

## Summary of Recent Articles on Analytics Education

### A note on required knowledge and jargon:

Academic and industry reports consistently divide analytics skills and knowledge into very similar categories: two kinds of technical skills-- analytical number crunching and IT data management; and two kinds of soft skills--business understanding and communication. Technical skills generally fall under the heading of "Data Science" and are often in the realm of the "STEM" (Science, Technology, Engineering, and Mathematics) disciplines. Business Schools are more likely to offer "Business Intelligence" (BI) and "Business Analytics" (BA) programs, and place more emphasis on the soft skills. In industry, "BI" generally refers more to data management, reporting, and descriptive methods, including visualization. "BA" incorporates that but also includes predictive and prescriptive methods.

### Articles:

Wixom, Ariyachandra, Douglas, Goul, Gupta, Iyer, Kulkarni, Mooney, Phillips-Wren, Turekian (2014). [The Current State of Business Intelligence in Academia](#). *Communications of the Association for Information Systems*. Vol 343, Article 1, pp. 1-13, January.

Recommended reading. One of the most comprehensive and well-organized assessments of the analytics education space. Authored by the AIS Special Interest Group on Decision Support, Knowledge, and Data Management Systems.

2012 survey of 319 professors in 23 countries; 614 students from 96 universities; and 446 practitioners.

131 full time BI/BA degree programs identified, with 47 at the undergraduate level.

While the article title has "Big Data" the content is not limited to that. One example of many interesting observations: "While big data is currently the leading topic of interest within BI/BA, the survey results suggest that employers do not see big data skills as a strong requirement when making hiring decisions. The top five skills desired by employers in descending order: 1) communication, 2) SQL and query, 3) basic analytics, such as descriptive statistics, regression and ANOVA, 4) data management, and 5) business knowledge.

Chiang, Goes, Stohr (2012). "Business Intelligence and Analytics Education, and Program Development: A Unique Opportunity for the Information Systems Discipline", *ACM Transactions on Management Information Systems*, Vol 3, No. 3, Article 12.

<http://dl.acm.org/citation.cfm?id=2361257>

Describes three routes to developing a Master's program. Detailed descriptions of University of Arizona MS in MIS, and Stevens Institute of Technology MS In BI and Analytics.

Provides a list of specific "IT skills" (e.g., ETL, OLAP, Hadoop), and "analytical skills" (e.g., cluster analysis, text mining), and a short discussion of Business Knowledge and Communication Skills.

Appendix lists alliance programs from IBM, Microsoft, SAS, Teradata University Network

Wilder, Ozgur (2014). [Business Analytics Curriculum for Undergraduate Majors](#). *Informs Transactions on Education*, Vol. 15. No. 2, pp. 180-187.

Details a seven-course core, plus electives, program for undergraduates. Inspiration comes primarily from existing graduate programs, academic literature, and industry reports. The program is designed for students with average to above-average analytical skills; less mathematical aptitude required than that for STEM fields of study. The target output is the “hybrid” professional, or the famous McKinsey “data-savvy managers” (Manyika et al. 2011)

1. Data Management
2. Descriptive Analytics
3. Data Visualization
4. Predictive Analytics
5. Prescriptive Analytics
6. Data Mining
7. Analytics Practicum

Electives could include Market Research, Sports Analytics, Web Analytics, etc.

Also includes a useful overview of existing graduate programs, which are more prevalent than undergraduate programs, as an introduction to content areas

Gorman, Klimberg (2015). [Benchmarking Academic Programs in Business Analytics](#). *Interfaces* Vol. 44, No. 3, pp. 329-341.

34 graduate and 10 undergraduate programs. Focus is on graduate programs.

Summary of web searches of 32 universities with analytics programs and interviews with representatives of 17 universities with longer histories of analytics programs in 2013. Also reviewed the skill sets identified for the INFORMS CAP program.

Two observations: “The first is that the variety of offerings across schools is great. The second is that estimating this variety is difficult... it seems clear that defining the skill set of a graduate of an MSc in analytics program has acquired is difficult.”

Palocsay, Markham (2014). “Management Science in U.S. AACSB International-Accredited Core Undergraduate Business School Curricula.” *Journal of Education for Business*, 89:2, 110-117.  
<http://dx.doi.org/10.1080/08832323.2013.763755>

Analyses on OR / MS undergraduate courses in 50 top business schools selected from *Bloomberg’s Businessweek* 2011 rankings, by examining information on their websites. Also followed up with a survey with 24 respondents.

Some conclusions are that there are substantial OR/MS/statistics requirements for undergrads; there is substantial variety across schools; and there is no evidence that “the 2003 reinstatement of MS in AACSB standards and/or the embracing of analytics by industry have generated a resurgence of MS in undergraduate business curricula.”

2/19/2016