Using **Tableau** with **Moodle** for **Visual Analytics**

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LMS's Data

- **LMSs capture student in instructors "clicks"**
- **This is an important reason to use an LMS**

- **Could all this data be used to improve education?**

- **Challenge: How to access the data, analyze it, and interpret it**

Moodle's Databases

- **Relational database management system (RDBMS)**
- **SQL – to query the database**

- **Example: "Complete Report"**

- **Many reports are textual, not graphic**
  - **Textual reports are harder to interpret!**

- **"A picture is worth a thousand word"**

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Problem!

- **RDBMS lack robust visualization tools**

- **Export data to neutral format**
- **Create graphics with other product**

- **Common graphic product: MS Excel**

Example: **Excel**

Comparison of Two Data Sets
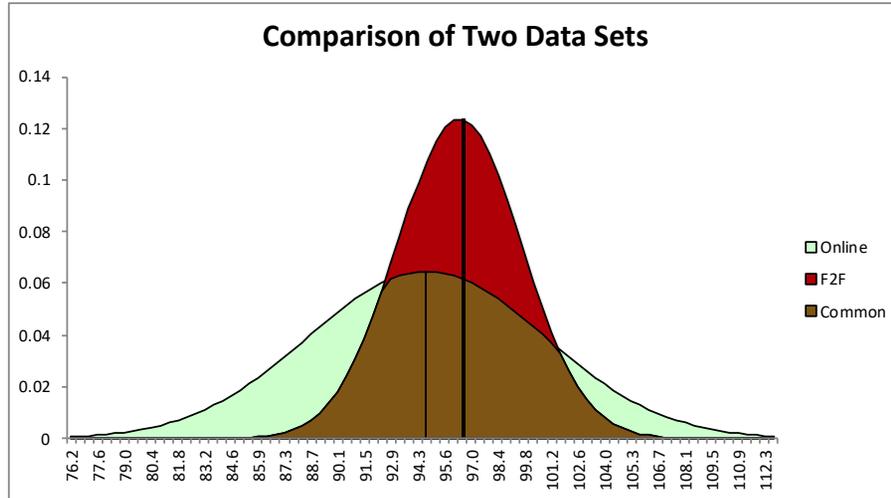
- **Export data from Moodle**
- **Import it to Excel**
- **Clean the data**
- **Produce the graphic**

- **Producing some graphic in Excel is challenging!**

Why **Tableau**?

- **Analyzing massive data**
- **Need for more complex visualizations**

- **Browse the www.tableau.com website**

Example: Tableau

- **How do grades compare between online and face-to-face courses?**

- **What is the best way to explore and communicate this?**

Tableau Visualization

MBA Business Analytics - Course Comparison
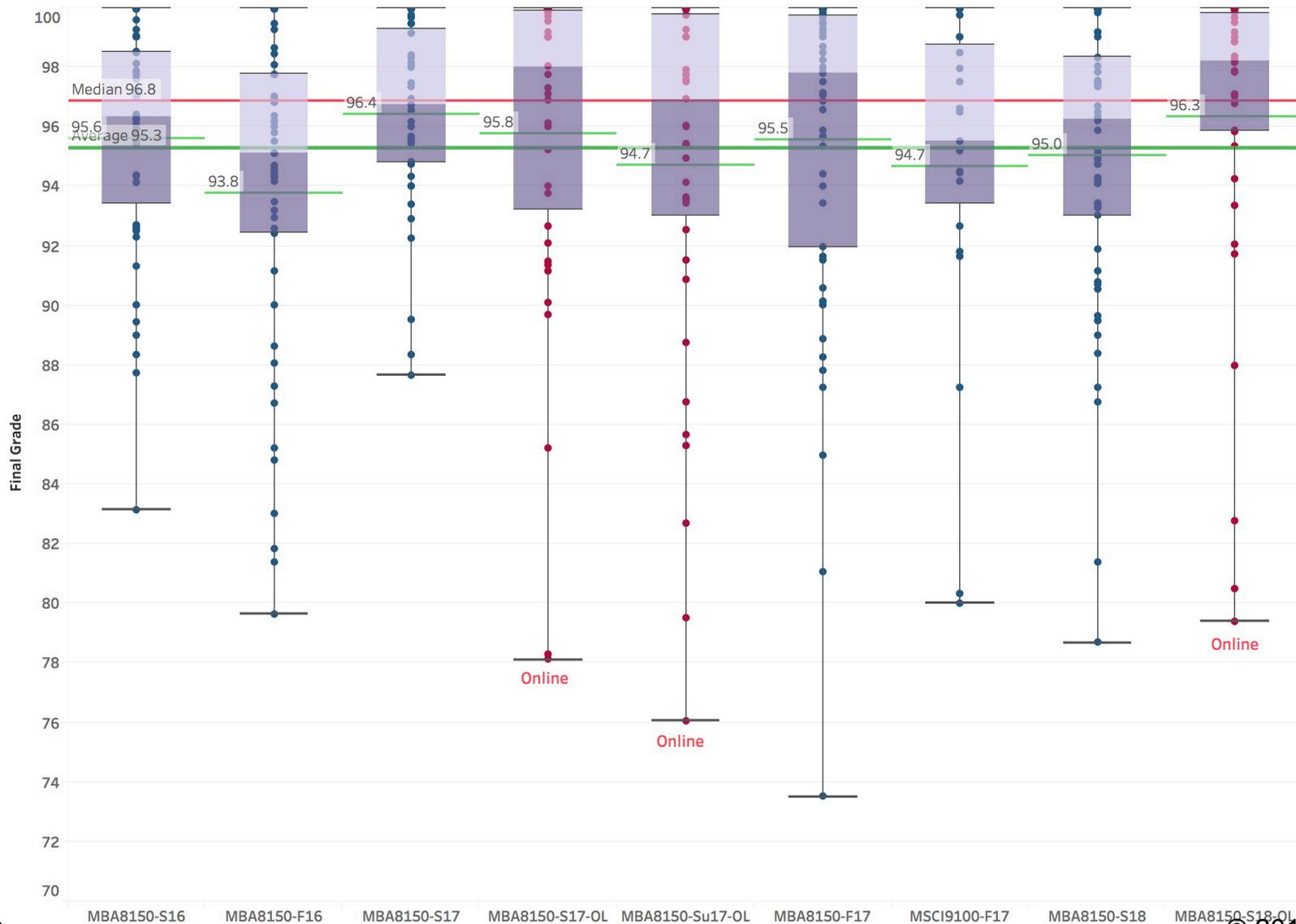Final Grade Distributions

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Tableau Visualization

- **Box Plots**
  - **Lowest grade**
  - **Highest grade**
  - **Median grade**
  - **Inner 50% quartile**
- **Box plots for all nine courses**

- **Overall average**
- **Overall median**

- **Dots: dot plot**

Interpretation

- **Online students do as well, maybe better than face-to-face students**
- **One under-performing student**
- **More online students are above the average**
- **Some courses better than average, some worse (as expected with means)**

- **What do you see?**

Results

- **We want to know more**

- **Why?**

- **Same resources**
- **Same quizzes**
- **Same assessments**

- **Good visualizations beg for deeper probing**

Quantitative and Visual Techniques

- **Are there relationships?**

- **Cause?**

- **What other data will help?**

How was this graphic produced?

- **An quick overview, not experts**
- **Not enough time to show all Tableau features**

- **An appreciation of what Tableau can do**

Learning Tableau

- **Tableau, like Moodle, are leaders in their markets**

- **This means: lots of learning resources**

- **Tableau is not open-source, must buy it**
  - **14-day demo**
  - **Free instructor licenses**

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Tableau Demo

- **Connect** to data source, there are many

- **Connect to MySQL database, Moodle**

- **A live connection to Moodle!**

Using Data in Tableau

- **Drag and drop database tables**
- **Tables are "joined"**

- **Results are shown below**

- **Or write custom SQL!**

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Rick's Technique

- **Develop queries using phpMyAdmin**
- **Move developed queries into Moodle's "Configurable Reports" plugin**
- **Create a database "view" from this query**
- **Use the view in Tableau**

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Creating the Graphic

Creating the Graphic (continued)

Conclusions

- **Tableau has some interesting possibilities**
- **Directly connecting to your moodle database seems powerful**
- **Ability to use SQL is very useful**

- **Disadvantages**
  - **Must buy it**
  - **Must learn it**

- **I hope to return and show you more!**

The End

- For **more support**, including this video, go to

www.rjerz.com