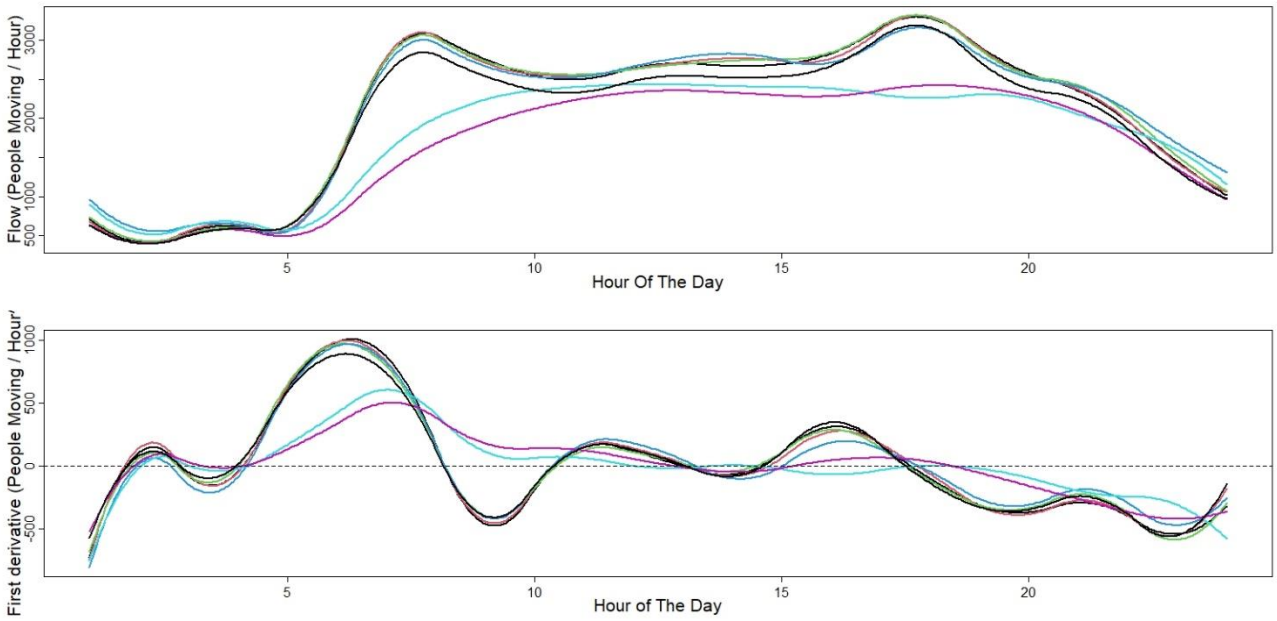
17/7

FLOW AND ITS VARIATION: INTEPRETATION

I put my self in the setting of the mean of the total flow hour by hour for each day of the week and thanks to the functional data analysis approach I'm able to do the first derivative and interpret its dynamical behavior.

Firstly I observe that the data that we smooth is a flow of people moving during the day, we measure it as the total number of people moving from a destination to an other in a specific hour so the unit of measure is 'number of people/hour', if we make the first derivative of it we have how it changes during the day, now the unit of measure is 'number of people/hour^2'.

Here is the plot of the two variables explained:

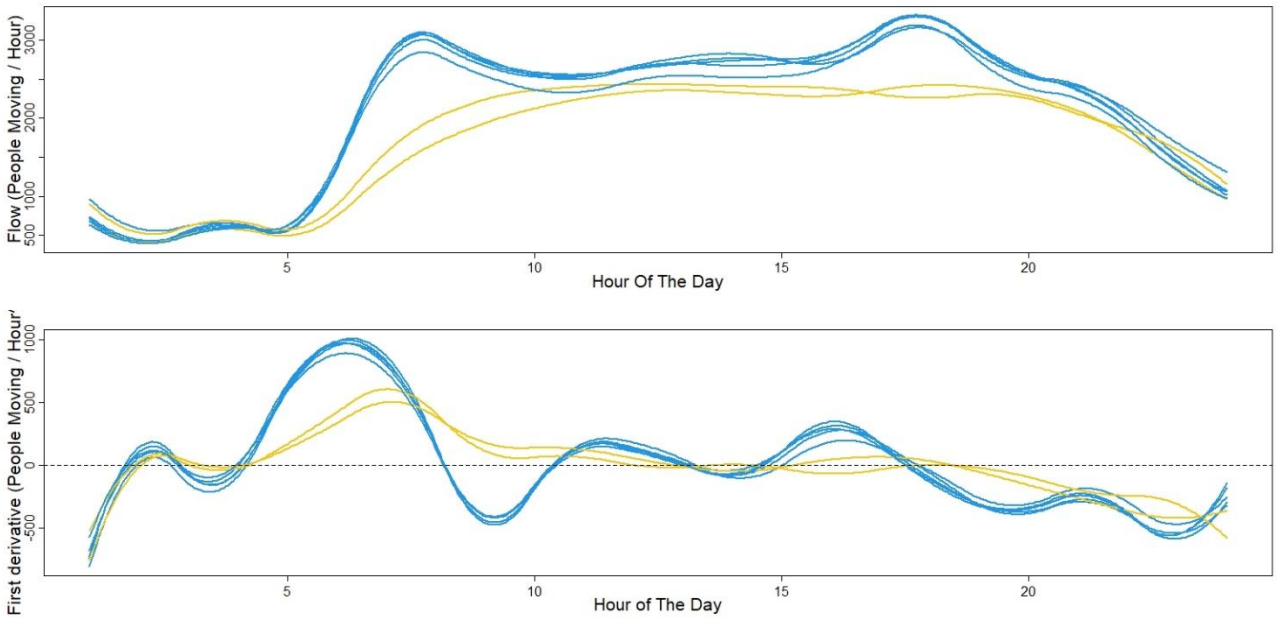


Now I can make a sort of studying of the two functions to interpret the change of the flow:

The first significant increasing of the flow is on 5 am when people start going to work at 7 o clock the flow continuos its increasing but passed the flex and it is now concave, then in the middle of the morning it is decreasing, remains more or less constant during afternoon until 17 when presumably people start going back home and then it decreas again until the next day.

Here I do the same Plot but coloring it according to the day of the week: yellow for Friday and Saturday and Blue for the other days.

Here also the interpretation is pretty similar but it's interesting looking that in the yellow days the flow is much more spread during all the day and not in the busy hours


Flow (People Moving / Hour)
500
1000
2000
3000
5
10
15
20
Hour Of The Day

First derivative (People Moving / Hour'
-500
0
500
1000
5
10
15
20
Hour of The Day