

**University of Connecticut  
Goldenson Actuarial Center**

Research Activities

Actuaries Clubs of Hartford/Springfield and Boston  
November 17, 2011

by Jay Vadiveloo & Jai Gangwani

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**Background**

- Janet & Mark L. Goldenson Center for Actuarial Research was established in June 2009
- Donation from the Goldenson family directed towards applied actuarial research to serve the needs of the financial industry and actuarial student scholarships
- Oversight by an Advisory Board comprising of industry executives and key University of Connecticut (UConn) academic staff

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**Role of Towers Watson**

- The Goldenson Center is a UConn entity and not part of Towers Watson
- Towers Watson funds the position of Director of the Goldenson Center so that all the Center revenues can be directed towards supporting students (and faculty)
- Towers Watson also supports the Center through joint research projects

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### **Selected Center Research Projects**

- Society of Actuaries (SOA) experience studies
- Claims Management System for P&C liabilities
- Retirement Satisfaction Index
- Mature Driver Screening Tool development & analysis
- Replicated Stratified Sampling (RSS) technique for efficient actuarial modeling
- Enterprise Risk Management for Small Businesses (ERMSB) initiative

To date, the Center research projects have supported more than 15 students and three PhD students at UConn

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### **Motivation for ERMSB Initiative**

- Small businesses are the largest, fastest growing and most important segment of the American economy
- Small businesses experience one of the highest failure rates compared to large corporations
- Lack of any institutional or formalized risk management for small businesses

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### **Similarities with ERM for Large Corporations**

- Fundamental steps are similar
  - Identify and prioritize risks
  - Model and quantify the risks
  - Create risk-mitigation strategies

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### Differences with ERM for Large Corporations

- Needs to incorporate business growth strategies as well
- Need to focus on reasonably likely risks with serious consequences versus low likelihood events with serious consequences
- Business owners are very knowledgeable about risks and business growth strategies
- Easier to assess and manage risks of a small business, but consequences of a risk shock are far greater
- Qualitative risks may be just as important as quantitative risks
- ERM analysis covers a shorter time period (three to five years) and should be revisited regularly

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### WILLIMANTIC BREWING COMPANY & MAIN STREET CAFE

JAI GANGWANI (FINANCIAL MATHEMATICS)

BERNARDO MARQUEZ (ACTUARIAL SCIENCE)

ADVISOR: DR. JAY VADIVELLO

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### The Craft Beer Industry

- Craft beer industry consists of four categories
  - Microbrewery
  - Brewpub
  - Regional craft brewery and
  - Contract brewing company
- According to the *Brewer's Association*, in the year 2010
  - 1,716 craft breweries operating in the United States
  - Domestic craft beer sales were 9,951,956 barrels\*
  - Craft retail dollar value was an estimated \$7.6 billion
  - Growth was 11% by volume and 12% by dollars
  - An estimated 100,000 jobs in the U.S. are provided by craft brewers

\* 1 barrel = 31 U.S. gallons

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#### Quick Facts about Willibrew

- WilliBrew qualifies as a **brewpub**
- **In business since 1991** and have made two moves since
- Currently occupies a 1909, granite and limestone, former U.S. Post Office building in the heart of Downtown Willimantic
- “**Go-to**” place for beer connoisseurs, wing fans and bar-fare enthusiasts in and around Willimantic, CT

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#### Risks faced by WilliBrew

- General liability – premises and operations
- Product liability and completed operations
- Workers' compensation
- Crime
- Fire/property
- Business interruption
- Machinery/equipment breakdown
- Key man liability (Brewmaster)
- Operational inefficiencies

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#### Initial analysis

- Sales have shown an upward trend in the last five years
- Unaffected by the economic crisis of 2008
- Business is slower in February; most probable cause is the weather
- Months with gas price hikes have shown to be great for sales
- Power outages in the area have led to increase in business
- Only competition are the grocery stores in the area
- One of the big issues faced is parking space
- Promotions are introduced from time-to-time to boost sales
- Most advertisement is through word-of-mouth
- Only two key persons: Owner/Brewmaster and General Manager
- Labor-intensive business; wages are the highest expense

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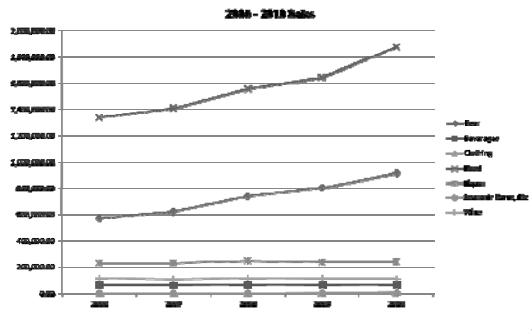
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### Sales Chart



### Deliverables

- A full report on the business, based on our risk and potential-for-growth analysis, with the following recommendations:
  - Parking:** Introduction of valet parking to relieve customers of the stress
  - Online Advertisement/Promotions:** Groupon.com, Saveology.com, Restaurants.com, SaveNowCT.com
  - Tracking:** Better tracking of item-by-item sales, maybe use a Business Intelligence software (such as OBIEE, Cognos, SSBI) to see ready reports for Cost, Sales and Profit by item to know when to make changes to the menu
  - Future Strategy:** Develop a five-year plan to determine where the business is headed

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### Student Perspective on ERMSB Initiative

- Not your typical actuarial project
- Forces students to think out-of-the-box as each ERMSB project is unique
- Growth analysis is an integral part of the project
- The business under review need not be under risk of failing; an increase in profitability is a favorable result for the project
- Students work in a team and are involved from start to finish
  - Students work directly with the business owners
  - Final report, models and presentation done by students
  - Invaluable experience and immediate gratification of having recommendations implemented by owners

## Conclusion

- The Goldenson Center has been established to serve the needs of industry
- Research projects like ERMSM provide valuable experiential knowledge for students and facilitates out-of-the-box thinking
- Success of the Center is precipitated on industry supporting the Center through real life research projects that are needed by industry

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## Contact Information

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