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Standard?

Effectiveness of Statistics in Schools of Business

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A Big Job!

300,000 students per year

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Business students studying statistics:

Undergraduate: 227,000 (1996 US Business Grads).

~1,000 teachers (4 sections/yr; 50 students/section).

Graduate: 94,000 (1996 US MBA graduates).

~1,000 teachers (3 sections/yr; 33 students/section).

At \$1,000 per student per course, the total costs are:

US Undergraduate: \$230 million per year.

US Graduate: \$100 million per year.

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Are we achieving our goal? Undergraduate level

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Making Statistics More Effective

- Students better prepared to get an MBA?
- Students better prepared for next courses?
- Statistics teachers (~1,000) teach differently?
- Students (~250,000/yr) learn/retain more?
- Students have better appreciation of statistics?
- Employers (other teachers) see improvement?

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Prepare Undergrads for MBA

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Percentage of business grads who get an MBA

~30%*

% of MBA earned by non-Bus	DELAY	
	Undergrad to MBA	
	6 years	11 years
10%	34%	36%
30%	26%	28%

* Estimated: 1996 MBAs vs. 1990 & 1985 business graduates.

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Undergraduate Preparation for Follow-on Courses

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- Statistics/Quantitative Methods: All courses
- Operations Mgmt/Research: Various
- Finance: **Principles** and all others
- Economics: Managerial Economics
- Marketing: Market Research
- Accounting: None
- Management: None

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Where are We Monitoring our Progress?

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Inside the box?

~20%

Statistics/OR
Finance
Economics

Outside the box

~80%

Management
Marketing
Accounting

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Effectiveness of Statistics: As judged by Whom

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Those who teach business statistics.

Those in closely-related areas:

- *Teachers* teaching follow-on courses
- *Students* majoring in finance, econ, etc.
- *Employers* who hire such students

Those in distantly-related areas:

- *Teachers* teaching mgmt, mktng, acctng
- *Students* majoring in these areas
- *Employers* who hire such students

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Statistical Needs of Employees/Employers

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Statistical Needs of Non-Specialist Young Workers
Peter Holmes, RSS Centre for Statistical Education

- Surveyed 25 businesses in 1985
- Surveyed 155 employees ages: 18 - 25
- Sample not random or representative
- Statistical tools taken in the broadest sense
- Tabulated number of times each statistical tool is referenced in the surveys

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Findings: % of young non-specialists

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- 54% read and interpret tables of data
- 50% decide what data to collect
- 40% detect and estimate trends
- 37% make decisions using data
- 17% calculate median and quartiles
- 13% use statistical tests to compare sets of data
- 14% read and interpret scatter diagrams
- 6% use a statistical test of significance

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Conclusion: Failure To Distinguish

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Undergraduates vs. MBAs/PhDs.

See 1985 MSMESB papers on business needs.

Student/employer needs vs. educator wants.

See papers in Journal of Statistical Education.

*Statistical needs of employers/staff by area:
non-statistical vs. statistical (OR, QC, etc.).*

See 1985 MSMESB papers on business needs.

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We should focus more on Non-Specialists

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What do successful entrepreneurs say they need?

Which is more important for managers:

- Statistics or cost accounting?
- Statistics or risk management?
- Statistics or market research?
- Statistics or Monte-Carlo decision making?
- Statistics or modeling/forecasting?

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We should measure our “Effectiveness”

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1. High priority: Measure “effectiveness for undergraduate non-specialists.”
2. Determine criteria for evaluation.
2. Generate survey instrument.
3. Work with ASA as joint sponsor.
4. Survey stakeholders.
5. Publish data for use by all.