



*WEDNESDAY COMMUNIQUÉ*

**April 13, 2016**

This week, as we work to address budget challenges, we also need to be mindful of the bedrock principles of shared governance. Administrators, faculty, students and staff all have a role to play in shaping the university's future. Shared governance is a work in progress, and we welcome the chance to continue the conversation.

**What Should They Learn?** In earlier postings, I discussed the recent state efforts to review the common core. The conversation continues at the national level, as detailed in this [Chronicle article](#). To quote: “Today, just about everyone — administrators, students, parents, employers, policy makers, and most professors — has accepted the notion that broad, transferable skills are the desired product of college... To be sure, colleges still care about specific areas of knowledge: Most institutions have learning outcomes for the sciences, mathematics, and the humanities, according to the Association of American Colleges & Universities (AACU). But learning outcomes for writing, critical-thinking, analytical-reasoning, and quantitative-reasoning skills, are now even more common, almost universal. These are described by the [AACU report](#), and are being studied as part of the state’s review.

**The Math Conspiracy and How to Stack your Oranges:** There were two exciting developments in the world of mathematics recently. The first is a [surprising result](#) (as the best ones are) that “prime numbers near to each other tend to avoid repeating their last digits ... that is, a prime that ends in 1 is less likely to be followed by another ending in 1 than one might expect from a random sequence.” While no immediate applications of the result are apparent, one cannot help but marvel at this so-called “conspiracy” of the prime numbers.

The second development is an [elegant solution](#) by a Ukrainian mathematician of two high-dimensional versions of the centuries-old “sphere packing” problem. “Mathematicians have been studying sphere packings since at least 1611, when Johannes Kepler conjectured that the densest way to pack together equal-sized spheres in space is the familiar pyramidal piling of oranges seen in grocery stores.” The problem is more difficult in higher dimensions, but Maryna Viazovska, a postdoctoral researcher, proved “in dimensions eight and 24 (the latter dimension in collaboration with other researchers) that two highly symmetrical arrangements pack spheres together in the densest possible way.” The results have applications in computing and physics, but they are also beautiful. As Peter Sarnak, at Princeton University and the Institute for Advanced Study, put it: “It’s stunningly simple, as all great things are. You just start reading the paper and you know this is correct.”

**Visualizing Information:** In his 1982 book "Megatrends," author John Naisbitt penned the famous quote, "We are drowning in information but starved for knowledge." Others have recently made similar claims, that “we are swimming in data but drowning in information.” One way to make sense of the data deluge generated by our multitude of sensors is to use visualization. This is what we have been doing at UNM, e.g. [studentflows.unm.edu](#) and [workforce.unm.edu](#). A collaboration between MIT Media Lab and a UK company called Deloitte has produced a website, [datausa.io](#), that uses open-source software to visualize previously inaccessible data from federal and state governments. The site includes data about Albuquerque and New Mexico. I encourage you to check it out.

**Financial Fitness Forums at the Branches:** The Financial Fitness Forum is designed to help UNM faculty and staff learn how to manage debt, savings and investments, protect against catastrophic risks, and prepare for retirement. The Forum will be coming to [Los Alamos](#) campus on Tuesday, April 19, and [Gallup](#) on Friday, April 22.

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