

## Regional

# Statistician recommends a dose of skepticism

A common saying is that numbers don't lie. But ask a statistician and you may get a more complicated view.

"Numbers don't lie, it is the perspective you put that can lead to confusion," said Steve Rigdon, a Distinguished Research Professor at Southern Illinois University Edwardsville. "Any time anybody does statistics on something, it is based on different assumptions about the data you use. And that can lead to different interpretations."

Rigdon was born in St. Louis, and ever since he was a youngster, he has been attracted to mathematics. He received his bachelor's, two master's degrees and a doctorate from the University of Missouri-Columbia.

One example Rigdon gives to explain his fascination with statistics is the attempt to correlate shoe size with reading ability in school. You would probably think that the larger the shoe size, the better the reader. But to assume that one has anything to do with the other is false.

"Simply larger shoe size means you are generally dealing with older students and, of course, they will read better than younger ones," said Rigdon, adding, "You cannot infer causation because of correlation."

He said that he believes that a good dose of skepticism is always in line when looking at statistics.

As a statistician, Rigdon sees his specialty being used today in almost any field. In addition to what you normally see in the media regarding poll numbers or health issues, Rigdon explained that statistics is

## Aldemaro Romaro College Talk

used in quite a number of areas, including history and English. "Some recent work has to do with identifying the authors of anonymous articles published in the past during political disputes," Rigdon said.

However, statistics can be misused. For example, sometimes the questions in opinion surveys are asked in a way that will lead to a predetermined result. "How questions are asked influences responses," Rigdon said. "Also, many people don't even think about the issue in question, so when asked the response is not always reasoned."

He also sees what is called "publication bias" when researchers only want to use the published data that will support their contentions. "That has happened with studies that try to correlate certain diets to cancer," he said.

In addition of being a mathematician specializing in statistics, Rigdon is also a musician and an ice hockey official.

"To be a successful statistician, you need background in areas other than statistics," Rigdon said. "It provides you with different ways of thinking. Mathematics is used in music thinking."

Because of his success as a researcher, Rigdon has been bestowed with the title of Distinguished Research Professor. "I feel very lucky being a college professor," Rigdon



Shan Lu

### Steve Rigdon, statistician at SIUE, with a few of his books

said. "It is a dream job because I do what I like. You spend your whole career doing things that you like and apply statistics to real problems."

One of the books he has published has been translated into three other languages: Spanish, Korean, and Indonesian. "It is a thrill to see your book published in any language," Rigdon said. "It shows that it

not just memorize. If you understand math you need to memorize less.

"The goal of doing homework is not to get things done but to understand," Rigdon said he often tells his students. "It always takes time and effort to get to that point."

Although mathematics in general is not seen as a good career path beyond teaching, Rigdon said that government, private industry and even sports clubs are hiring more and more statisticians.

"Pure mathematicians are hired by the National Security Agency because code decrypting requires a lot of theoretical math," Rigdon said.

When asked whether technology will eliminate the need for mathematicians in the future, he has a clear vision of what the future will look like.

"Technology reduces a burden, the burden of doing number crunching and symbol manipulation," Rigdon said. "It allows us to think more broadly. It also produces nice graphs that are more accurate and beautiful."

"Although computers are going to be good at doing routine testing," Rigdon said, "the insight on assumptions and the way data collected is something for humans to do."

*Aldemaro Romero is the Dean of the College of Arts and Sciences at Southern Illinois University Edwardsville. His show, "Segue," can be heard every Sunday morning at 9 a.m. on WSIE, 88.7 FM. He can be reached at [College\\_Arts\\_Sciences@siue.edu](mailto:College_Arts_Sciences@siue.edu).*

is appreciated — particularly because that book is 800-pages long."

He feels that upcoming college students are better prepared in mathematics than 20 years ago when calculus was rarely taught at the high school level. Yet, he added, "The mathematical thinking is missing. Why things work, not just whether they work. Students need to get at the bottom of things,