**O’Reilly Live Online Training Course Proposal**

**Excel Statistics for Business Analytics**

Explore, visualize, and make inferences about data using spreadsheets

**Contacts**

**Instructor:** George Mount

**Email:** george@georgejmount.com

**Phone:** 440-879-8399

**Editor:** Michelle Smith

**LX Team:** Scott Murray

**Timing and Scheduling**

**# of sessions:** 1

**Session duration:** 3 hours

**Initial cadence:** 2 months apart

**Instructor's general availability** in Pacific Time (mornings PT are optimal)

* Eastern time, generally available during the day.

**Initial dates** to be captured here by Production during scheduling

**Course Info**

**Title:**   Excel Statistics for Business Analytics

**Subtitle:**   Explore, visualize, and make inferences about data using spreadsheets

**JupyterHub:** **No**

**Description**  1-2 paragraphs. What is this about, and why is it important and valuable?

Inferential Statistics involves inferring parameters of a population based on the values of a sample. Professionals in e-commerce, manufacturing and more use inferential statistics as the basis for decision-making. Conducting their work in Excel, users will take a hands-on approach to conducting statistical inference. By the end of this course, users will be able to organize, present, and draw valid conclusions from data, using inferential statistics for business impact.

**What you'll learn — and how you can apply it**

**By the end of this live, hands-on, online course, you’ll understand:**

* What variables are, and how to explore them given their type
* How the central limit theorem provides the “missing link” between descriptive and inferential statistics
* How statistics and visualizations each play a part in effective quantitative analysis

**And you’ll be able to:**

* Explore a dataset for potential research questions, check assumptions and build hypotheses
* Test formally whether the value of one group is greater than another, on average, given their respective samples
* Make compelling business recommendations using inferential statistics

**This training is for you because...**

* You want to apply more rigorous methods to your business decision-making
* You’re an Excel user interested in learning more about data science
* You’re a researcher or analyst looking to apply statistical methods to business

**Prerequisites**  What prior knowledge or experience is necessary?

* Intermediate Excel skills: Relative and absolute cell references, PivotTables, building bar & line charts. No previous statistical knowledge required.

**Recommended preparation**  Any setup instructions or links to Safari-based content? Any supplemental materials, like PDF worksheets or links to code repositories?

* Read Chapters 1 “[Evaluating Data in the Real World](https://learning.oreilly.com/library/view/statistical-analysis-with/9781119271154/05_9781119271154-ch01.xhtml)” and 2 “[Understanding Excel’s Statistical Capabilities](https://learning.oreilly.com/library/view/statistical-analysis-with/9781119271154/06_9781119271154-ch02.xhtml)” in [*Statistical Analysis with Excel for Dummies*, 4th edition](https://learning.oreilly.com/library/view/statistical-analysis-with/9781119271154/)(book)
* Load the Excel Data Analysis ToolPak (See [Microsoft’s instructions](https://support.office.com/en-us/article/Load-the-Analysis-ToolPak-in-Excel-6a63e598-cd6d-42e3-9317-6b40ba1a66b4))

**Recommended follow-up**  Links to Safari-based content for further learning

* Read [*Statistical Analysis: Microsoft Excel 2016*](https://learning.oreilly.com/library/view/statistical-analysis-microsoft/9780134840437/)(book)
* Read [*Data Smart: Using Data Science to Transform Information into Insight*](https://learning.oreilly.com/library/view/data-smart-using/9781118661468/)(book)

**Common misunderstandings**  What are the most common ideas, skills, or performance abilities that someone new to this content struggles with?

* How to properly evaluate a p-value (i.e., it’s not the probability of being wrong)
* The difference between substantive and statistical significance -- over-relying on the p-value cut-off to make business decisions
* How to evaluate if a variable is “normal enough” -- it is a judgement call, can’t rely too much on make-or-break-rules
  + Same goes for p-values that are right on the brink of significance
* Whether having two different sample sizes affects the validity of the t-test
* The philosophy behind hypothesis testing -- why we say “rejecting/failing to reject the null” versus “proving/disproving”

**Learning Plan**

**# of sessions:** 1

**Session duration:** 3 hours

**Course schedule**A high-level, bulleted list, alternating between presentations and interactive activities (discussions, exercises, pulse checks, or polls). Include an estimated duration for each section, and designated time for Q&A at the end of each section.  Include at least a 5-minute break every hour. For example:

Topics:

**Exploratory data analysis in Excel** (50 minutes)

* Presentation: What is a variable and how do you measure it?
  + Different types of variables, both quantitative and qualitative, and how they are used in business analytics
* Presentation: Looking at a variable with visualizations
  + Using histograms and box plots to paint a picture of a variable’s distribution
* Presentation: Listening to a variable with descriptive statistics
  + Using measures of central tendency and dispersion to explore the data statistically
* Exercise: Identify and visualize variables in a real-world business dataset.
* Q&A

Break (10 minutes)

**Foundations of inferential statistics** (50 minutes)

* Presentation: Introducing the Data Analysis ToolPak
  + Load and explore the free Office plug-in for various statistical analyses
* Presentation: The central limit theorem -- saved by the bell curve
  + Demonstrate the central limit theorem’s role in providing valid inferences about a population, given a sample
* Presentation: What is a hypothesis and how do you test it?
  + Introduce the concept of hypothesis testing in statistical analysis and how to craft one
* Presentation: What is a t-test and when do you use it?
  + Introduce the use case for an independent samples t-test, along with how to check for the necessary assumptions and pre-process the data
* Exercise: Inspect and prepare a dataset to test
* Q&A

**T-tests for business impact** (50 minutes)

* Presentation: Evaluating for substantive and statistical significance
  + Analyze the p-value and confidence interval to make informed and well-rounded business decisions
* Exercise: Conduct a t-test using the Analysis ToolPak
* Presentation: Presenting the results for management buy-in
  + Prepare recommendations and visualizations to present before a general business audience
* Exercise: Visualizing a t-test’s results
* Q&A

Break (10 minutes)

*Notes from instructor (not for public display):*

**Instructor Info**

**Bio**

George develops data analytics curriculum and training programs through his company Stringfest Analytics. He has been featured on industry outlets such as Excel TV and the MyExcelOnline podcast through his website [georgejmount.com](https://georgejmount.com/). The blog also features content on Excel and, more generally, business analytics, training and career development. He holds a master’s degree in information systems with a certificate of achievement in quantitative methods from Case Western Reserve University.

**Company affiliation**

Stringfest Analytics

**Social media URLs**

|  |  |
| --- | --- |
| Primary website | [georgejmount.com](https://georgejmount.com) |
| Twitter | [@gjmount](https://twitter.com/gjmount) |
| LinkedIn | [linkedin.com/in/gjmount](https://www.linkedin.com/in/gjmount/) |
| GitHub | [@summerofgeorge](https://github.com/summerofgeorge/) |
| YouTube | [youtube.com/georgemountexcel](https://www.youtube.com/georgemountexcel) |
| Other | [github.com/summerofgeorge](https://github.com/summerofgeorge) |

**Video samples** of you engaged in teaching

* <https://youtu.be/G00fDMaHUWc>
* <https://youtu.be/MGHjnpj46IU>
* <https://youtu.be/RSJqPS1B224>

**Testimonials** such as praise from previous clients or glowing tweets

* “…time and time again confirms his deep insight into Excel. It's the analyst thinking which makes George an outstanding asset to any data driven organisation. Add the ease in personal relationships and good communication skills in the mix ... great performer.” –Erik Muylle, Cost Controller at Novasol
* “George is a great instructor who provided a hands-on introduction to data science with clear and concise instructions and explanations. He organized the course with a useful balance of practical information, hand holding, and helpful tips and tricks.” –Melissa Cooper, doctoral student, Department of Organizational Behavior at Case Western Reserve University
* “I've had the distinct pleasure to call George both a mentor and a friend throughout many advancements in my career. In my personal journey to conquer all things Excel and advanced analytics; George provided a wealth of knowledge and guidance not only in the application but across his industry experience. These teachings are immeasurable and for that I want to say thank you for all that you do for our community, George!” –Alex Powers, Premier Field Engineer, Data & AI at Microsoft
* “George has exceptional skills at teaching and mentoring coupled with a deep understanding of Excel, Python, Tableau, and SQL. George’s ability to explain the complexities of these programs has positioned me to be a successful student and ultimately a successful data analyst.” –Blake Bowling, project manager at Bowling Business Strategies

**Instructor photo**

* <https://drive.google.com/file/d/1wG60-M1GReIDG3EEJxn8DziwPicFFvS6/view?usp=sharing>

**Proposal Checklists**

Minimum requirements checklists. All O'Reilly courses must include the following.

**Course info**

* Instructor contact info captured
* Initial timing, duration, and cadence values captured
* All course info fields filled in
* Confirmed with instructor intent to use JupyterHub (or not) and reviewed restrictions
* Tested and verified links to all Safari-based content and other materials

**Instructor info**

* Bio and social media links captured
* New instructors only:
  + Video samples
  + Testimonials
  + Headshot received

**Learning plan**

* Description communicates the value of this learning (the "why")
* Learning promise elements are clearly articulated
* Prework well defined (if any) and all needed materials linked to
* Resources for further learning listed and linked to
* Any other supplemental materials (PDFs, worksheets) linked to
* Schedule alternates presentations and activities; no lectures
* Schedule accounts for short breaks every hour
* Schedule indicates durations for each section, and durations total sum as expected
* Each segment has time for Q&A
* Exercises provide opportunities for hands-on problem solving
* All exercises include an assessment component (via chat)
* Any external services used comply with our privacy policy