The need for "Mundane Analytics"

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Abstract

Success stories of data analysis are a daily occurrence in a very wide range of applications from 'pure' to applied sciences from medical to business applications and beyond. However, there are other important uses for the data analysis software toolset, hardly of interest scientifically, that can make a great impact on the work lives of people dealing with plenty of data, on daily basis, just not in a data analysis context, omnipresent in administrative corridors where the venerable spreadsheet still rules. In this opinion we argue that there is a true need for 'Mundane Analytics' and we suggest to data analysts to spend some of their altruism on these; simply to help out colleagues that are unaware of the power and the impact analytics can make.

Opinion

Analytics is one of the most prominent trends in the business and the academic world, often in synergy. Daily, each news media is, most likely, going to have a piece that is relevant to data analysis. In fact, it is hard, if not impossible, to not find a data-analysis relevant and newsworthy piece.

With a data analysis core, at one end of a (very wide) spectrum, analytics, data science and business intelligence may seem more related to statistics and 'number crunching'. At the other end, machine learning and artificial intelligence are used to fuse new knowledge in tangible (e.g. autonomous driving, managing smart cities) or less tangible outputs (e.g. predicting the stock market).

In a few words, there is a real need for sophisticated data analysis in all types of applications from 'pure' [1] to applied sciences [2], from medical [3] to business applications [4], from 'fun' projects [5] to the gig-economy [6] for data scientists. For example, in the US, some groups took this application level to, you could say, 'crusade' level. Even though this is not a strict 'data analysis' effort, it is certain that most, if not all, of the implemented projects involve data analysis [7].

From another perspective, in our postgraduate program "Global Risks and Analytics" we venture between the extremes of tangible and intangible. The program focuses only on three subjects over two semesters and a master's article: International Politics, Risk Management and Analytics. The learning goal is to provide the theory, tools, and skills necessary to fuse the three subjects into a novel competence integrating quantitative and qualitative methods in factual analysis, for foresight or comprehension, of the world dynamics (*as opposed to only argumentative as is often the case when international politics experts analyze events with world-wide impact sifts and events*). International Politics, to gain an insight on the driving forces and the international dimensions of events around the world and then use, accordingly or in tandem, Risk Management to address them before hand or Analytics to elicit a more factual and scientifically valid comprehension of the issues at large. From our part, we set a baseline [8] and followed up with some collaborative work that evolved the principle further empirically [9,10]. We are proud that some our students had the motive and tenacity to take on this principle to achieve publication status, some in high quality journals [11-14].

All very promising, indeed. But is there a real need for less sophisticated, mundane even, uses of analytics tools? A need to use analytics tools to make work life easier, simpler in some situations, even if there is no science or medical or other higher purpose? I think so. One can use the analytics toolset to simplify data-intensive chores and workflows for those who need it. Hint: there's plenty of them but they are almost invisible in data science radars. Still, they just work with bucketloads of data, daily, repeatedly, but rather mundanely for any type of higher order data science. Enterprise information systems are still lacking in some fronts.

A Venerable Spreadsheet(S) Case for Administrative Staff

We are a public-state university and textbooks are provided, free of cost, to each undergraduate student for each of their semester courses. However, students cannot get a second copy nor the textbooks for a course that they are not registered to, nor more textbooks than the number of courses they need to complete to finish their degree. Textbook dissemination is centrally managed by the Ministry of Education via a single platform, for all the undergraduate students, for all the (public) universities in the country (26 in total these days). Each student, each semester, uses single-sign-on (SSO) to login to the ministry's platform and selects their textbooks from a recommended list for each course they registered to in the semester. The student then simply waits to get or pick up the textbooks as and when available. The process repeats every until graduation. But there is a catch at the back-office. Only the university has the information to verify, per course, which students are (not) eligible to receive the textbook. So, the distributed textbooks list from the state's system, needs to be cross checked by the corresponding department of study for each student's eligibility to receive a specific textbook. Statistically, for every 1000 students probably no more than 2 to 5 are not eligible. A few needles, but still in a haystack.

I discovered all this by chance, due to my appointment as a vice rector at the time, when I received a huge excel file to pass on to the individual departments for the cross check. Apparently, *ex officio*, the specific VC's seat is institutionally responsible to oversee the process; thus, receive and disseminate the file for the cross check and so I dutifully did. Being curious, however, when I passed by my department, I asked the registry how they do carry out this chore. Apparently, it took two people two dedicated days (each semester). That is one person working with the master list while the other fetches the per-course list or, if you will, cross matching the master 2,500 records to each of the student lists in 41 courses and each course ranging between 15-300 registered students in our case. We are a relatively 'small' department in terms of student numbers' both university-wide and nationwide; the so called 'large' departments may have up to three times the number of students and some departments (smaller or larger in student numbers) may offer up to 60 courses or more. You get the picture what these numbers imply for the administrative staff assigned to do the validation. I am not jealous.

So, I asked the registry staff to give me the lists, guide me as to what I am looking for and I gave it a go in my preferred analytics software, KNIME [15]. Analytics software have powerful data handling tools. In our case the 'mission-critical' ability to read files at bulk, to aggregate their records and filter any mismatches. Once the workflow was setup properly (it took about half an hour with some validity checks), the whole process took a no more than a few seconds on a 15-year-old PC. So, from two days to a few seconds, in half an hour, simply because I was aware that there is a software tool that can do 'that'. Easily.

Of course, comparing spreadsheets in not the holy grail of analytics. But the joy being able to help my colleagues save those two days, is just as satisfying. I am very pleased that I was part of such a 'mundane' solution.

Conjecture

My argument is that, what may seem, at least initially, unchallenging to a career-oriented data scientist may truly be a 'blessing' or a 'holy grail' even, to someone who is unaware of the toolset and capabilities of analytics and its capacity to improve their real-life work experience, daily and immediately. Knowing their true value, looking down on "mundane analytics" hinders some of the altruism data analysts may use to help others with their expertise. I am not suggesting to build a career on mundane analytics; just to remain aware that their analytics skills can make an immediate positive impact to a someone else's work life.

So, in my opinion, the need for "Mundane Analytics" exists in the 'real world', not too far from the data analysis main stage, though certainly not within it. And while data scientists and analysts may be looking, understandably, in another direction, I doubt that the need for "Mundane Analytics" will ever, ever go away.

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