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Predicting Lumber Prices and Buying Decisions: Would you like to play a game?

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Purpose of this study

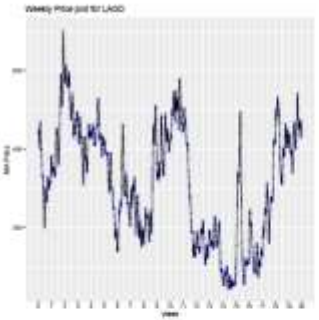
- Lumber purchasing decisions are based on:
  - Historic lumber prices
  - Futures
  - Past experience and information networks

- We introduce a prediction model that builds on **the movement** of prices instead of their actual prices (spot or futures)

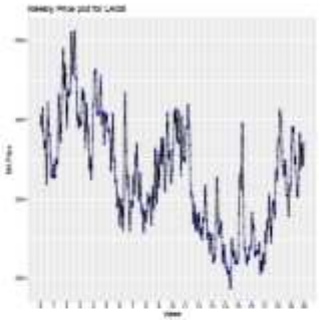
7 W 2013	7 W 2014	7 W 2015	7 W 2016	7 W 2017	7 W 2018
					BUY

Data

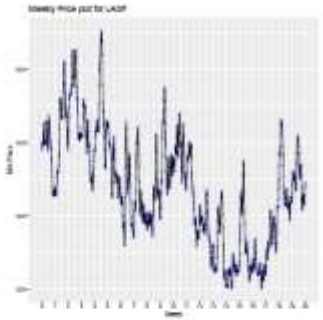
- Random Lengths
- 1995-2014
- Stationarity
- Correlations between the six series
- Seasonal patterns



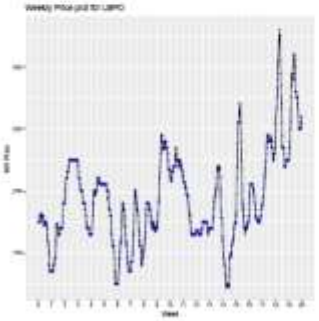
(a) KD S. Pine #2 2x4



(b) KD S. Pine #2 2x6



(c) KD S. Pine #2 2x8



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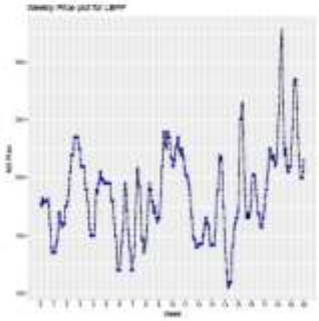

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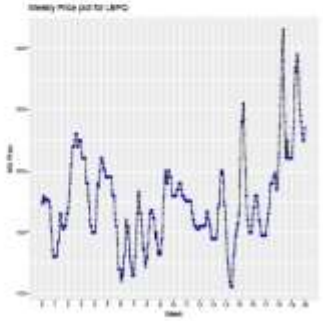
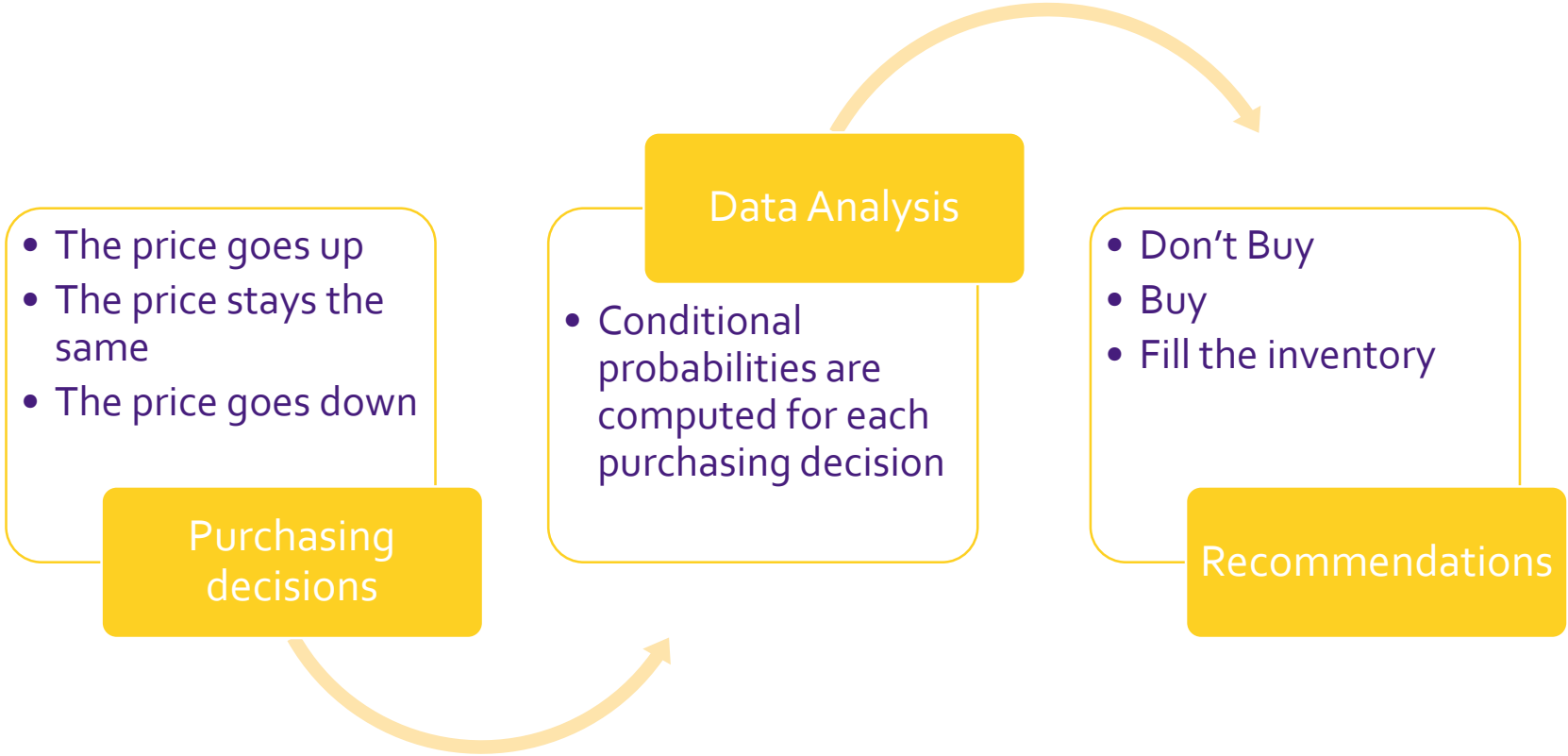


(f) KD S. Pine #4 2x8

Algorithm


Data Analysis
• Conditional probabilities are computed for each purchasing decision
• Don't Buy
• Buy
• Fill the inventory
Recommendations
• The price goes up
• The price stays the same
• The price goes down
Purchasing decisions

The Experiment

- Agent is a lumber buyer
- Operational needs
- Limited inventory
- Same amount of lumber units at the start and end of each year

Number	TAG	PRICE	Year	Week	Recommendations	Purchaces	StoredQuantity	Cost
2861	LAGF	239	2010	1	B++	9	1	2151
2862	LAGF	247	2010	2	B+	1	9	247
2863	LAGF	264	2010	3	B+	1	9	264
2864	LAGF	287	2010	4	B+	1	9	287
2865	LAGF	308	2010	5	B+	1	9	308
2866	LAGF	326	2010	6	B++	1	9	326
2867	LAGF	333	2010	7	B++	1	9	333
2868	LAGF	327	2010	8	B++	1	9	327
2869	LAGF	317	2010	9	B+	1	9	317
2870	LAGF	304	2010	10	DB	0	9	0
2871	LAGF	302	2010	11	DB	0	8	0
2872	LAGF	310	2010	12	DB	0	7	0

Observations

- Comparisons with other strategies
- Analysis During Crisis
- Flexible
- Extendable

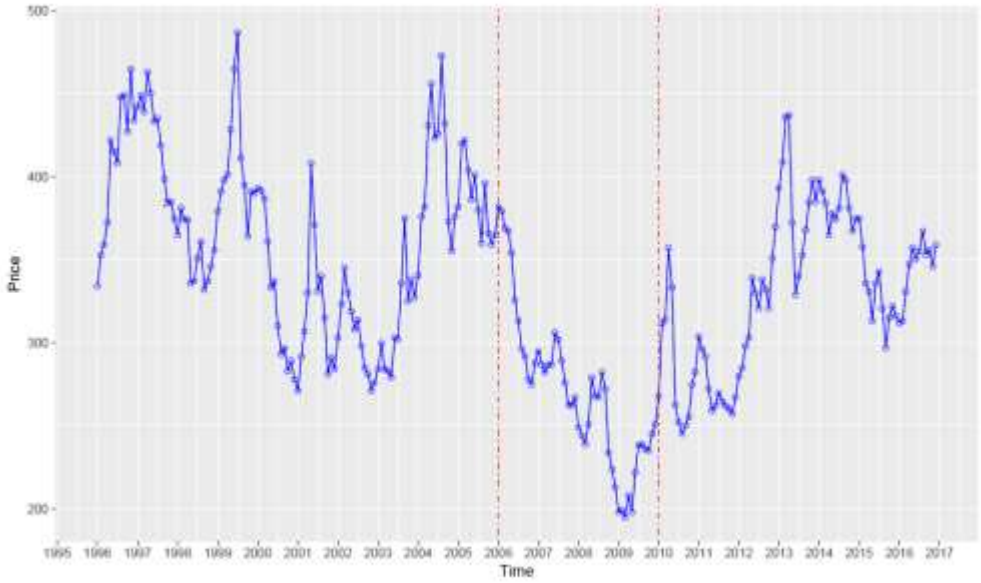


Figure 7: Spot Lumber Prices for the years 1995-2017

THANK YOU!

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