

Forecasting City Tourism Demand: a hybrid approach

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Outline

- Where to find city tourism forecasts?
- Needs and benefits for planning purposes?
- Case example for Vienna:
 - Timeseries forecasting for the EURO 2008 period
 - Expert tool application by the Vienna Hoteliers' Association
 - Evaluation of the accuracy
- Advancements through causal methods
- A hybrid model integrating quantitative and expert based data
- Critical success factors

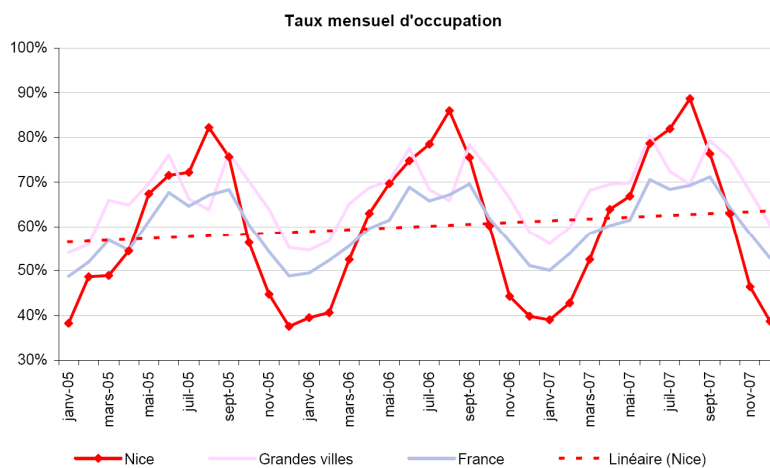
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City tourism demand data

- Berlin
 - CTO web site: figures but not forecasts
 - Hotel association: report includes forecasts
- Sevilla:
 - CTO: quarterly figures found, no forecasts
- Edinburgh:
 - CTO: statistics of visitscotland, no forecasts

=> Hardly any city forecasts publicly available

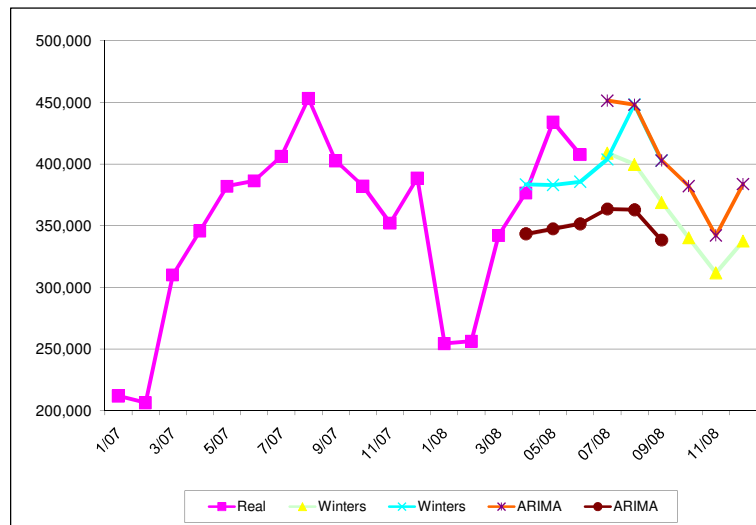
Example: Nice



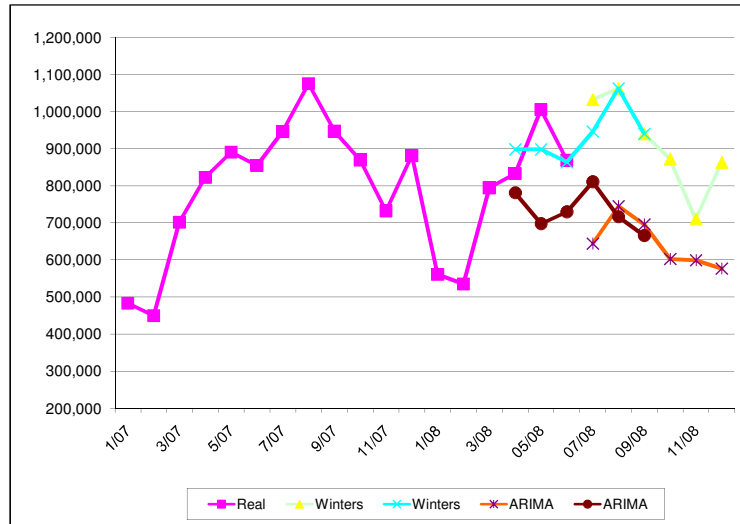
Needs and benefits

- Occupancy predictions help adjusting HR resources
 - In the accommodation sector
 - In the restaurant sector
 - In the attraction sector
- Demand level forecasts help refining pricing strategies
- Counter-actions for low demand, e.g. increased short-term marketing efforts, travel bundles, last minute offers

Time series forecasts in April 2008 for arrivals in Vienna: May – July



Time series forecasts in April 2008 for bednights in Vienna: May – June – July



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Expert tool application by the Hoteliers' Association

How would you estimate the **total bookings for Vienna** in June 2008 compared to June 2007?

- Higher than - 5%
- Max. - 5%
- Max. - 3%
- No change
- Max. + 3%
- Max. + 5%
- Higher than + 5%

How would you estimate the **occupancy rate for your hotel** in June 2008 compared to June 2007?

- considerably higher
- slightly higher
- more or less the same
- slightly lower
- considerably lower

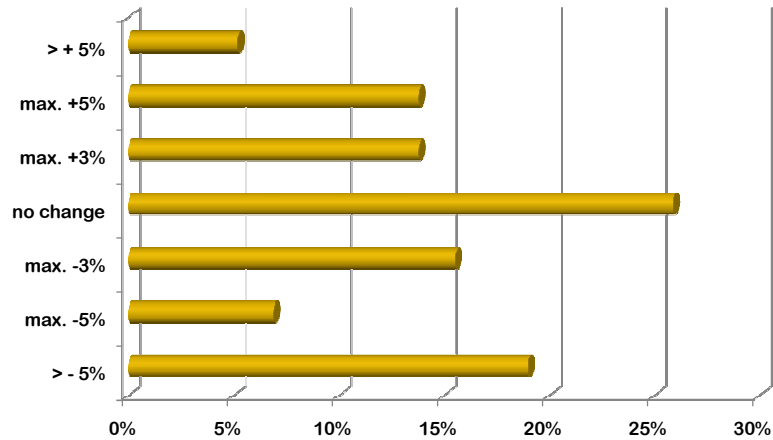
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(ÖHV, 2008)

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Expert tool results

Overnight estimates June 2008



(ÖHV, 2008)

Fit comparison: Vienna example

Bednights	Real	Experts	Winters	ARIMA
May 2008	+13%	+1%	+1%	-22%
June 2008	+2%	-1%	+1%	-15%
July 2008	+9%	+1%	0%	-14%

Perspective: April 2008 and data available until March 2008

Improving forecasts through causal methods

Integrate in the forecasting for a city factors such as:

- Booking status
- Transport data (airline, train bookings)
- Event databases
- Tour operator / travel agency bookings

Together with

- Calendar data
- Promotional incidents (e.g. special international promotions, new and additional air links)

Improving forecasts through hybrid models

- A pool of experts delivers forecasts
 - For overall city tourism demand
 - For distinct generating markets
 - Accuracy/confidence levels for each experts can be evaluated after a number of forecast cycles
- System users requesting city tourism forecasts
 - Can choose from time-series forecasts or from expert based forecasts only or
 - Select a – weighted – mixture from both

Improving forecasts through hybrid models

Bednights	Real	Experts	Winters	Hybrid 50 : 50
July 2008		+3%	+9%	+6%
August 2008		-3%	-1%	-2%
September 2008		+5%	-1%	+2%
October 2008		+3%	0%	+1.5%
November 2008		+1%	-3%	-1%
December 2008		-1%	-2%	-1.5%

Perspective: April 2008 and data available until March 2008

Web-based forecasting system

Forecast Selection - Mozilla Firefox

File Edit View History Bookmarks Tools Help



City tourism forecast

Your personalised forecast

Choose which forecast you would like to receive:

Choose Forecast

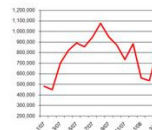
Obtain Forecast

Include in your bed nights forecasts:

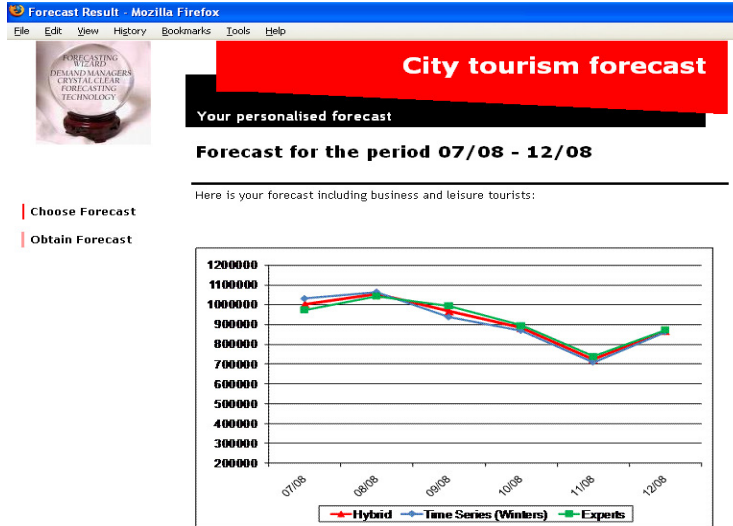
- Expert forecast
- Time Series forecast
- Both (Mixture)

Include in your bed nights forecasts:

- Leisure Tourists
- Business Tourists
- Both



Web-based forecasting system cont.



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Critical Success Factors

- Sufficient number of experts who contribute
- Balanced variety of experts: e.g. from different tourism sub-sectors
- Commitment to regularity
- Willingness to learn and adapt and to share knowledge about market insights
- Ease-of-use of an interactive web tool for administering data input and information retrieval

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Thanks for your attention!

Questions and remarks are welcome

