R Programming

Project: Further Examples of Plots

What to use on the x-axis

Type	Use	Useful `lubridate` functions
Calendar time *	$\text{year}_i + \text{diy}_i/365 + \text{hour}_i/(365 \times 24)$	`demical_date`
Date within year (seasonal) *	$\text{diy}_i/365 + \text{hour}_i/(365 \times 24)$	`demical_date` (use remainder after integer division by 1)
alternative:		
Day within year (seasonal)	$\text{diy}_i + \text{hour}_i/24$	`demic al_date`
Hour within week (weekly)	$24 \times (\text{dow}_i - 1) + \text{hour}_i$	`wday, hour`
alternative:		
Day within week (weekly)	$\text{dow}_i - 1 + \text{hour}_i/24$	`wday, hour`
Hour within day (daily)	hour_i	`hour` (or use column `Hour`

* Divide by 366 for leap years.

$\texttt{diy}_i$ is the day in the year (e.g. February 2nd would be 33). $\texttt{dow}_i$ is the day of the week as an integer (Monday is 1, Tuesday is 2, …).

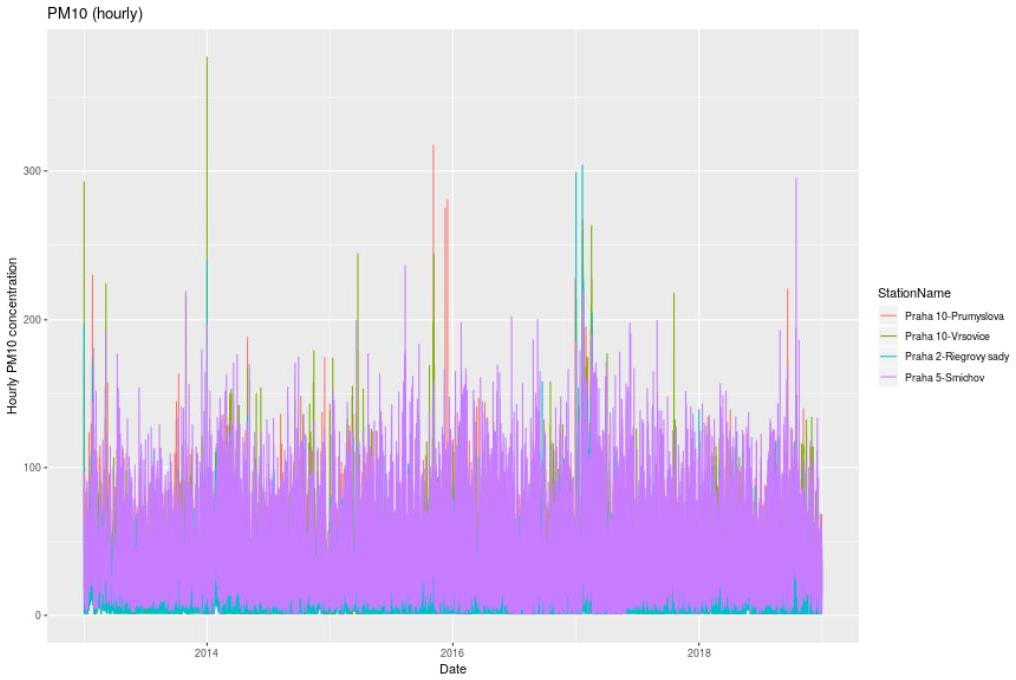
The above is justy one way of setting the x-axis. Other reasonable approaches (typically a linear function of the proposed) are also accepted. Make sure you use informative tickmarks.

Example plots

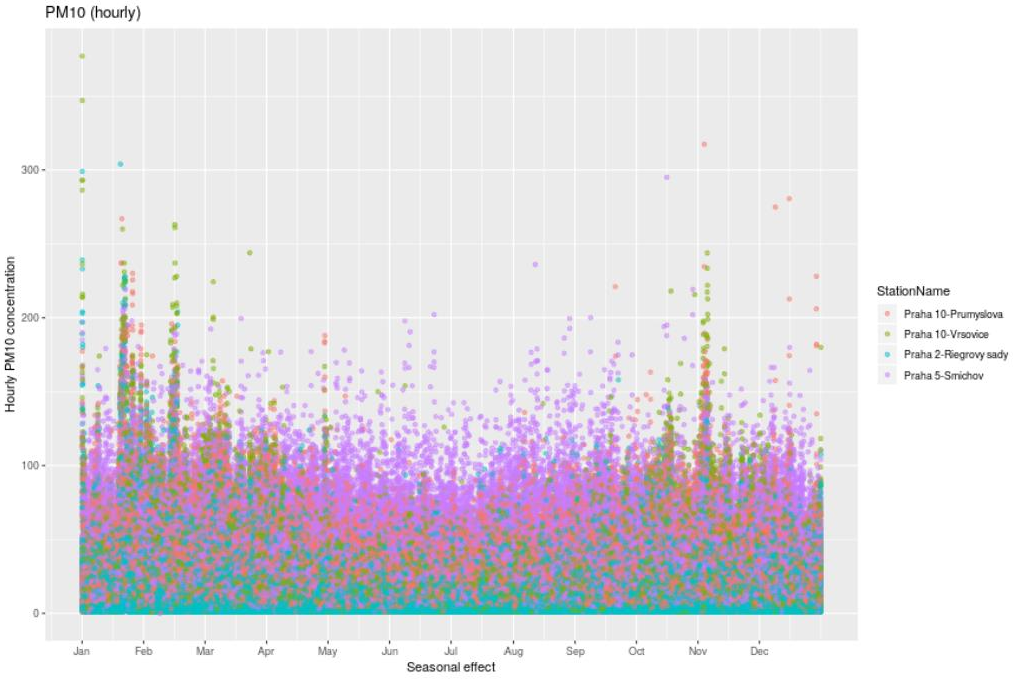
Hourly PM10 data

Due to the amount of data to be plotted, plots of the raw hourly data will be very slow.

Plotted as time series against calendar time

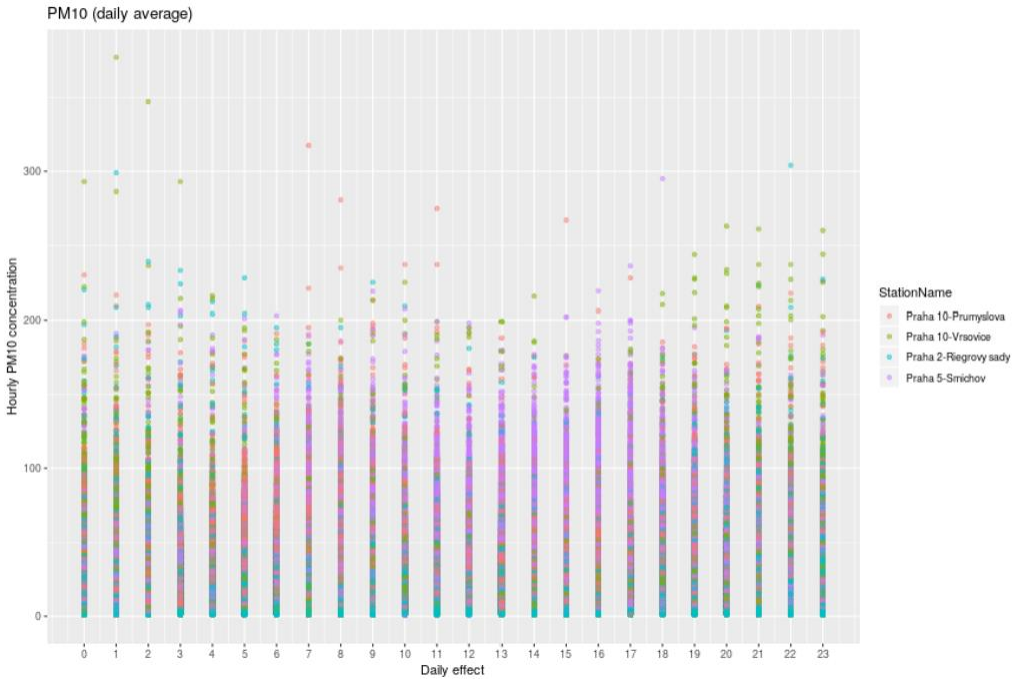


Plotted against hour in the year (seasonal effect)

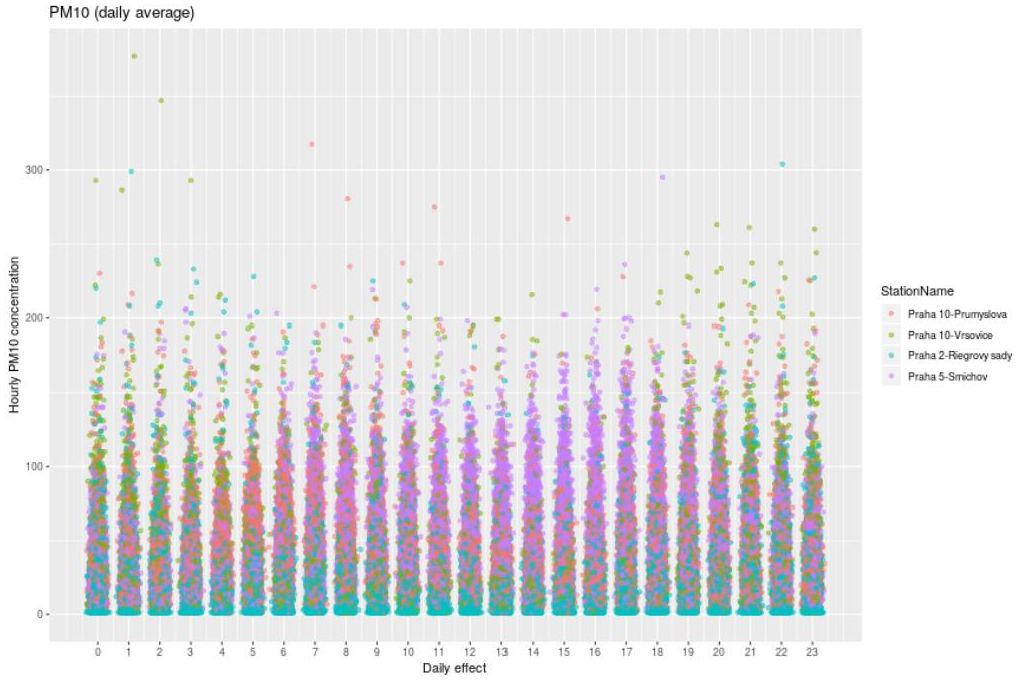


Plotted against hour in the week (weekly effect)

Plotted against hour in the day (daily effect)

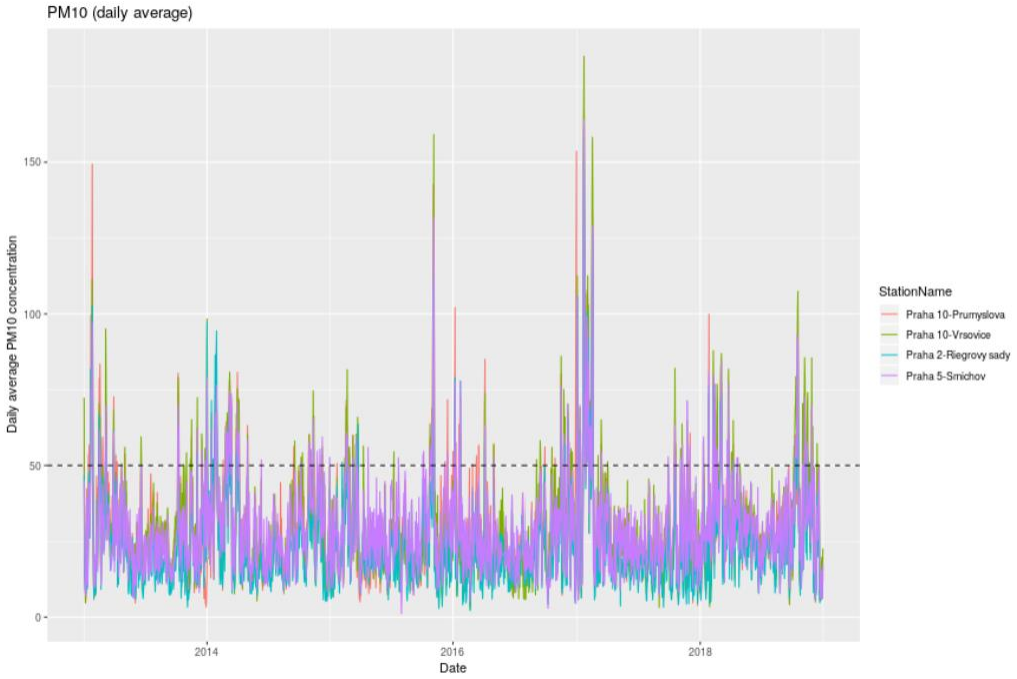


Not required: The plot is more informative if a little bit of jitter is added to the x-values.

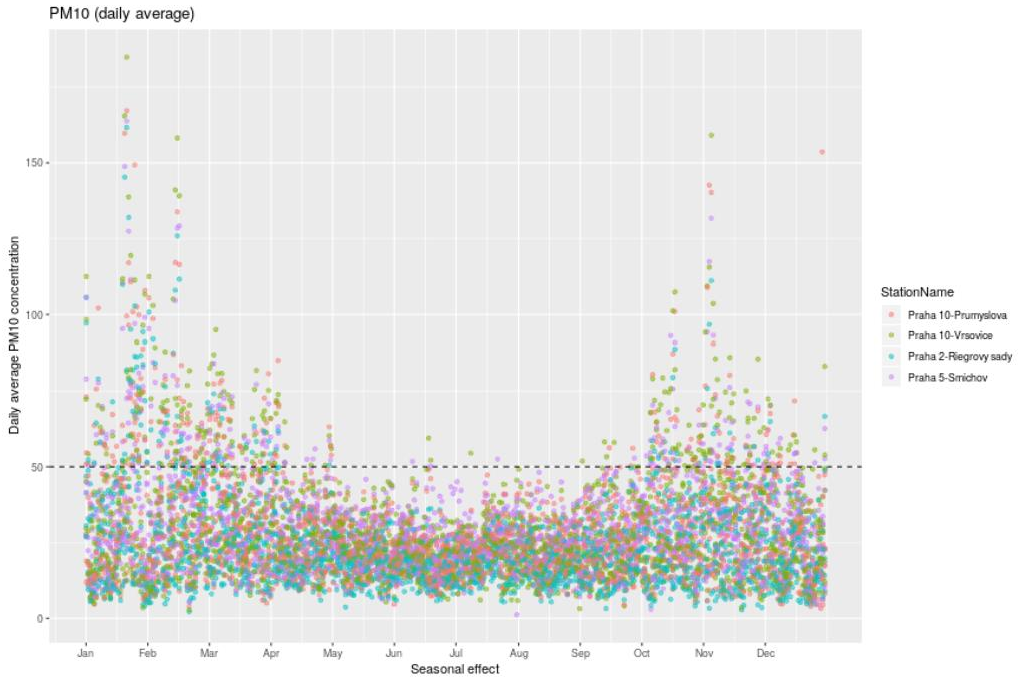


Daily average of PM10

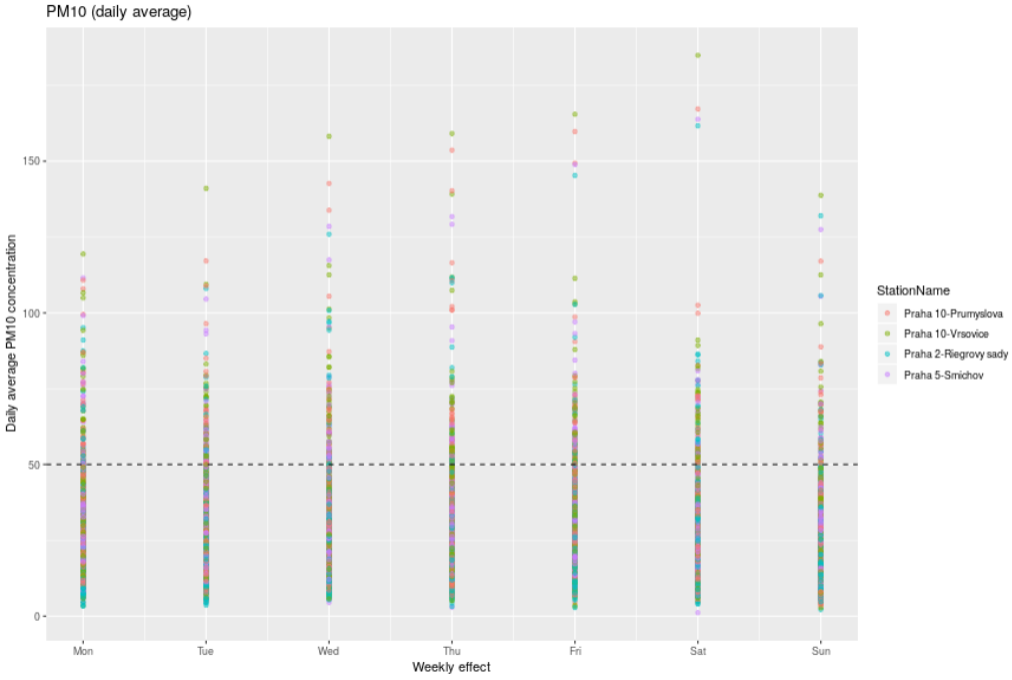
Plotted as time series against calendar time



Plotted against day in the year (seasonal effect)



Plotted against day in the week (weekly effect)



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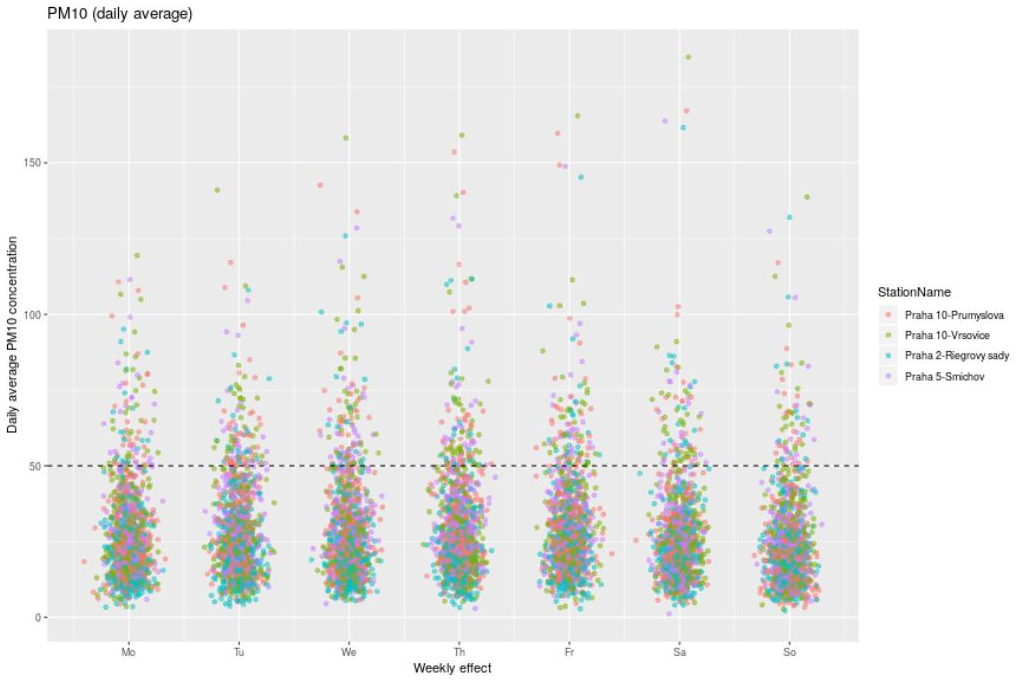
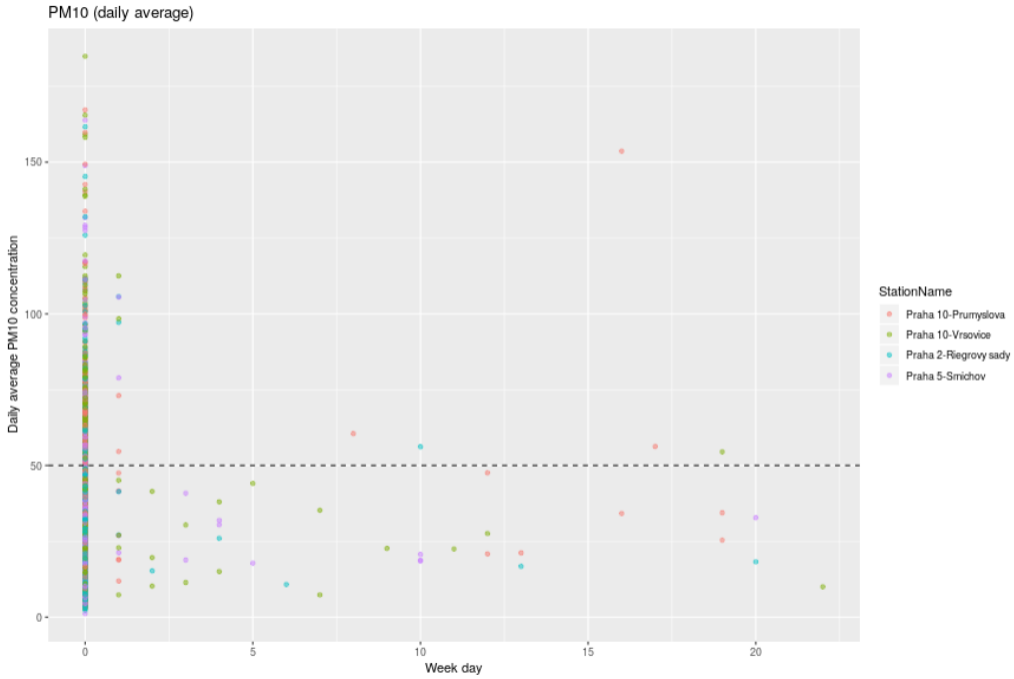


Plotted against hour in the day (daily effect)



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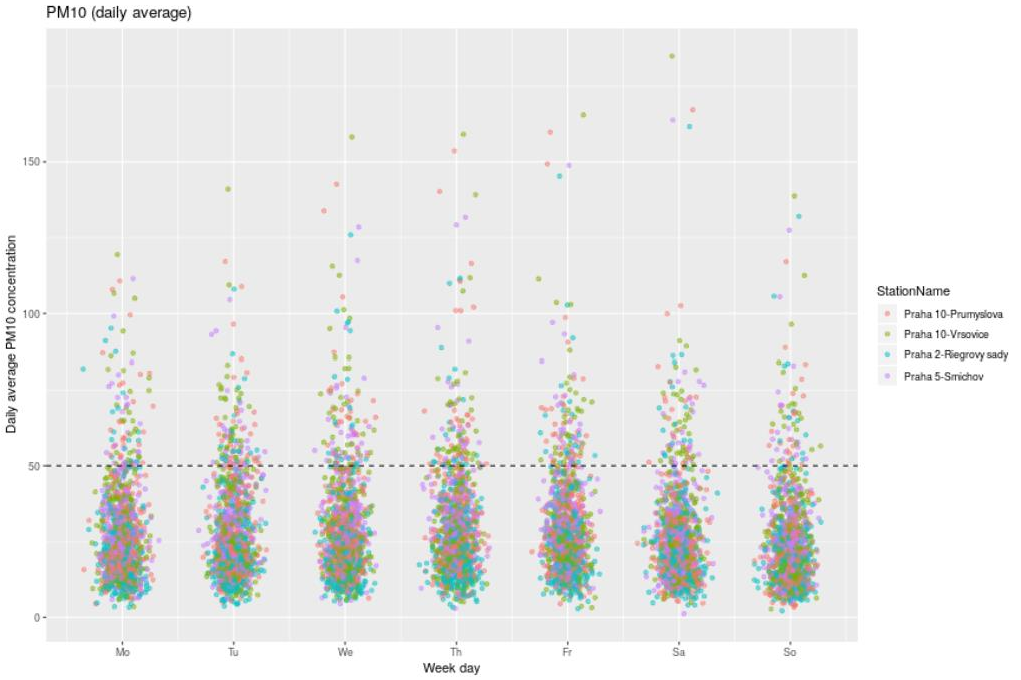
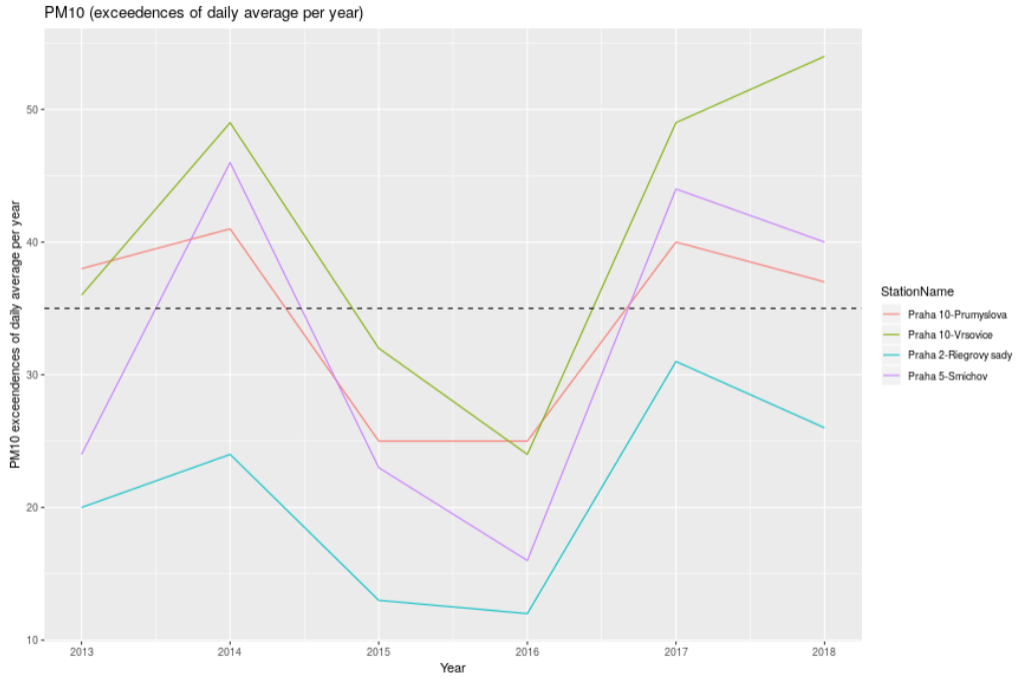


A plot against the hour in the day is not meaningful, as the daily has been aggregated lib a daily basis.

Number of yearly exceedences of daily threshold of $50\mu g/m^3$ (PM10)

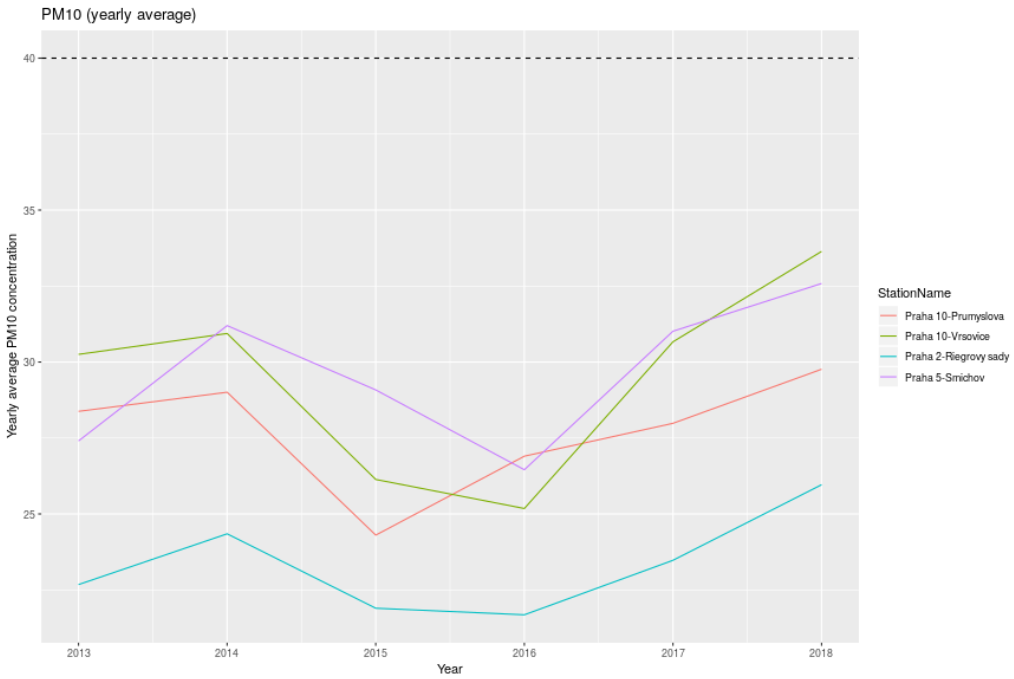
Yearly average of PM10



Other plots not meaningful as data already aggregated on a yearly basis.

Yearly average of PM10

Plotted as time series against calendar time



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