

Using Tableau with Moodle for Visual Analytics

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LMS's Data

- LMSs capture student and 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

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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 words"

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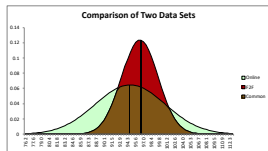
Problem!

- RDBMS lack robust visualization tools
- Export data to neutral format
- Create graphics with other product
- Common graphic product: MS Excel

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Example: Excel



- Export data from Moodle
- Import it to Excel
- Clean the data
- Produce the graphic
- Producing some graphic in Excel is challenging!

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Why Tableau?

- Analyzing massive data
- Need for more complex visualizations
- Browse the www.tableau.com website

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Example: Tableau

- How do grades compare between online and face-to-face courses?
- What is the best way to explore and communicate this?

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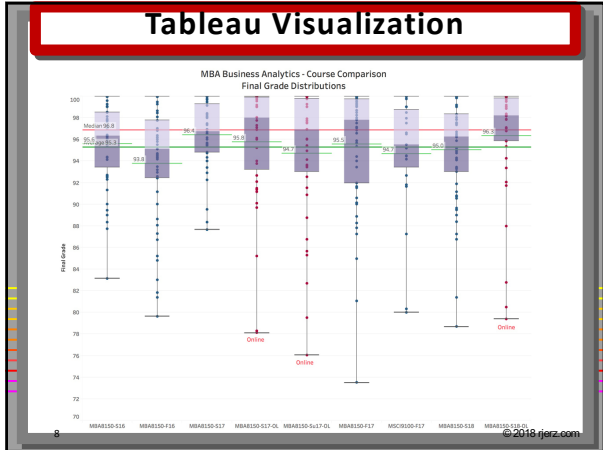


Tableau Visualization

- Box Plots
 - Lowest grade
 - Highest grade
 - Median grade
 - Inner 50% quartile
- Box plots for all nine courses
- Overall average
- Overall median
- Dots: dot plot

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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?

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Results

- We want to know more
- Why?
- Same resources
- Same quizzes
- Same assessments
- Good visualizations beg for deeper probing

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Quantitative and Visual Techniques

- Are there relationships?
- Cause?
- What other data will help?

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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

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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!

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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

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Creating the Graphic (continued)

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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!**

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The End

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

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