption text to suit devices with limited screen resolution

Use the **radio buttons** to select any permutation of the **x** and **y** axis data and the required chart type. Use the **slider** to select a later start point for the analysis, this emphasises short term variations in the casualty rate. Press the **EXECUTE** button to display the selected graph.

CAUTION : There appears to be a bug in the slider input control. If the App is displayed in a maximised window, dragging the cursor off the left edge of the screen when moving the slider control to the left causes it to freeze and return a 'NaN' value, crashing the app. This can be avoided by clicking on the control then using the arrow keys to adjust the value.

Technical Details and Acknowledgements

Details of the dataset (extract from the 'Seatbelt' dataset help) :

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Road Casualties in Great Britain 1969-84

Description:

    'UKDriverDeaths' is a time series giving the monthly totals of
    drivers in Great Britain killed or seriously injured Jan 1969
    Dec 1984.  Compulsory wearing of seat belts was introduced on
    Jan 1983.

    'Seatbelts' is more information on the same problem.

Usage:

    UKDriverDeaths
    Seatbelts

Format:

    'Seatbelts' is a multiple time series, with columns

    'DriversKilled' car drivers killed.

    'drivers' same as 'UKDriverDeaths'. (Drivers killed or serious

    'front' front-seat passengers killed or seriously injured.

    'rear' rear-seat passengers killed or seriously injured.

    'kms' distance driven.

    'PetrolPrice' petrol price.

    'VanKilled' number of van ('light goods vehicle') drivers.

    'law' 0/1: was the law in effect that month?

Source:

    Harvey, A.C. (1989) _Forecasting, Structural Time Series Model
    and the Kalman Filter._ Cambridge University Press, pp. 519-52

    Durbin, J. and Koopman, S. J. (2001) _Time Series Analysis by
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     State Space Methods._ Oxford University Press.  <URL:
     http://www.ssfpack.com/dkbook/>
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References:

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     Harvey, A. C. and Durbin, J. (1986) The effects of seat belt
     legislation on British road casualties: A case study in struct
     time series modelling. _Journal of the Royal Statistical Socie
     series B, *149*, 187-227.
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