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Terrorism and Wine Tourism: The recent case of France

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Motivation

- In this paper we analyze econometrically the main drivers of the number of visitors at a wine museum located in Bordeaux
- *La Cité du Vin* was inaugurated on June 1, 2016
- Among these determinants, we're interested in assessing the potential impact of the wave of Terrorist attacks that hit France since November 2015



Motivations

- Beyond the prediction model that is of interest for museum managers, we are questioning the potential role that this constant wave of terrorist attacks may have had on tourism and in particular wine tourism in France
- Bordeaux is a natural application as wine tourism has become over time a very attractive destination for tourists with more than 7 millions of visitors in 2017
- Negative impact and positive impact (Song et al., 2018)
 - Direct negative effet: decline in visitors number
 - Indirect positive effect: wine tourism serves as a substitute for urban tourism after terrorist attacks

Hypotheses

- The number of tourists drops immediately after a terrorist attack in the country, with some positive and negative interregional effects (Richardson et al., 2005).
- Terrorism has also more permanent effects (Becker and Rubinstein, 2008; Camacho, 2008).
- Luechinger and Stutzer (2004) show that it takes from 2-3 months to a maximum of 18-21 months for a tourism destination to recover from a terrorist attack.

Related Literature

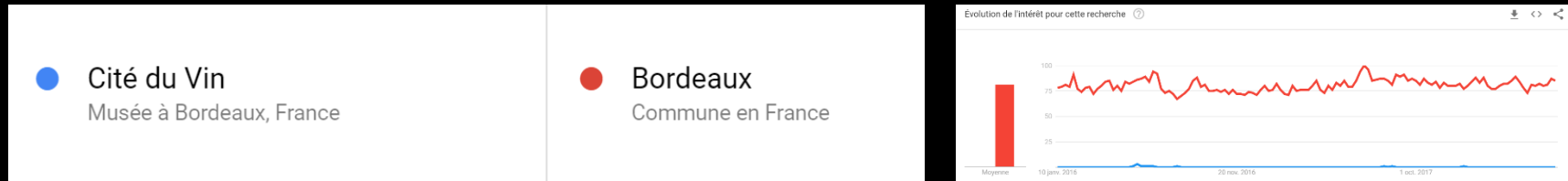
- Weather is included in some models of movie demand (Dahl and DellaVigna, 2009 ; Moretti, 2011 ; De Roos and McKenzie, 2014)
- Museum attendance: Effect of the presence in the city of cruise ships (Gordin and Matetskaya, 2012)
- Motion picture industry: films earn more on public and school holidays (Einav, 2007)
- Tourism and Google trends index (Siliverstovs and Wochner, 2018)

Attendance Data: La Cité du Vin

- Number of visitors per day at *La Cité du Vin* since the opening (June 1, 2016 – December 31, 2017)
- Number of opening hours per day
- Weather: temperature and rain
- School holidays and bank holidays
- High speed train between Bordeaux and Paris after July 1, 2017
- Cruise ships in Bordeaux
- French and foreign passengers at the Bordeaux airport (monthly)

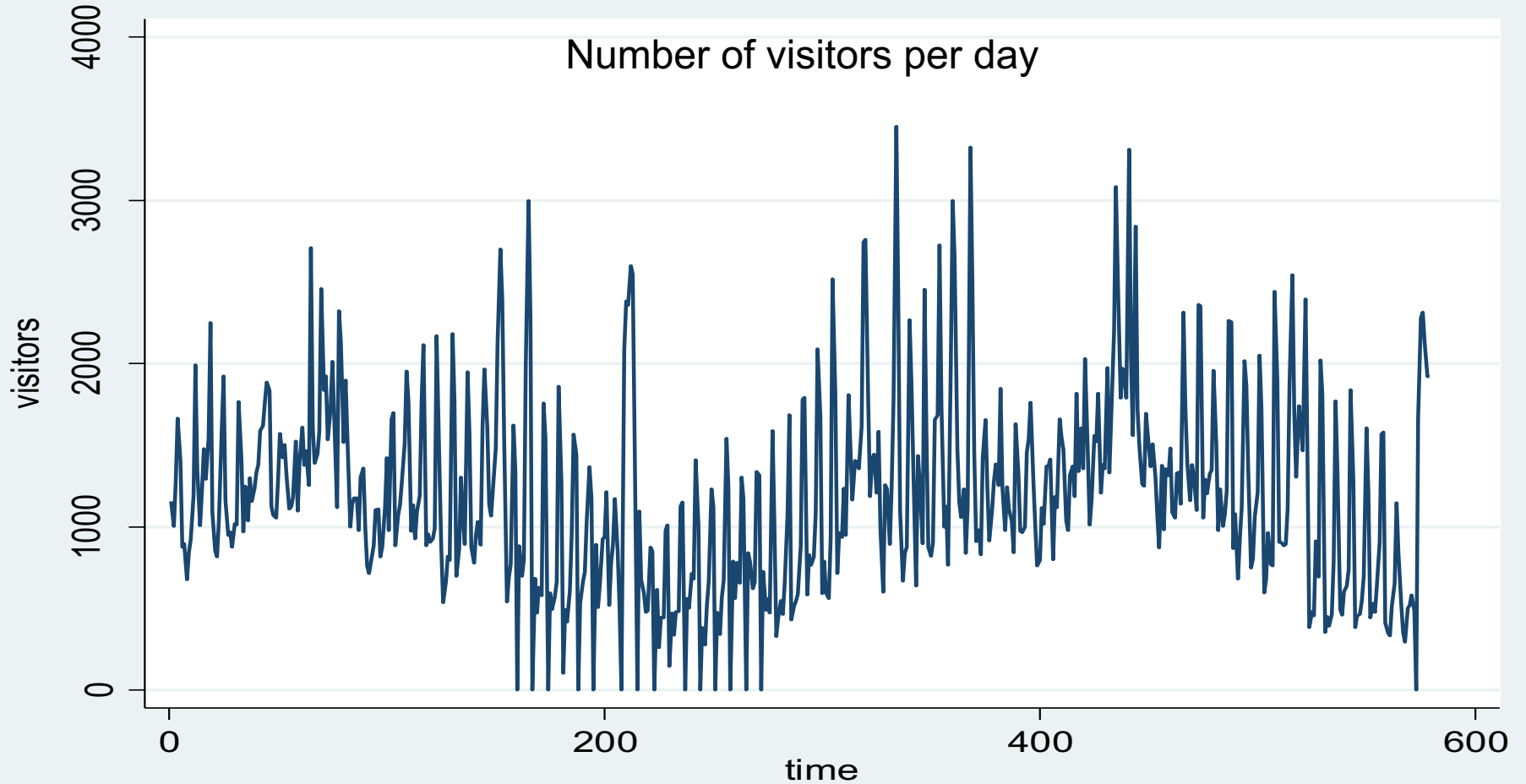
Google Trends Data

- We introduce in our regressions a series of GT indices
- To capture the interest of people around the globe for *La Cité du vin* and the city of *Bordeaux* as a tourism destination



- To capture the extent to which people around the globe are concerned about terrorism
 - Keywords used: « terrorisme », « isis », « daech », « état islamique », « terrorisme islamiste » and their equivalent in English
- Weekly scores

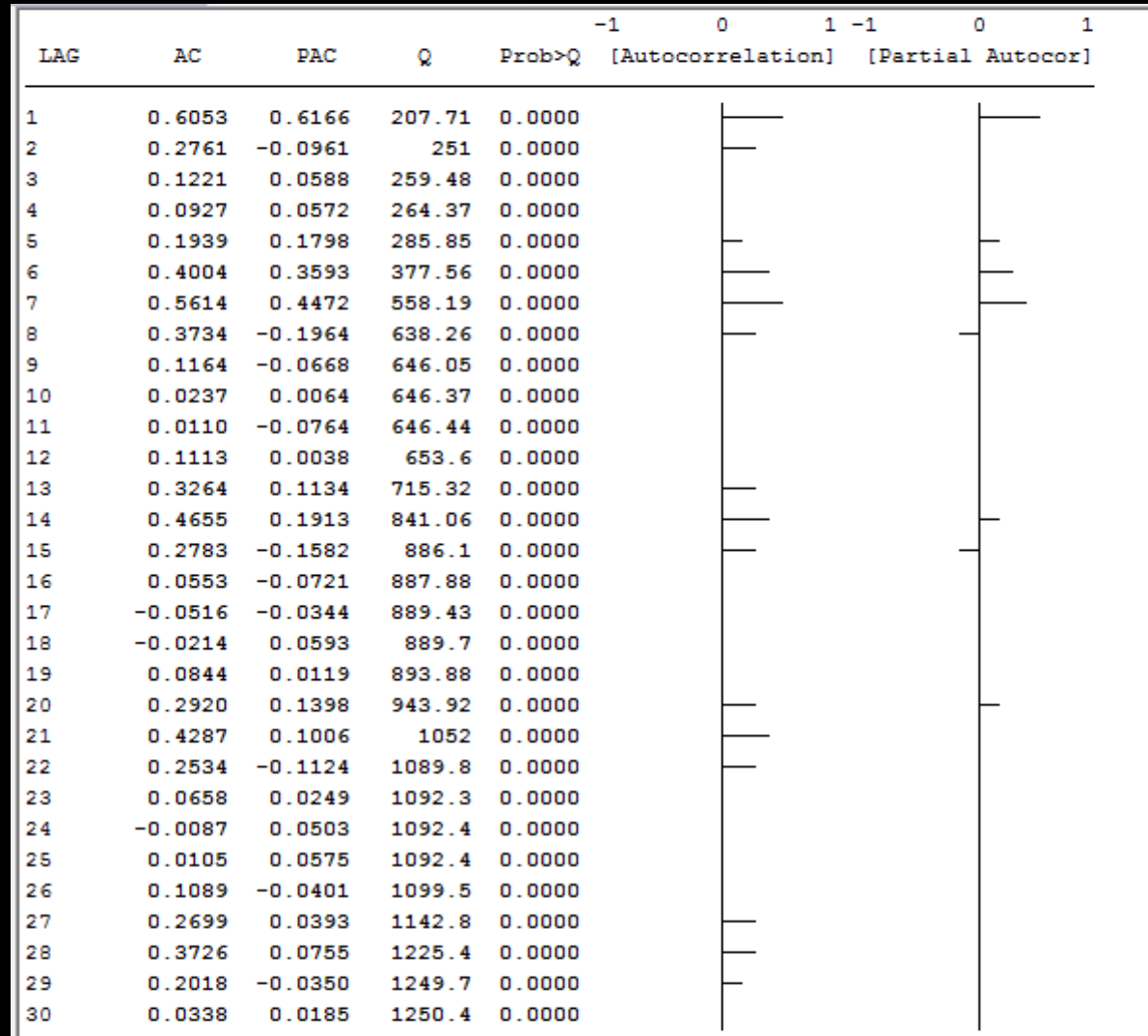
Time series



June 1, 2016 – December 31, 2017

Autocorrelation

- Autocorrelation is high
- First order and second order autocorrelation
- Need to introduce lags on the RHS of the equation to get consistent estimates of the impact of other control variables



Regression results

	Coef.	t-stat
Number of visitors t-1	0.341***	8.11
Number of visitors t-2	-0.088**	-2.13
Week-end	0.366***	10.51
Opened hours	0.175***	7.61
temperature (log)	-0.011	-0.32
rain (yes/no)	0.105***	3.44
School holidays (yes/no)	0.068**	2.07
Bank holidays (yes/no)	0.368***	4.67
LGV high speed train	-0.071*	-1.75
Cruise ship in Bordeaux	0.009	0.25
Airport French passengers (log)	0.375**	2.11
Airport Foreign passengers (log)	0.023	0.97
Google trends "Cité du vin" (log)		
t-8	0.258**	3.89
t-16	0.067	1.14
Google trends terrorism (log)		
t-8	-0.112*	-1,84
t-16	-0.114*	-1.90
Intercept	-1.474	-0.70
R ²	0.63	
Nb. of obs.	512	

Conclusion

- Our model predicts museum attendance in a satisfactory way
- Autocorrelation is present and high in the data
- A clear weekly seasonality has been detected
- Terrorism has a short run negative impact on museum attendance one week after the event.
- Elasticity is low at around -0.11

Next steps

- Unit root test
- Box-Jenkins approach: SARIMA and ARIMAX models
- Complex seasonal pattern: weekly and monthly
- BATS or TBATS model (De Livera et al., 2011) ?
- A more developed Google Trend index to capture the concern about terrorism

Questions & comments:

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