The Sexiest Job of the 21st Century
OR
How Analytics Professionals Make the World Go Round

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• Largest association in the world for advanced analytics professionals
• Publisher of 13 scholarly journals
• Talks and workshops at National and Analytics Conferences
  – Annual Meeting: Minneapolis Oct 6-9, 2013
  – Analytics Meeting: Boston Mar 30-Apr 1, 2014
• Student union and student publication: https://www.informs.org/Pubs/OR-MS-Tomorrow
• Online publication, Analytics magazine: www.analytics-magazine.org
• Website: www.informs.org
Analytics

“The scientific process of transforming data into insight for making better decisions”

As defined by:
Analytics Process

What is “analytics” used for?

IDEA → ANALYSIS → DECISION → EXECUTION

- Frame the Decision Need & Generate Ideas
- Get Data, Build Models, & Provide Analyses
- Support Decision Making
- Monitor Execution & Drive Results

... create value by driving decisions from idea to execution
Assets
50-60% shortfall in analytic scientists in the US by 2018

Data Scientist: The Sexiest Job of the 21st Century

Only ⅓ of 4.4 million global data scientist jobs will be filled by 2015

15000% since 2011 & 2012
9. Head of analytics, Big Data. As the amount of data generated within companies keeps growing, "having someone in place who can effectively make sense of it all" is critical, the study says, adding that these folks are "essentially data scientists who can find nuggets of insight like needles in a haystack."
• Where should I locate my distribution centers?
• How much inventory should I hold?

• What’s the best portfolio investments given my risk tolerance?
• How do I maximize my budget?

• What product is best for which market?
• Which promotion drives the most list?

• How do I optimize patient treatment?
• How do I minimize patient wait times?
Workforce Analytics

- HR Analytics
- Workforce Intelligence
- Human Capital Analytics

A combination of methodology and software that applies mathematical models to worker-related data, allowing leaders to optimize human resource management.
Social Media Analytics

• Web Analytics
• Customer Intelligence

Measuring, analyzing & interpreting interactions and associations between people, topics and ideas… uncovering customer sentiment dispersed across countless online sources. The analytics identify sentiment and trends in order to better accommodate the customer.
Analytic Professionals: Common Misconceptions Miss The Mark

- It is not just about:
  - Programming skills
  - Statistics and math skills
  - Advanced degrees in relevant fields
  - Specific industry experience

- Most great analytic professionals are an exception

- Hire knowledge and skills, not just check boxes

Many skills are necessary, but not sufficient
Characteristics of Analytics Professional

The era of Big Data has created a talent gap for people who can pull actionable insights out of raw data. The data scientist—called “the sexiest job of the 21st century” by Harvard Business Review—is in demand, with a 15,000% jump in job posts between 2011–2012. In the US, the average salary for these sought-after scientists is around $100,000.

So what makes a good data scientist?

Degree in Geek

Mathlete

Suit-Able

Curiouser and Curiouser

Agile and Adaptive

Problem Solving Prowess

Insight Whisperer

Quantastic
Women in Analytics: Verizon Wireless's Anne Robinson

Beth Schultz
8/14/2013

Even in kindergarten, Anne Robinson had a brain for math. Her teacher told her mother so -- and perhaps her parents didn't find the assessment quite so surprising since her dad was a civil engineer and her mom a biologist.

It turns out that Robinson was good at math -- and science -- as a grade schooler and teenager... but she was just as, if not more, into art and music, she told All Analytics. But by the time she began to think about a career and decide on a college, Robinson followed her passion into a math program. "I knew that would get me into a mathematics career... not that I necessarily had figured out what that would mean."

For today, what that means is a management gig at Verizon Wireless, where she is director of supply chain strategy and analytics. Her team leads strategic efforts across the company's supply chain organization, "leveraging advanced analytics to implement processes and procedures that lead to improved device lifecycle management, working capital optimization, and cost reduction." Robinson comes to Verizon Wireless after a seven-year stint at Cisco, where she began her corporate career after receiving a PhD in industrial engineering from Stanford University. At Cisco, she earned recognition for establishing the networking giant as a leader in business intelligence and analytics.
Two different supply chains driving value to the end customer
Verizon Wireless Supply Chain Strategy and Analytics Team

**TEAM:** 20 strong team consisting of members with diverse backgrounds
- **Degrees:** PhD, MBA, MSc and BSc in IE, OR, EE, Math, BA, Chemistry, etc.
- **Experience:** Telecom, Logistics, Consultancy, Semiconductors, Cons. Electronics, Consultancy, etc.

**FOCUSED ON** Projects including:
- Multi-echelon Inventory Optimization
- Distribution Strategy Evolution
- Spare Parts Optimization for Network Equipment
- Forecasting device failure rates
Jack Levis

FAST TALK

BROWN DOWN: UPS DRIVERS VS. THE UPS ALGORITHM

UPS's new algorithm can plot routes more efficiently than drivers, just try convincing the drivers of that.

BY DAVID TAYLOR

"A lot of times, I feel like an explorer," says Jack Levis, UPS's director of process management. "Often I'm telling the company, 'Just because we've done it this way for the past 30 years doesn't mean it's right.'

Levis, who manages a team of mathematicians who build the algorithms that help UPS shave millions of miles off delivery routes, is paid to tell the company things it may not want to hear. One of his major projects in the last decade has been rolling out a system called ORION (On-Road Integrated Optimization and Navigation), a kind of algorithmic overmind that knows better than any human how drivers ought to plan..."
Radhika Kulkarni
Vice President of Advanced Analytics R&D at SAS Institute Inc.

“What I tell them [my team] is that when you work with customers, you have to first listen to what they're trying to do.

You're not going to say, "Here is my tool that I have, and here's what you can use it for." Find out what they want to do, and then figure out what tool or combination of tools will help satisfy their needs. Don't present the solution before you know what the problem is”.

Karl Kempf
Director of Decision Engineering
Intel

• Over 30 years of operations research/analytics experience
• Member of the National Academy of Engineers
• Bachelor degrees in physics and chemistry, PhD in applied math
• Involved in scheduling workload for space station residents and experiments on the NASA space station
• Designed flight profile for Superman in three Superman movies (his team won academy award for special effects)
Linking Employee Satisfaction to Income

• Noticed statistical relationship between employee satisfaction and company performance
• Most significant at region and store level

• Prompted them to do employee satisfaction surveys quarterly instead of annually
• Value of 0.1% increase in employee engagement is greater than $100,000 of a store’s annual operating income

Source: Based on “Competing on Talent Analytics” T. Davenport, J. Harris, J. Shapiro  HBR Oct. 2010
Revenue Management Optimization

- Low hotel room occupancy
- Highly competitive (internet), differentiation by channel no longer valid
- Customers faster than hotel operators

- Centralized forecasting
- Optimization model based on:
  - Price elasticity of demand
  - Consumer’s willingness to pay
  - Competitive rate data
  - Available inventory
- Used as basis to set prices

Source: http://interfaces.journal.informs.org/content/43/1/21.full.pdf (6/5/13)
Revenue Management Optimization

Lift of 2-4% per compliant hotel
$8M realized from North America $30M annually

Source: http://interfaces.journal.informs.org/content/43/1/21.full.pdf (6/5/13)
What talent is needed for a successful team?

• Expected Performance Value
  – Infield Efficiency
  – Pitching Efficiency
  – Outfield Efficiency

• Probability of Injury
• Compensation

Source: MIT SLOAN Sports Analytics Conference, March 2011
NFL MIDSEASON REPORT
J.J. WATT POWERS THE TEXANS // GONZALEZ, PEYTON AND THE FOUNTAIN OF YOUTH // SECOND-HALF FORECAST

WE ARE STILL PENN STATE
HAPPY VALLEY ONE YEAR LATER
BY S.L. PRICE
P. 25

THE GIANTS WIN THE SERIES!
The Giants win the series!
TWO TRIPS TO
THE BRINK,
THREE UNREAL
WEEKS IN
OCTOBER
BY TOM VERDUCCI
P. 32

Illustration: Cover photos of baseball players celebrating on the field.
Project Oxygen

• Statisticians to understand traits of a good manager and pitfalls of a bad one
• 8 positives, 3 negatives
• Focused learning & development in
• Improved employee satisfaction
• Reduced turnover

Source: NYTimes 3/13/2011
In order of importance the 8 top behaviors of managers are:

1. Be a good coach
2. Empower your team and don’t micromange
3. Express interest in team members’ success and personal well-being
4. Don’t be a sissy: Be productive and results-oriented
5. Be a good communicator and listen to your team
6. Help your employees with career development
7. Have a clear vision and strategy for the team
8. Have key technical skills so you can help advise the team

In addition they identified 3 key manager pitfalls:

1. Have trouble making a transition to the team
2. Lack a consistent approach to performance management and career development
3. Spend too little time managing and communicating
Leveraging Supply Chain Operations to Improve Customer Satisfaction

- Organization evolution
- Disparate groups working together
- Culture shift continuing to execute
Leveraging Supply Chain Operations to Improve Customer Satisfaction

- Blended domain expertise and analytics
- Borrow models from social sciences (SEM)
  
- SC investments aligned with customer impact
- Improved Customer Satisfaction scores
What Skill Sets Do I Need for Analytics?

Understand Data
- Integrate
- Manipulate
- QA
- Prep.

Know Analytics
- Appropriate techniques
- Interpret data and diagnose models
- Meet business requirements

Focus on the Business
- Goals
- Constraints
- Decisions
- Communication of results

QA = Quality Assurance
Don’t forget the “fluffy” stuff!

- Team Work
- Program Management
- Change Management
- Communications Skills
- Network, network, network
- Industry Projects (even if you have to volunteer!)
Certified Analytics Professional (CAP®)

• Certifies knowledge of end-to-end application of analytics process
• Covers 7 domains of analytics practice
• A way to differentiate yourself in the marketplace

*Created to:*
• Ensure quality and develop standards for profession
• Identify individuals with appropriate breadth of knowledge
• Ensure continued competency

*Exams:*
• Nov 6, 2013: San Francisco, California
• Nov 12, 2013: NYC, New York
• Nov 23, 2013: Baltimore, Maryland

https://www.informs.org/Certification-Continuing-Ed/Analytics-Certification
INFORMS Career Center

State of art job board and career center

Hundreds of O.R. and Analytics jobs, robust functionality, career resources like videos, references, free “ask an expert”

Robust functionality

Keyword searching and filtering, job alerts, anonymous resumes, network listings, featured and preferred jobs

Industry’s only in-person job fairs

2 great events – meet, greet, and interview under one roof!

This great member benefit conveniently and efficiently keeps your career on the move
Search relevant jobs by job type, keyword, and location

Click on a job you are interested in to view the full description.
TELL ME AGAIN HOW THE BRAVE KNIGHT CONQUERED BIG DATA AND RESCUED REAL-TIME BUSINESS INSIGHTS.
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