

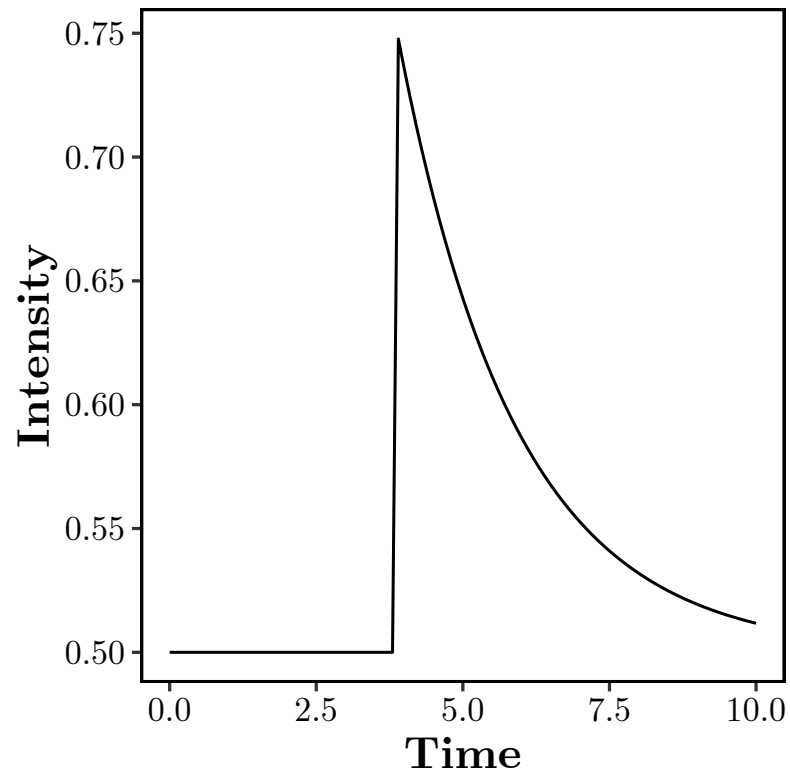


FX Trade Prediction with  
Hierarchical Nonparametric Hawkes  
Processes

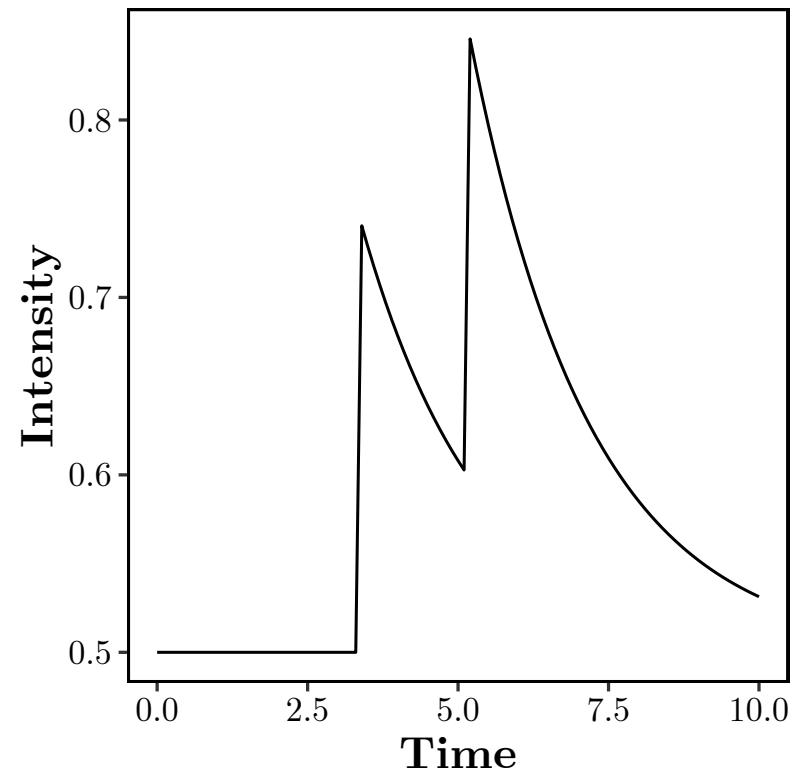
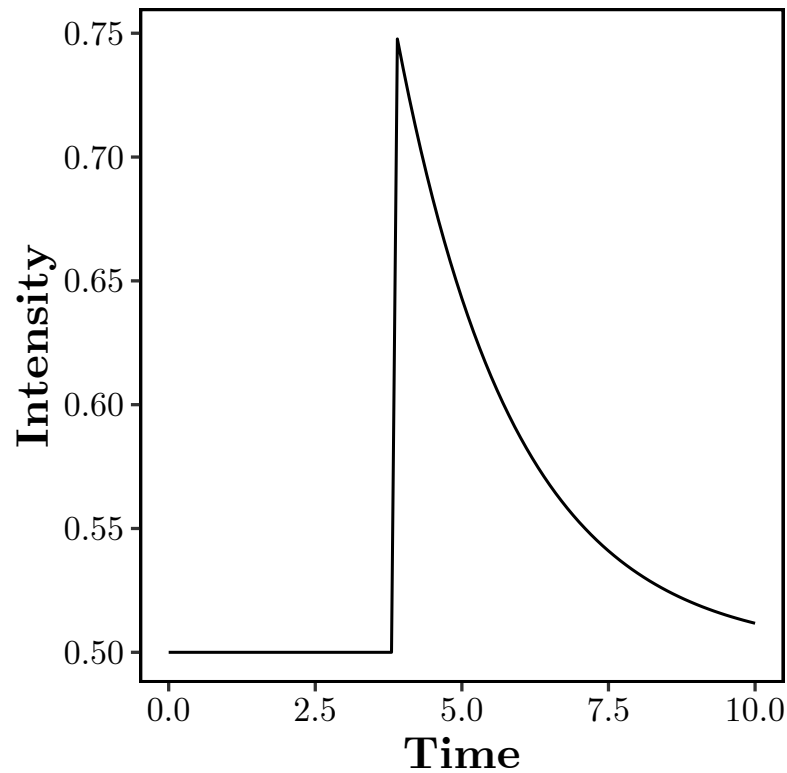
Dean Markwick

# Hawkes Processes

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# Hawkes Processes



# Hawkes Processes in Finance

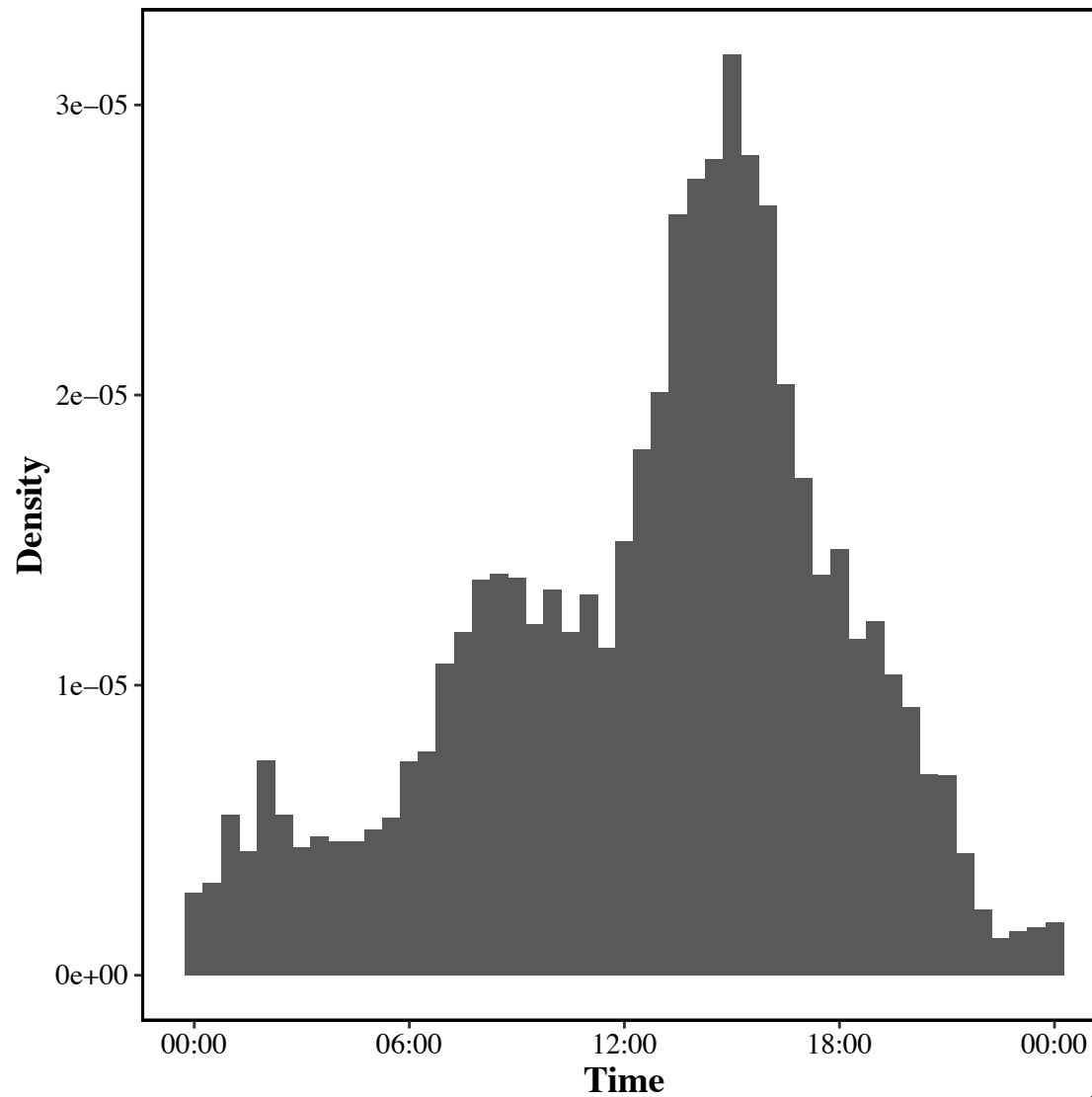
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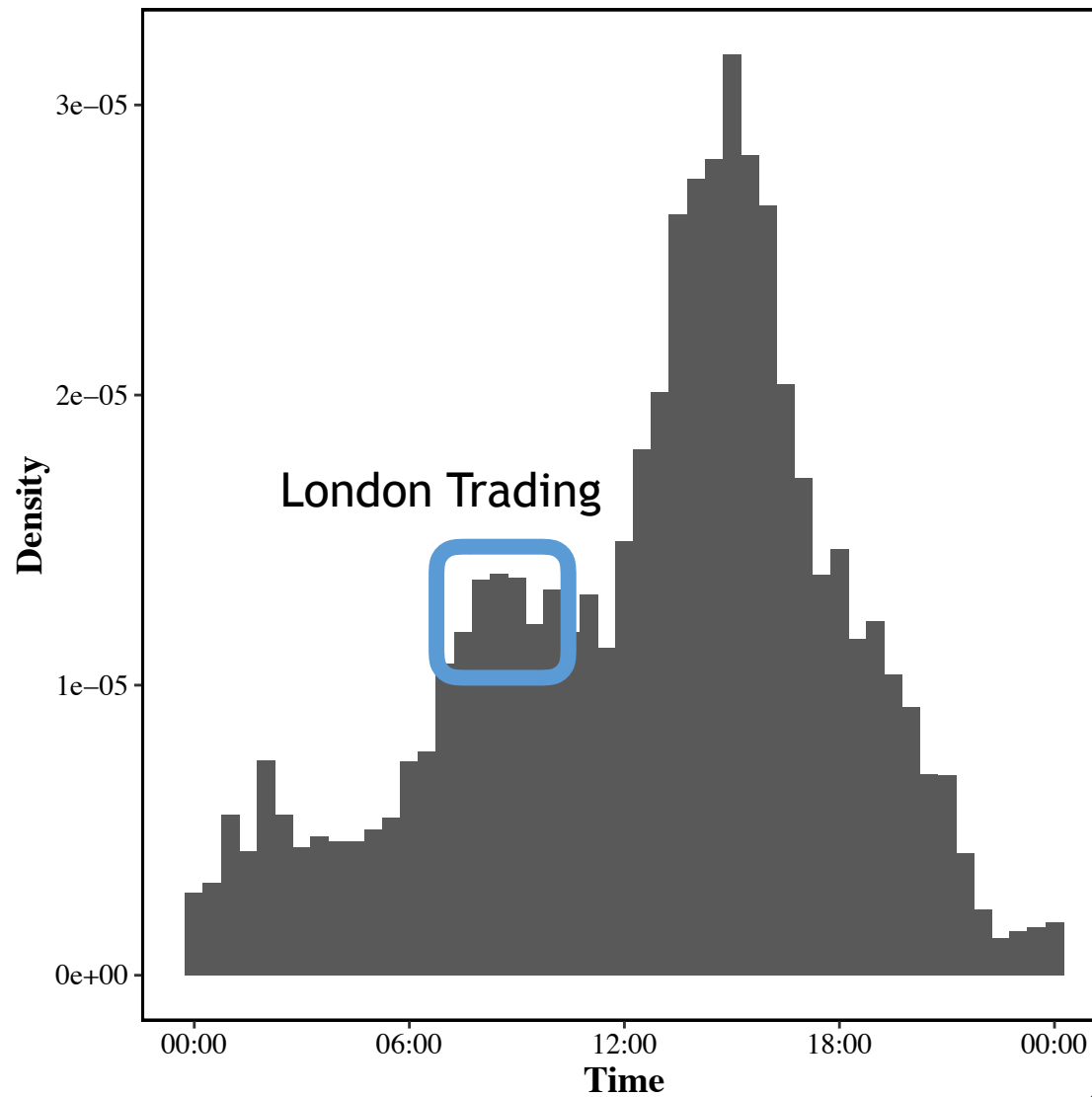
- Prediction of Flash Crashes - Filimonov and Sornette (2012)
- High Frequency Value at Risk - Chavez-Demoulin and McGill (2012)
- Impact of Macroeconomic News - Rambaldi et al (2015)

And many more examples out there.

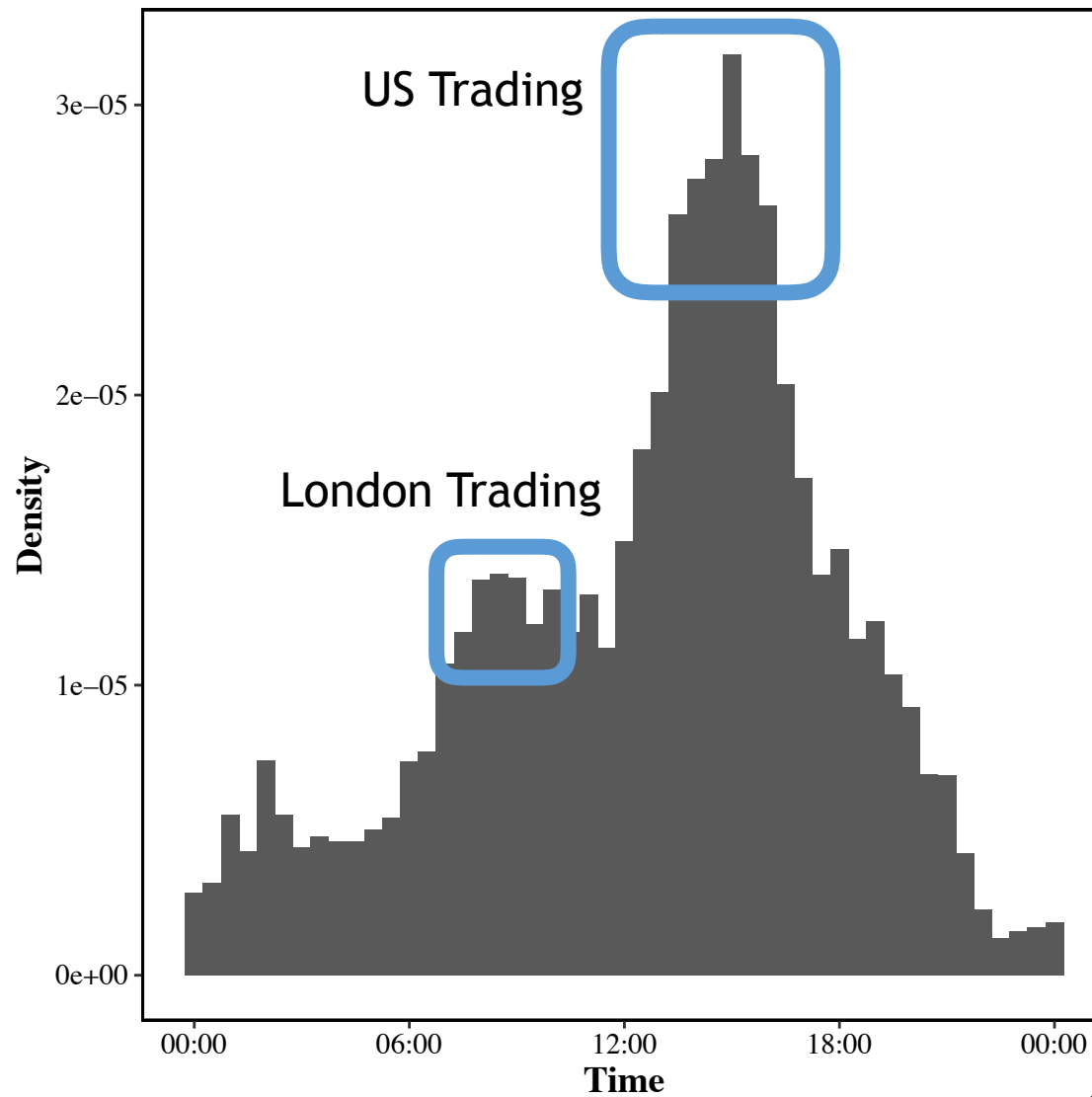
# Patterns in FX Data



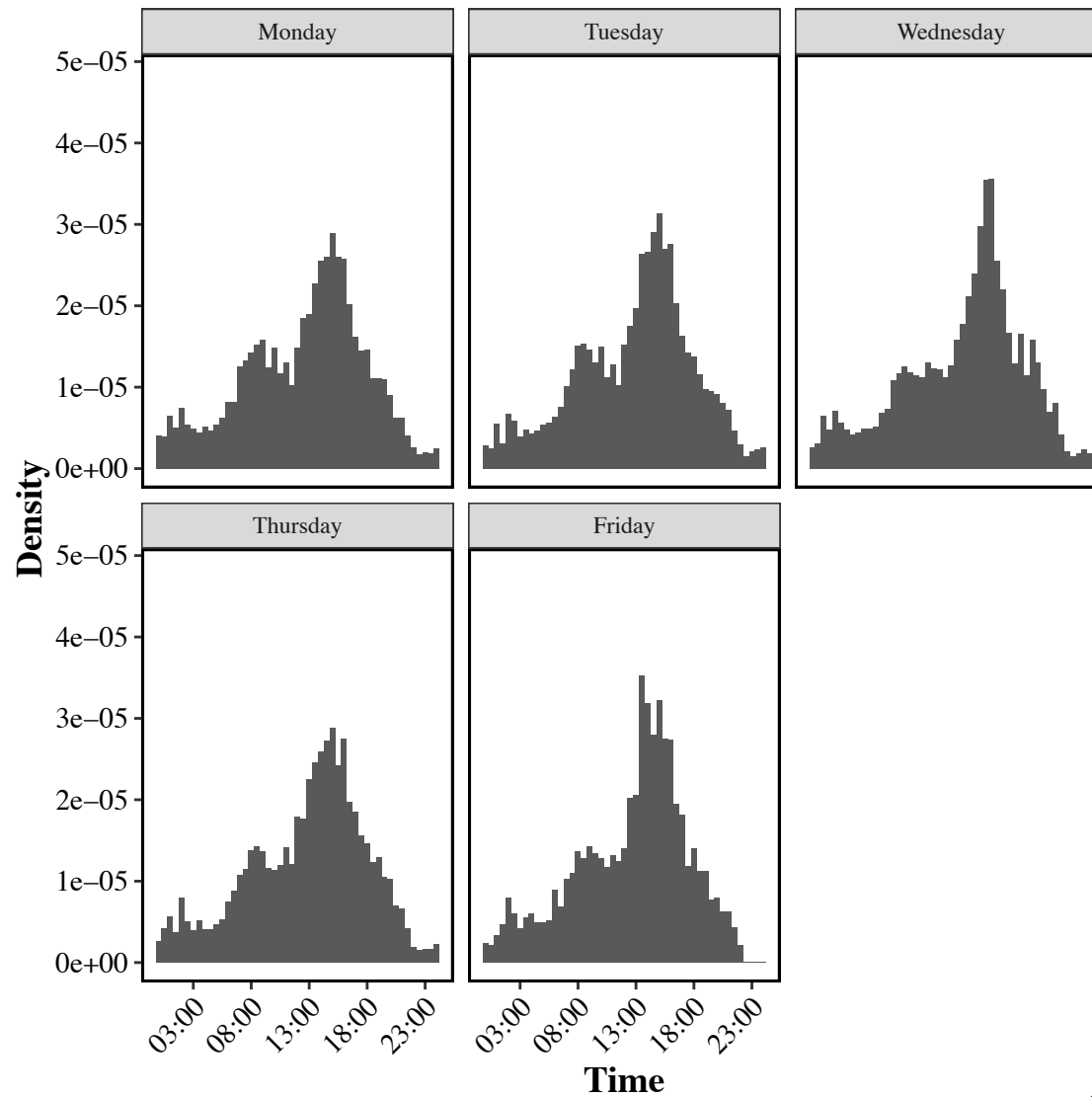
# Patterns in FX Data



# Patterns in FX Data

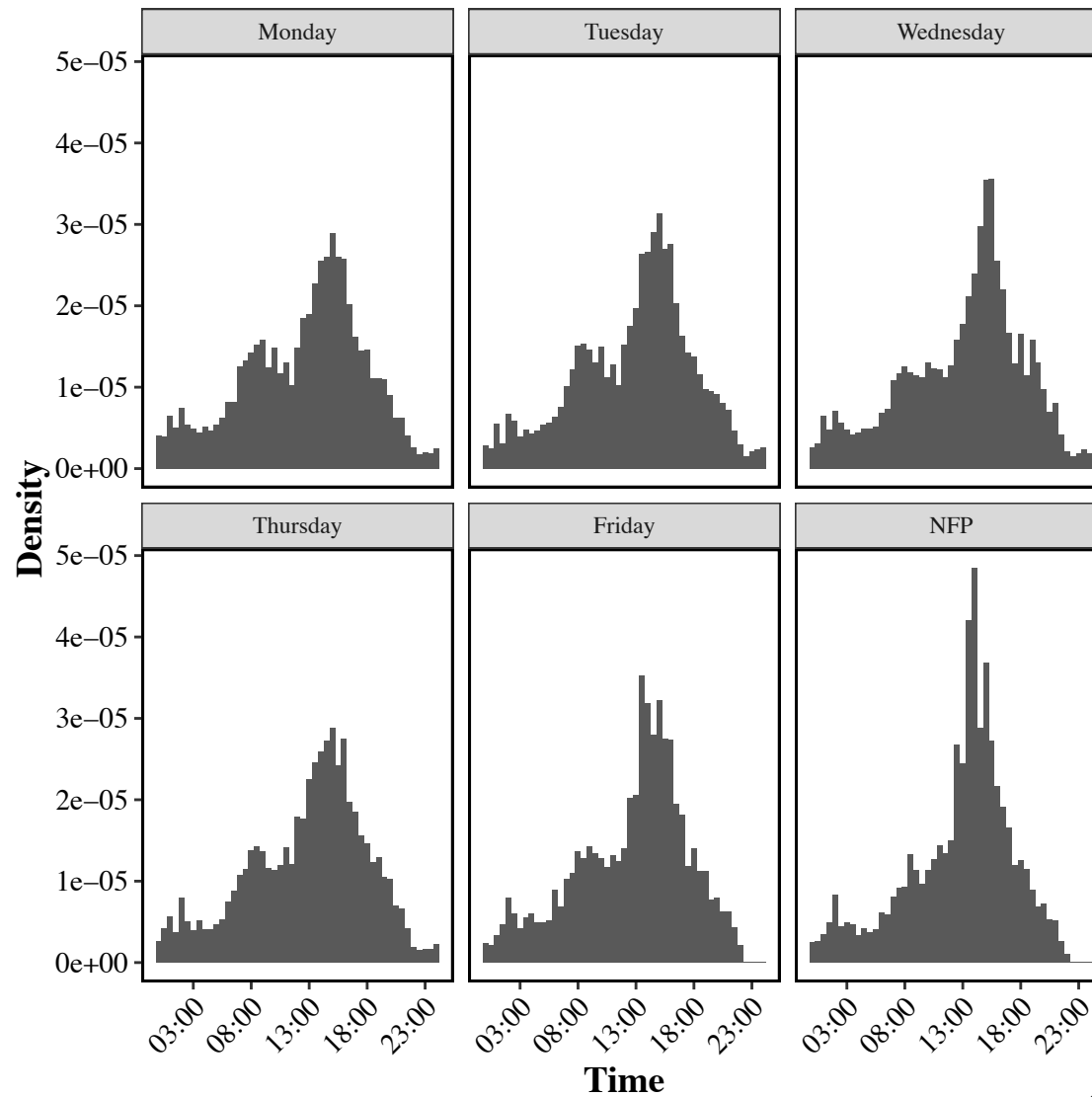


# Patterns in FX Data



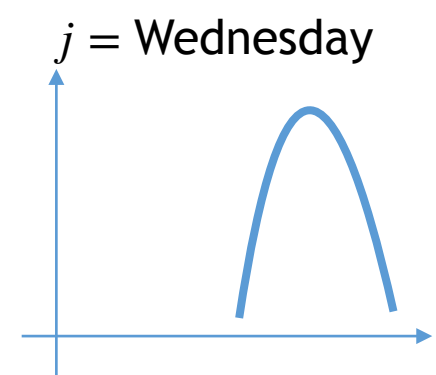
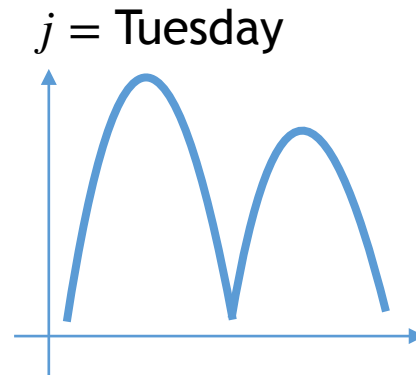
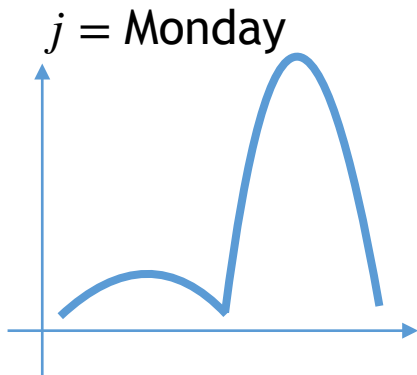


# Patterns in FX Data

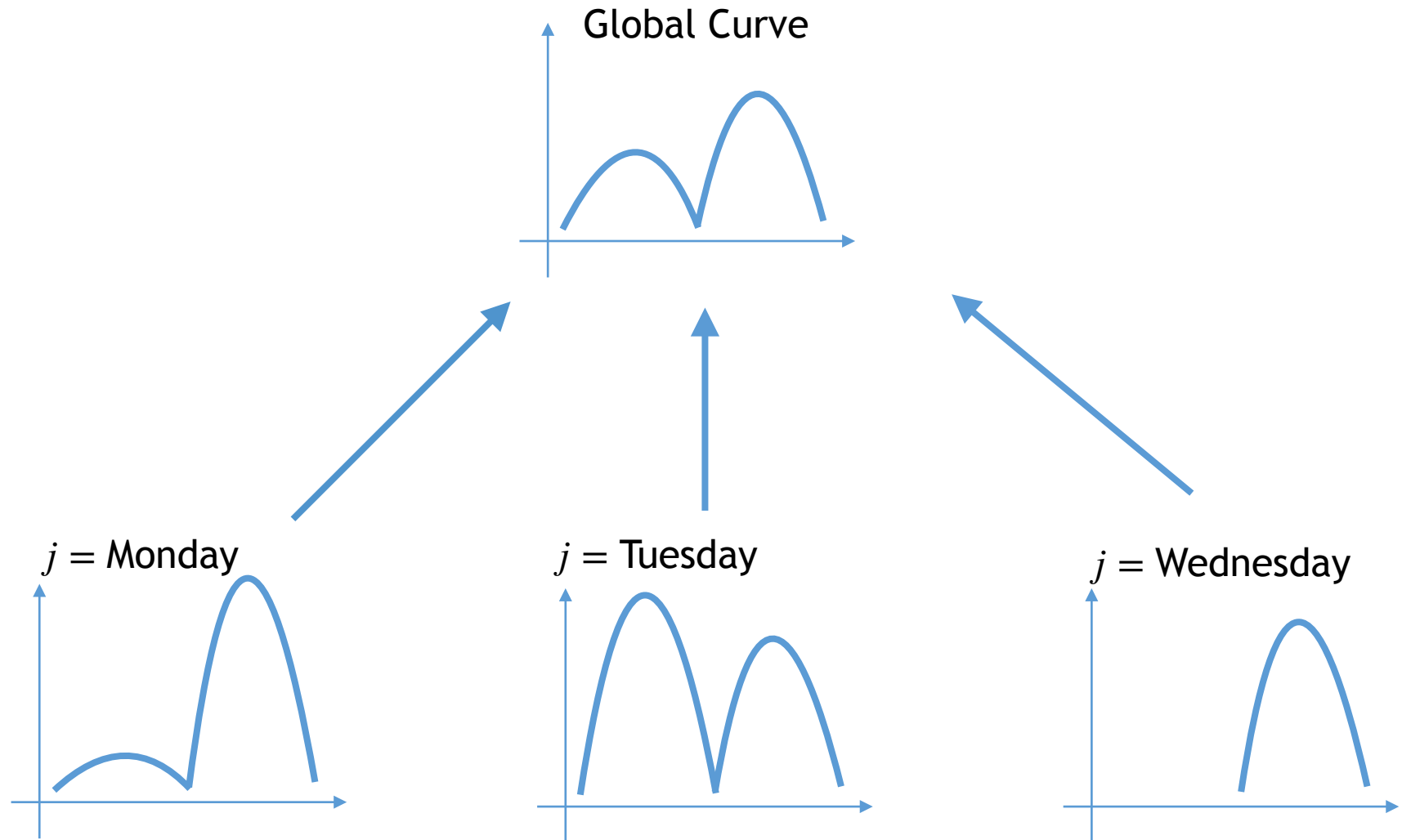


# Hierarchical Dirichlet Process

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# Hierarchical Dirichlet Process



# Hierarchical Dirichlet Process



<https://github.com/dm13450/dirichletprocess>

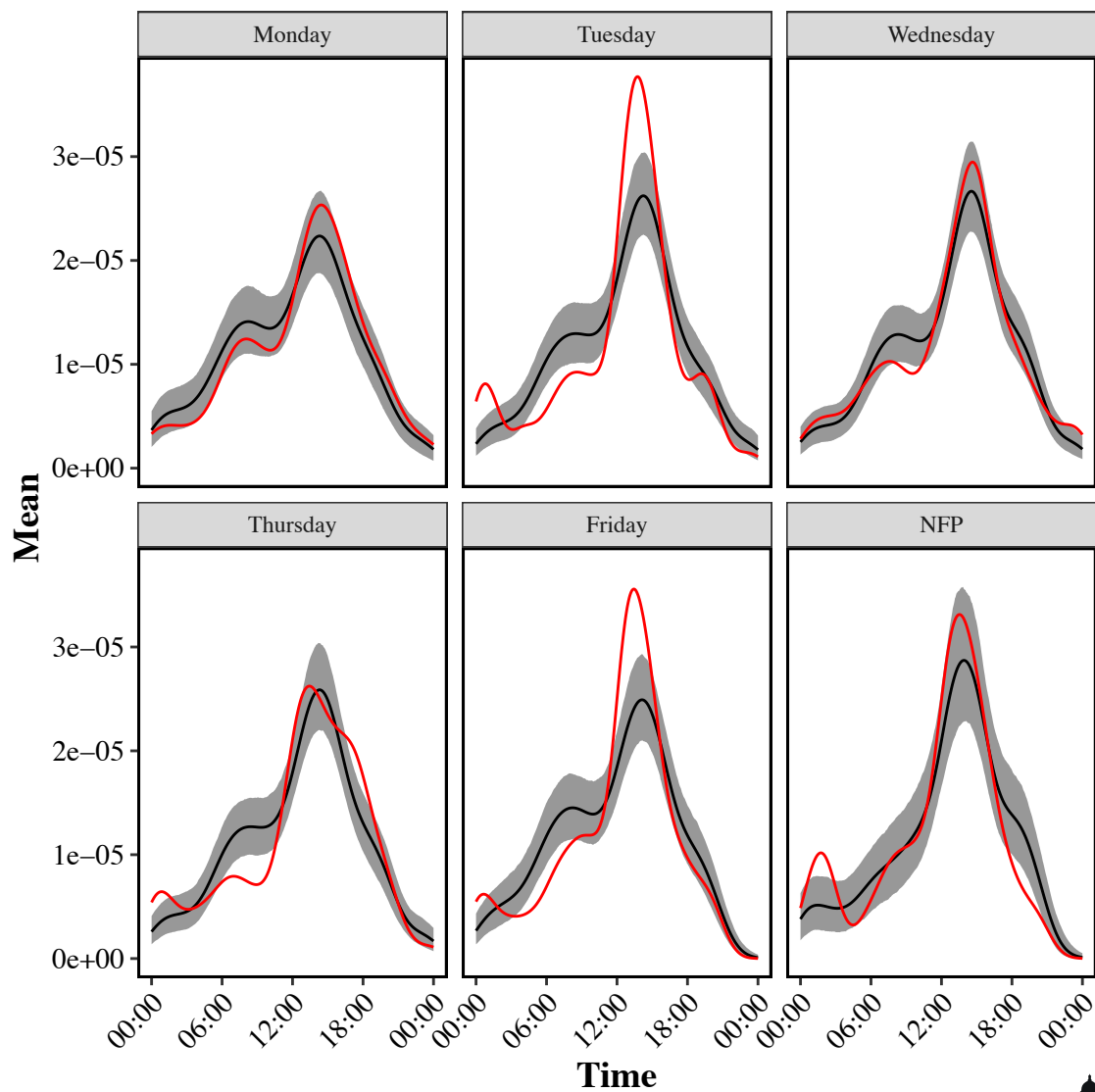
<https://cran.r-project.org/package=dirichletprocess>

- Build Dirichlet process objects in R.
- Inference is handled by the package.
- Can fit, plot and draw from the resulting posterior without having to know the maths or algorithms behind the process.

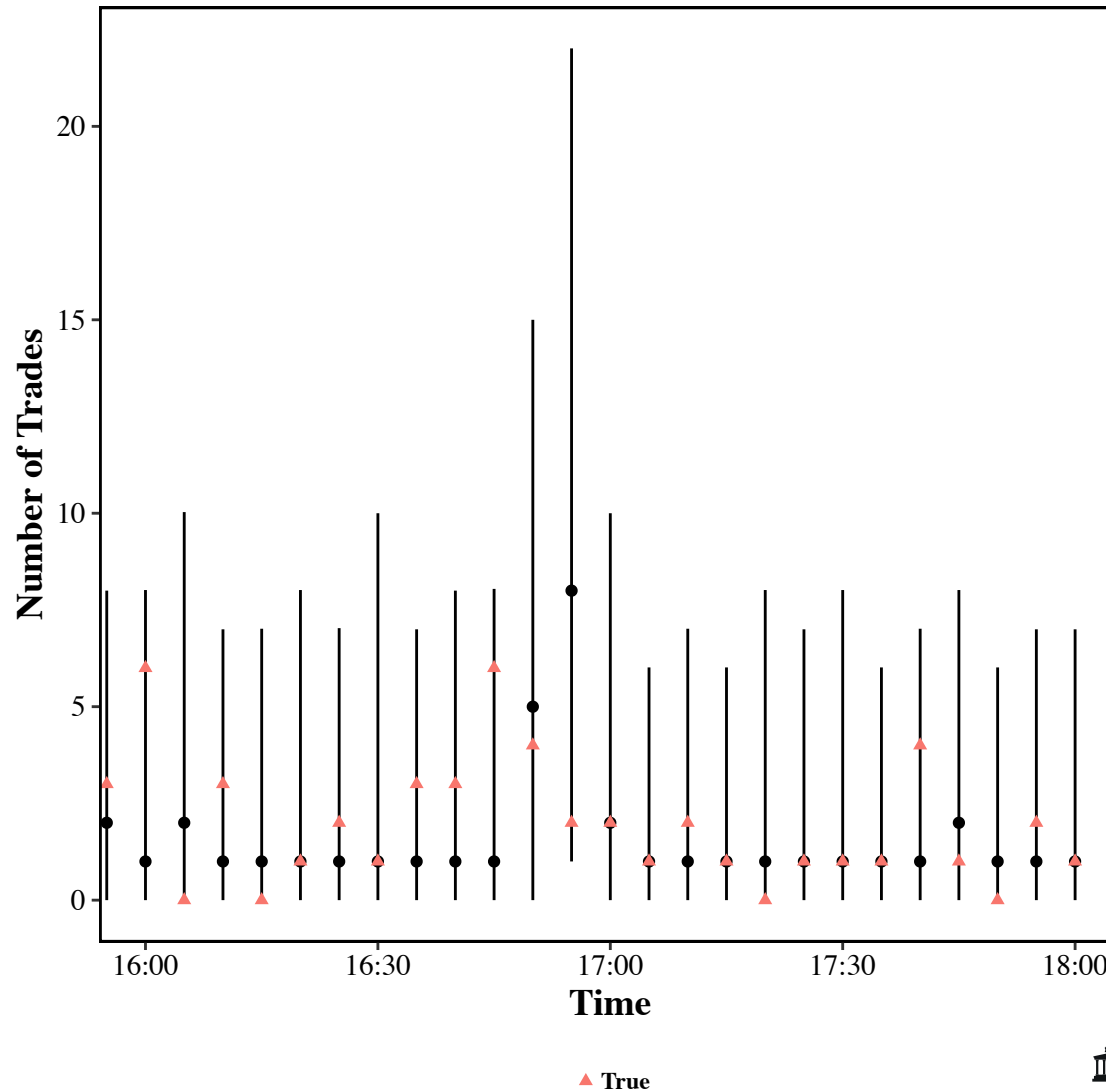


UCL

# Results



# Live Results - 5 minute updates



# Parameter Results

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- Each trade on average has a 30% chance of causing another trade.
- This impact lasts for about 20 seconds.



- Trade Cost Analysis software provider.
- Pre and Post Trade analytics for FX and Fixed Income.
- We are about providing the tools to improve the execution process.





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