

Promoting Statistics via Websites

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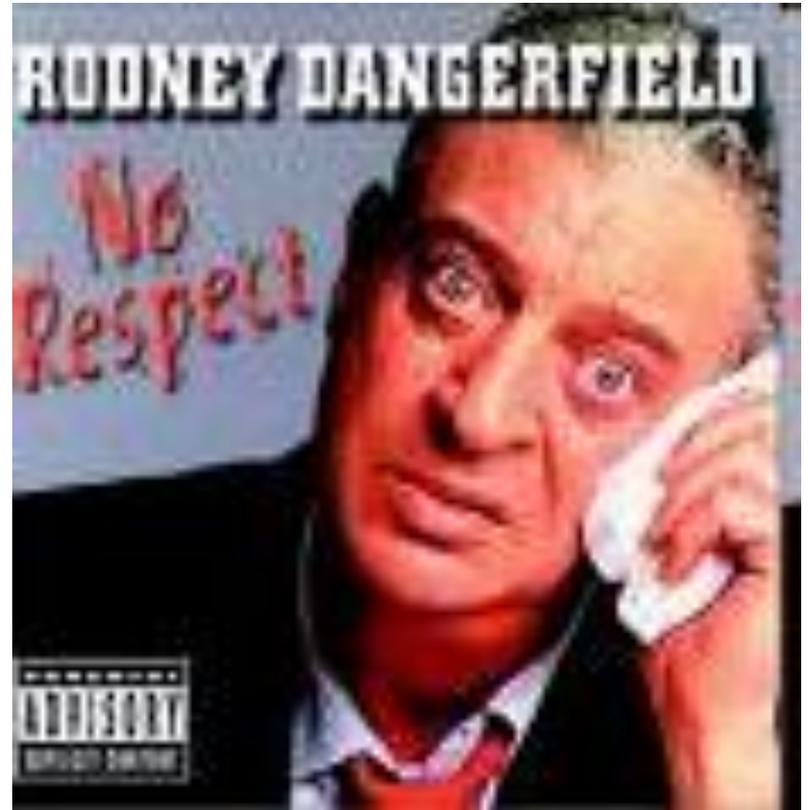
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Outline

- Statistics is under-appreciated: two recent examples
- Can our websites help draw positive attention?
- A study of statistics websites in three parts
- Plans for a new website for the new Bi-State Department of Statistical Science

Identity problems for Statistics

- Recent examples:
- “[Odds Are, It’s Wrong](#)” article by Tom Siegfried in *Science News*, 03/27/2010
- Is AP Statistics good or bad for the field of Statistics?



“Odds Are, It’s Wrong” by Tom Siegfried in Science News

- “Science fails to face the shortcomings of statistics”
- “During the past century, though, a mutant form of math has deflected science’s heart from the modes of calculation that had long served so faithfully. ”
- “It’s science’s dirtiest secret: The “scientific method” of testing hypotheses by statistical analysis stands on a flimsy foundation. ”

So what do the odds say is wrong?

- Many scientists misunderstand P values
- Statistical significance does not equal scientific significance
- Performing multiple tests inflates Type I error
- Randomization in clinical trials does not guarantee balance on all possible confounding factors

Anything else?

- Meta-analyses are not always properly conducted or interpreted
- Bayesian methods may produce better answers but require a different definition of probability

A set of new concerns!

- Let's blame engineers when we drive too fast on icy roads and slide off the road!
- Let's blame doctors if unqualified people harm patients by prescribing crazy treatments!
- Let's blame grocers if we get sick by eating foods that are weeks past their expiration dates!

Statistics Education strategies

- This topic and other issues discussed in “Desired and Feared – What Do We Do Now and Over the Next 50 Years?” by Xiao-Li Meng, American Statistician, August 2009
- Several follow-up articles in the February 2010 American Statistician

Issue 1: AP Statistics

- Meng: "... among Harvard undergraduates I asked, the most frequent reason for not considering a statistical major was a 'turn-off' experience from an AP statistics course"
- Are we helping or hurting ourselves by having AP Statistics classes and exams?

Issue 2: The Intro College course

- A new Harvard Gen Ed course: Stat 105: [Real-Life Statistics: Your Chance for Happiness \(or Misery\)](#)
- Designed around content modules such as Finance (the stock market), Romance (on-line dating models), Wine and Chocolate Tasting, etc.
- Goal is to show the excitement of Statistics to students

What to do?

- These examples concern educating laypeople and the intro course, but is there anything we can do to help that is related to what we already do?



Proactive strategies

- Web materials have been a popular resource in teaching and statistical consulting service over the years (SAS or R code, review articles, etc.)
- Expanding these materials can lead to wider recognition by the research community locally and beyond

A study of statistics websites

- 1) What are other academic statistics units doing with their websites?
- 2) Some general ideas about content on statistics websites.
- 3) Initial results from a survey of current clients about web content that they would like to have available.

1) What is out there?

- Use of two sites:
- ASA list of consulting centers (with departments also)
- WWW Virtual Library of Statistics (at Florida) listing of statistics departments



ASA list

- Amstat.org Consulting Section [Centers and Facilities](#)
- 26 sites, 24 have links for both an academic unit and a consulting center

Links on the ASA site

- Of departments, 21/26 links were unbroken
- Of consulting centers, 11/24 links were unbroken, but some of the 11 links were to empty pages or to a notice that the consulting service is no longer active

Content for consulting centers

Services	People	Short Courses (\$)	Projects	Links*
9	8	4	4	3

Content for departments

People	Talks	Progs/ Classes	Res.	Alumni Donate	Links (I, +)
19	18	19	16	11	(14, 12)

2) Thoughts on websites

- Focus here is on content, not technology or all aspects of presentation
- What kind of content, how to organize - for example, long lists or deep hierarchies? Our preference is for hierarchies with annotated links to make searching more efficient

More thoughts

- Routine practices include checking links regularly (manually or via software) and deleting or replacing broken links, etc. Many pages of (other sites') links will accumulate broken links over time. If a linked page has too many broken links, unlink it and link to its linked pages directly

General themes for website content

Content type	Locally produced	External Links
Contact info	X	
Services	X	
Online texts	X	X
Tutorial material	X	X
Code examples	X	X

3) Preliminary results of a survey of local users

- We designed a one-page survey asking consulting clients to look at our website <http://www.uiweb.uidaho.edu/stat/SCC/> asking them if they were satisfied with the site or could suggest additions

Survey initial findings

- Only a few surveys have been returned thus far. One thing that struck us at first, is that most clients do not understand that we are asking them to suggest content for the site! Some people have given us feedback about their consulting experiences, even though that topic is not addressed on the survey!

Future directions, I

- Collect materials across faculty and staff in units to present an organized set of materials from the unit
- Solicit feedback (at least locally) to learn about content that is desired by researchers/clients

Future directions, II

- As we merge to form the Bi-State Department of Statistical Science, let's work toward making a distinctive website containing materials of use (at first) to our colleagues and local clients. It would then draw wider attention to our new department and our interests, and could be a useful recruiting tool.

Future directions, III

- We could do fun things to interact with each other and our colleagues, like having a 'link of the month' section where we pick a link from those submitted. The submitter's name would be entered along with the link.
- Other suggestions are welcome!

Some useful websites...

- A 'megasite', [Michael Friendly's site](#) at York University

More useful websites ...

- An example of a modest-sized but very helpful page on R by Rob Kabacoff, called the [Quick-R site](#)

More useful websites ...

- A defense of the graphics capability of SAS, [many nice examples](#) by Robert Allison

More useful websites ...

- A site that is unassuming in appearance but loaded with useful content from [Academic Technology Services at UCLA](#)

More useful websites ...

- A very cool set of videos about Statistics, [Against All Odds](#), now available for free viewing

More useful websites ...

- A Statistics Education 'megasite', [CAUSEweb](#), which includes a webinar about the [Happy Statistics course](#) at Harvard by Xiao-Li Meng

One last example ...

- A site listing free textbooks in many fields,
[Textbook Revolution](#)

Thank you!

