Customer Story

University of Geneva

Challenge

Equip students with analytics skills that will be a differentiating factor in their future careers.

Accessible analytics for all disciplines

A professor at the University of Geneva prepares graduate students for the challenge of competing in a data-obsessed world

The 21st century is fast becoming an era of analytics. New hires in the professional world are now expected to bring some basic understanding of statistics to the table after they graduate. In fact, whether they'll be deep into crunching numbers themselves, or the business creative types looking at a consultant's analysis in their inbox every morning, analytic proficiency isn't just a nice-to-have. It's a must.

Analytics skills are increasingly important across multiple disciplines

The University of Geneva is taking the ubiquity of data seriously. The administration acknowledges that, like it or not, analytics fluency gives students a leg up in their future careers – whether they're pursuing PhDs or seeking jobs in finance and management.

"Students recognize that there is no way to get around data and analytics," says Christian Hildebrand, Assistant Professor of Marketing Analytics at the University of Geneva School of Economics and Management. "They realize, 'we feel we really need to learn analytics to have a competitive advantage in the job market.'" And it's not just coming from students pursuing a more traditional path in statistics, he says; it's students in math, science, finance, economics and management.

That same line of thinking led to the inception of the University of Geneva's multidisciplinary business analytics master's program. Hildebrand came together with colleagues from the faculties of computer science, statistics and finance to promulgate a new curriculum that includes coursework in a wide range of topics from fundamentals of machine learning and applied data mining to corporate strategy for big data analytics and leading data science teams.

Data visualization helps students understand key concepts and methodologies

Hildebrand himself teaches major courses in applied data mining, business analytics and the computational implementation of experiments in addition to more niche electives focusing on web data. "In class, we walk through a variety of data analytics techniques – linear mixed effects models, decision trees and ensemble methods, shrinking estimators – everything related to model building for supervised and unsupervised methods. But the visualization part is key," he says. "Without visualization, all we as instructors can do is introduce concepts and discuss how an algorithm works in theory. Students would have to be very, very motivated to really follow along and say 'OK, now I'm curious to see what the application is.'"

On the other hand, he says, "if students can visualize the end result from the start and go back and make a deep dive into the methodology, [they] say 'oh, that looks really neat – I want to produce the same analysis and powerful statistical graph. And I'm curious to understand how this methodology really works.'"

With the right software, analytics becomes more engaging and accessible

And to produce that picture? Hildebrand says that the right software can help illustrate even the toughest concepts. After all, he can relate:

> Students were thankful for having had the chance to develop powerful, effective visualizations in a very short period of time… and JMP really helped them understand statistics better.
>
> Christian Hildebrand, Assistant Professor of Marketing Analytics

As a graduate student himself years ago at the University of Michigan, he recalls, "I got so excited after seeing JMP for the first time in a class on data mining. I got to thinking that someday I'd want to use JMP to teach courses myself." And that's precisely what he now does at the University of Geneva.

"I often begin class with an example in JMP where we have a nice illustration of a certain statistical concept. Students can see the end result of the model visualized – and then we go back to the beginning and walk through the details of the methodology. As soon as students have a visual picture, they immediately get the point of the methodology.

"The ability to learn and observe patterns in the data during the visualization process is a feature that is unique to JMP. Students can produce a graph and ask 'are there certain patterns in the data that I haven't thought about previously?' Having the opportunity to actively learn during the creation of a graph or figure in JMP is what makes it so unique. Visualization makes everything click."

That analytics concepts were making sense to students was evident in Hildebrand's course evaluations. "I could see it in the comments that we received from students in their evaluations," he recalls. "They were saying, 'One of the main takeaways is having learned a new statistical program that really helped speed the analytics workflow.' There were many comments that students were thankful for having had the chance to develop powerful, effective visualizations in a very short period of time… and that JMP really helped them understand the statistical part better." Students' responses spoke volumes – and the university's administrators took note, enabling others in the department to adopt a similar pedagogical approach.

Tapping the pedagogical potential of JMP® and R integration

Though many of Hildebrand's students see JMP for the first time in their courses at the University of Geneva, that doesn't mean some don't arrive already equipped with experience in other tools like R. Proficiency in multiple statistical tools – and R or Python in particular – is something Hildebrand sees as inevitable.

"One of the things that I'm really looking forward to teaching in the future is the integration of JMP with other programs like R," he says. "Although I totally am a big fan of JMP and integrate it in all my courses, it doesn't make sense to teach just one statistical package." Using JMP in tandem with R is a win-win situation, he says. Students benefit from the richness of R without being limited by the computing power it requires. JMP allows for exploratory data analysis and saves untold amounts of time.

"Students are convinced [of the utility of JMP] once they produce a more complex multivariate graph and say 'it would have taken me I don't know how many more minutes with R!'" Hildebrand says. "Those tradeoffs are a big problem when you're working on an analytics problem in real time. You need to learn the data as quickly as possible – before you estimate any models. And visualization in JMP is really fast – not to mention you can load a large data set so quickly. It was so cool to see students from more quantitative fields getting excited about doing this with JMP."

And it is the University of Geneva's embrace of just this kind of out-of-the-box, cross-disciplinary thinking that could very well be, Hildebrand says, "a differentiating factor in the education system in Switzerland."

Solution

Introduce JMP – and in some cases, JMP in combination with R – into the classroom to teach students business analytics through hands-on data visualization and exploration.

Results

Students' course evaluations showed an overwhelmingly positive response to learning business analytics via data visualizations.

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