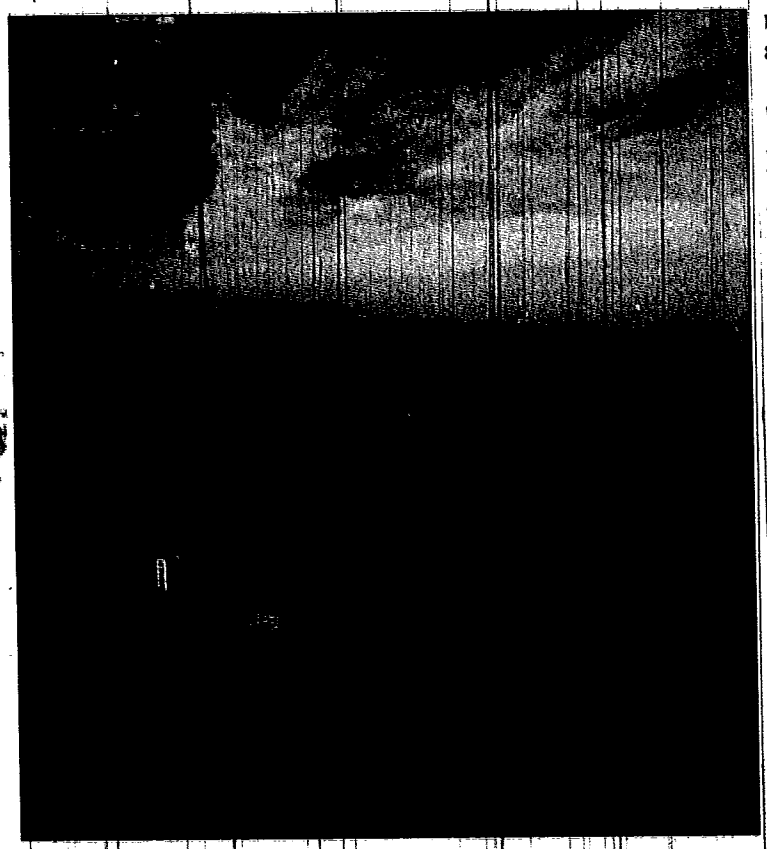
PUBLIC SECTOR

# SAY IT AIN'T PITTSBURGH

BY GEOFFREY R. LOFTUS



*Pittsburgh may be great, but is it the greatest?*

KENNETH GARRETT/WOODFIN CAMP

Pittsburgh!? Why Pittsburgh? That was the question on everybody's lips when Rand McNally's *Places Rated Almanac* hit the bookstores with the news that, of 329 U.S. metropolitan areas, Pittsburgh was the number one place to live.

Pittsburgh's rosy status, along with the rest of the rankings, constituted quite a media event. Numerous articles appeared immediately, all trying to explain various of Rand McNally's counter-intuitive conclusions. Why *was* Pittsburgh number one? How did Louisville (number 8), Buffalo (13) and Knoxville (14) manage to edge out sun-drenched San Diego (27) and mountain-fresh Denver (29)? Why the low rankings of world-class metropolitan hubs like New York (25), Chicago (26) and Los Angeles (38)?

The answers to these questions lie in the method by which Richard Boyer and David Savageau, the authors of the *Places Rated Almanac*, arrived at their rankings. Boyer and Savageau considered nine categories—climate and terrain; housing; health; crime rate; transportation; education; arts and culture; recreation; and economic status—that most people would agree are important determinants of life quality. They devoted one chapter to each of the nine categories and, in the process, ranked each of the 329 cities in terms of that category. So by the end of the book, each city had received a rank in each category that ranged from 1 (best) to 329 (worst).

In a final chapter called "Putting it all Together," Boyer and Savageau obtained a single, "overall goodness" score for each metropolitan area in the simplest possible way—by adding the city's nine category ranks. Of all 329 cities, Pittsburgh received the lowest total (735, or an average rank of 735/9 = 81.67), and thus captured the much-touted distinction of being the best place to live.

It is in this process that, from a psychological perspective, things go awry. Consider two hypothetical cities, City A and City B, along with two categories, say arts and climate. Suppose Cities A and B rank 1 and 25 respectively on arts, but 276 and 246 respectively on climate. With these ranks, it is clear that City A is better in arts, but City B is better in climate. When the ranks are added, the City B total (25 + 246 = 271) turns out to be lower than the City A total (1 + 276 = 277), thereby leading to the conclusion that City B is a better place to live than City A.

This conclusion clashes with intuition. Psychologically, the difference between a rank of 1 and a rank of 25 is much more important than the difference between a rank of 246 and a rank of 276—even though the *actual* difference between 1 and 25 (24) is less than the actual difference between 246 and 276 (30). With respect to arts, City A (Rank 1) is first-rate, but City B (Rank 25) is, at best, second-rate. So, if arts were the only criterion, a person would much rather live in City A than in City B. With respect to climate, however, Cities A and B are both perceived to be pretty bad (Ranks 246 and 276). If climate were the only criterion, a person wouldn't really care all that much which city's awful weather would have to be endured. On balance, therefore, City A should be psychologically better than City B—it is much better in arts, but only a little worse in climate.

The principle that underlies this illustration was formulated in the middle of the 19th century. It is called the Weber-Fechner law and it states that a given numerical difference is psychologically more important at the low end of some scale than at a higher part of the scale. The Weber-Fechner law was originally applied to scales of physical intensity—for in-

**The New Top 20**
**Original *Places Rated Almanac* ranks are in parentheses.**

1. San Francisco (4)
2. New York (25)
3. Washington, D.C. (15)
4. Boston (2)
5. Chicago (26)
6. Philadelphia (5)
7. Los Angeles (36)
8. Seattle (10)
9. Nassau-Suffolk, N.Y. (6)
10. Baltimore (16)
11. Atlanta (11)
12. Pittsburgh (1)
13. San Diego (27)
14. St. Louis (7)
15. Dallas (12)
16. Raleigh-Durham (3)
17. Cleveland (30)
18. Denver (29)
19. Burlington (18)
20. Oakland (68)

Due to errors in calculation, some of the numbers in parentheses may differ from those in the *Places Rated Almanac*. Discrepancies will be changed in the next printing of the *Almanac*.

stance, the perceived brightness difference between one and two lightbulbs is considerably greater than the difference between 101 and 102 lightbulbs. But the law also applies to preference scales, such as the Rand McNally ranking scale.

How should the ranks be combined to take the Weber-Fechner law into account? Instead of giving equal importance to equal rank *differences* (which is what happens when the ranks are added), equal importance should be given to equal rank *ratios*. For example, the difference between ranks 1 and 5 (a ratio of 1:5) should be as important as the difference between ranks 30 and 150 (also a ratio of 1:5). This conceptual switch can be accomplished using the *product* rather than the sum of a city's ranks. Using our hypothetical example, City A has a product score of 1 x 276 = 276, whereas City B has a product score of 25 x 246 = 6,150. Using the product method, City A, with the lower product, would (in accord with intuition and psychological reality) score as the better place to live.

The switch in ranking method produces some clear and dramatic changes. San Francisco now takes first place, and Pittsburgh drops to 12. New York, Washington, Chicago and Los Angeles move up into positions 2, 3, 5 and 7, respectively, from 25, 15, 26 and 36. San Diego and Denver move up to 13 and 18, respectively, from 27 and 29. Buffalo, Knoxville and Louisville fall out of the top 20 (to, as it happens, ranks 24, 59 and 61, respectively).

The point of this reanalysis is not to cast aspersions on the *Places Rated Almanac*. The *Almanac* is enormously useful for the scope and depth of information that it provides about U.S. cities. The authors are, moreover, perfectly aware that trying to rank cities in terms of overall goodness is a misleading exercise. They stress that readers should concentrate on the rock-solid raw information in the book rather than on the dubious combined scores.

Despite their cautionary notes, the authors apparently found that the urge to produce overall rankings was irresistible. Indeed, had the authors themselves not combined ranks to produce an overall goodness score, the media probably would have done it for them. If the ranks are combined, however, they should be combined in a way that best conforms to known psychological principles. Using products rather than sums as overall scores accomplishes this goal. That is the major point of this little essay. Sorry, Pittsburgh.

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## Beat that lie detector!

The old game of *Truth Or Consequences* may be played a lot more often as advocates push for the use of polygraph or lie-detector tests by the federal government and in employment applications. But the game will be given a new twist when people learn that it is indeed possible to "beat the machine."

The key to the way a polygraph test works is that it begins with a question designed to worry you or make you unsure, such as "Have you ever stolen anything?" The machine records the way your body responds to this control question so it can be compared with your response to the

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*Lie detecting: Sleight-of-foot*

real question, such as "Did you steal this book?" If you are innocent, you should be less discomfited by the second question.

Expert polygraphers have been very confident about this method of telling lies from truths. Several laboratory and field studies have reported accuracy rates as high as 98 percent. But a recent study by psychologists Charles Honts, Robert Hodes and David Raskin shows that guilty people using specific techniques can escape detection even by experienced polygraphers.

The successful countermeasures were biting the tongue to produce