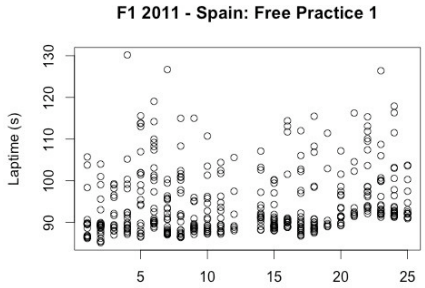
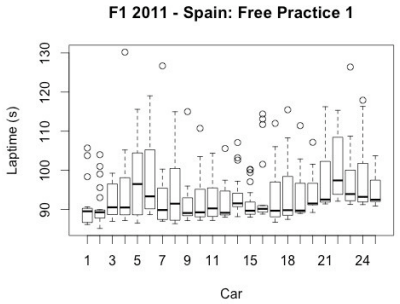
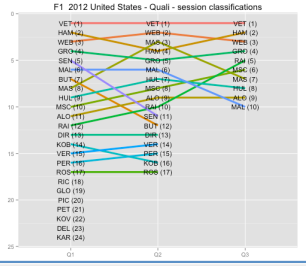




From new laptime events, we can build up a summary of lap time distributions by driver, perhaps toggling the circle plot with a box plot summary of laptimes, with outliers marked, for each driver. Alternative orderings of x-axis categories are possible: drivers could be ordered in terms of increasing best laptime, increasing mean laptime, or increasing variance (though the latter would be heavily influenced by the number of laps completed).

By focusing on a particular driver, we can plot lap number along the x axis, with dodged bars for each lap showing the delta for each sector on that lap from a baseline time, such as the sector times recorded in that driver's first lap, or the sector times from the previous lap. (We might read these differently…) A reverse y axis showing better times (larger negative delta) increasingly above the origin helps us read the chart in a 'higher is better' frame of reference. Alternatively, a subseries plot could use a line chart to show the evolution of sector times, by sector, for each driver.

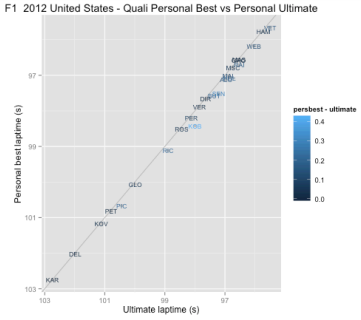
This slope graph style chart is directly derivable from timing screen data and shows the change in relative positions of each driver across the sessions. The y-axis ordering is rank position, but it could equally be lap time, which would transform this chart to a slope graph type and might show a more interesting pattern?



How many lives? Qualifying sessions have a known duration, cars taking a finite time to get round the circuit. Drivers thus have a limited number of "lives", given as (session time – outlap)/laptime , which correspond to an upper bound on the number of laps they can complete in a session. As the clock ticks down, so does the number of lives , or lap opportunities left. Pitting may cause a sudden loss of lives. (Entering the pit will thus immediately incur the loss of a life as the outlap must be completed before a timed lap can be achieved.)

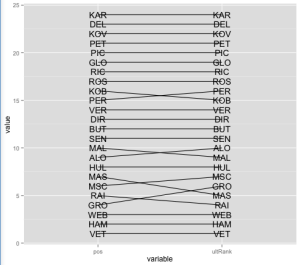
The number of lives could be visualised as a series of circles similar to those used in the practice session utilisation charts, and flash if a driver is on a current lap. On completing the lap, the life might transform to a classification number coloured cyan if it is an improvement on the driver's position, green if an improvement on time, but not position, or red if it represents a lower time than previously, and then fade away.

As with the practice sessions, a radial chart could show a countdown of the clock and outlined lap lives as empty cells to show how many possible laps a driver can still fit in (the end of the session is not the 12 o'clock position but at "one lap to twelve" to allow for laps to be charted for a driver crossing the line to start their final lap just before the end of the session).



The qualifying session timing data includes the sector times most recently recorded by each driver. If we generate row based events and log the fastest lap times recorded by each driver, we can calculate an ultimate laptime for each driver, and plot it against their current best laptime.

Labels below the line show that the driver's best laptime fell short of their ultimate laptime. If a driver is below and to the right of another label, that shows that had the lower driver driven their ultimate lap, they would have beaten the ultimate lap of the driver ahead of them. If a driver is above and the the left of another driver, this shows that their ultimate laptime is slower than the driver ahead of them but their best achieved laptime is superior. Labels can never go above the line (a recorded lap can only be equal to, and never better than, a driver's ultimate lap).



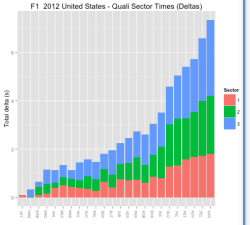
A simple slope graph based on ranking (or recorded best vs ultimate laptime) can be used to indicate whether drivers driving at their performance limit could actually improve their position.

If the vertical y-axis shows the laptime, (personal best for the left hand column, personal ultimate for the right) a line cross would show a position change if both drivers drove their ultimate lap. In addition, if the right had value for a particular driver crosses the horizontal line taken from the left hand value of another driver, it shows that the ultimate of the particular driver is better than the current best of the other driver. (Which is to say – maybe we need faint, bottom layer grey horizontal lines drawn from laptimes on the left column?)

As the fastest sector times recorded as a whole in the session are available, we can calculate and chart the deltas for each driver of their current sector times from these overall session best values, rendering them as a stacked bar chart showing the overall delta of the current lap (or best lap) from the ultimate session lap.

This chart can operate in three different modes – current lap deltas (or previous lap deltas if the car is in the pits), deltas from the sector times recorded in the driver's best lap, and deltas from the drivers best sector times in that session.

Stacked bar charts can also be used to display accumulated pit stop time for each driver. If we keep track of each driver's best sector times, we can also calculate deltas between their most recent time for each sector and their best sector time.



Images used are images I have created previously. I didn't have time to recreate images using the example data feed, but all data used to generate these sorts of plot can be derived from the example timing data. tony.hirst@gmail.com