

Attachment 1

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

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| In the Matter of |) | |
| |) | EB Docket No. 03-199 |
| Section 272(d) Biennial Audit of |) | |
| SBC Communications, Inc. |) | |

**DECLARATION OF ROBERT M. BELL
ON BEHALF OF AT&T CORP.**

1. My name is Robert M. Bell. My business address is AT&T Labs-Research, 180 Park Avenue, Florham Park, New Jersey 07932.

2. I received a Ph.D. in Statistics from Stanford University in 1980. From 1980 to 1998, I was promoted to Senior Statistician at RAND, a non-profit institution that conducts public policy analysis. While at RAND, I supervised the statistical design and/or analysis of many projects, including several large multi-site evaluations. I also headed the RAND Statistics Group from 1993 to 1995 and taught statistics in the RAND Graduate School from 1992 to 1998. In 1998, I joined the Statistics Research Department at AT&T Labs-Research, where I am a Principal Member of Technical Staff. My main research area is survey research methods. I have authored or co-authored fifty articles on statistical analysis that have appeared in a variety of refereed, professional journals. I am a fellow of the American Statistical Association. I am currently a member of the Committee on National Statistics organized by the

National Academy of Sciences as well as the Academy's Panel to Review the 2000 Census. I have attached a copy of my curriculum vitae as Exhibit RMB-1.

3. I submitted Declarations in the first Verizon Section 272 Audit proceeding, CC Docket No. 96-150, on April 8, 2002; the first SBC Audit proceeding, CC Docket No. 96-150, on January 29, 2002; the second Verizon Section 272 Audit proceeding, EB Docket No. 03-200, on February 10, 2004 and the BellSouth Audit proceeding, EB Docket No. 03-197.

4. The purpose of this declaration is to address the data on performance measurements in Attachment A to the Report of PricewaterhouseCoopers LLP filed on December 23, 2003 in connection with the biennial section 272 audit of the BellSouth companies ("Auditor's Report") as well as various sampling issues.

I. THE AUDITOR'S REPORT IS DEFICIENT.

5. Objective VIII of the audit is designed to evaluate whether "the Bell operating company and an affiliate subject to Section 251(c) of the Act have fulfilled requests from unaffiliated entities for telephone exchange service and exchange access within a period no longer than the period in which it provides such telephone exchange service and exchange access to itself or to its affiliates."¹ Procedure 4 in Objective VIII required the Auditor to provide performance data for a 24 month period from July 2001 to June 2003 for seven listed performance measures.² Attachment A-7 in the Auditor's Report contains seven tables purportedly corresponding to the performance data required for the seven measures identified in

¹ *General Standard Procedures* at 47.

² *Id.* at 48-51.

Objective VIII, Procedure 4. Data are reported for seven states, for varying numbers of month depending on when Section 271 approval occurred.

The Tables For Performance Measurements 2 Through 6 Exclude Information That Must Be Reported Under The General Standard Procedures.

6. The performance data for five³ of the seven measurements in Attachment A-7 deviate from the audit procedures and obscure disparities in performance. For each measurement, the *General Standard Procedures* state explicitly that the Auditor is required to provide data showing the percentage of services completed “within each successive . . . period” until 95% completion. Instead of reporting percentages for each successive period, the Auditor reported only a single percentage—that for the first period (e.g., the first hour or the first day). By reporting results for only a single period, the Auditor might exclude information about the distribution of service times for the majority of customers. Consequently, the data in the Auditor’s Report could conceal disparities in service.

7. For example, the *General Standard Procedures* required the Auditor to present data regarding the “Time to Restore and trouble duration (percentage restored within each successive 1 hour period, until resolution of 95% of incidents).”⁴ For each month, the Auditor should have reported data on the percentage of troubles restored within 1 hour, the percentage of troubles restored within 2 hours, and so forth, until the hour at which 95 percent of

³ The five measures are: Performance Measurement 2 (Time from BOC Promised Due Date to Circuit Being Placed in Service); Performance Measurement 3 (Time to Firm Order Confirmation); Performance Measurement 4 (Time from PIC Change Request to Implementation); Performance Measurement 5 (Time to Restore and Trouble Duration); and Performance Measurement 6 (Time to Restore PIC After Trouble Incident).

⁴ *General Standard Procedures* at 51.

troubles had been restored.⁵ Instead, the tables for this measure report only the percentages of troubles restored within 1 hour. For example, p. 37 of Attachment A-7 shows that for DS1 in November 2001, 26.2% of troubles faced by BOC & Affiliates were restored within one hour. However, the table omits information about the remaining 74% of troubles, other than that at least 95% had been restored within 8 days. Similarly, for non-affiliates, the table reports that 14.3% of troubles were completed within 1 hour, but says little about the other 86%. Consequently, it is impossible to compare the timelines of service received by the majority of customers. The same problem occurs for Time to Restore PIC After Trouble Report (Performance Measure No. 6), for which the first period also tends to include a small minority of instances.

8. Because the tables in Auditor's Report looks at only a small slice of the distribution for some of the performance measures, they may conceal performance disparities in the rest of the distribution. Indeed, data for Trouble Duration from the first SBC audit report illustrated that parity at one point of a distribution may miss large disparities elsewhere in the distribution.⁶

The Report Omits All Information That Would Allow Accurate Statistical Inference

9. When making comparisons of SBC's performance for non-affiliates and affiliates, it is important to use statistical procedures. By allowing for variability in the services received by customers, statistical analysis can control the risk of rendering an inappropriate

⁵ See Attachment A-7, pp. 3-6 (Performance Measurement No. 4) of the Report of Independent Accountants on Applying Agreed-Upon Procedures, prepared by Ernst & Young, LLP and filed on December 17, 2001 ("SBC's First Biennial Audit Report") for tables in the required format.

⁶ See Declaration of Dr. Robert Bell, Attachment 1 to AT&T's Comments on SBC's First Biennial Audit, CC Docket No. 96-150 (filed Jan. 29, 2003) ¶¶ 28.

conclusion. To avoid concluding incorrectly that SBC has discriminated against non-affiliates, a statistical test of the null hypothesis should be performed whenever results suggest a lack of parity condition.

10. The tables for the seven measurements in the Auditor's Report include rows for the "Difference" between performance received by affiliates and non-affiliates. When the value reported in a Difference row is a percentage, a negative value indicates discriminatory treatment vis-à-vis non-affiliates, while a positive difference indicates preferential treatment for non-affiliates. The reverse is true for Performance Measurement 7, where the Difference row displays differences of durations. In that case, a positive value in the Difference row denotes discriminatory service for non-affiliates (negative values are enclosed in parentheses).

11. In order to assess whether the differences shown in the performance results are meaningful, the Commission must determine whether these differences in reported results are statistically significant or due to random variation. In order to make such an assessment, the Auditor should have provided some measure of uncertainty -- a standard error, confidence interval, test statistic, or P-value -- for each value in the Difference row. None of those measures was supplied. Furthermore, the Auditor's Report omits any reference to sample sizes in the performance results, even though the *General Standard Procedures* explicitly requires them for Performance Measures 1-3, 5, and 7. For example, for Performance Measurement No. 1, the *General Standard Procedures* at 50 states, "Indicate the total number of service orders for each service and for each group of customers."

12. In addition, the table for Performance Measurement 7 fails to show standard deviations corresponding to each mean time in the table -- information that is essential to compute standard errors or other measures of uncertainty for means or differences in means.

Again, this omission is counter to the *General Standard Procedures* at 50, which states, “Where appropriate, the performance measures data shall reflect the standard deviation, as well as mean.”

The lack of information on sample sizes and standard deviations, where appropriate, renders it impossible for this Commission or interested parties to compute standard errors or confidence intervals for the reported values in the Difference rows.⁷

II. DESPITE THESE DESIGN FLAWS, THE DATA SHOWS STATISTICALLY SIGNIFICANT EVIDENCE OF DISCRIMINATION.

13. Despite the data deficiencies described above, it is still possible to demonstrate large, systemic discrimination against non-affiliates compared with affiliates for most of the performance measures. The unauthorized omission of sample sizes and standard deviations, where applicable, makes it impossible to perform statistical tests for a single month of data for any state. However, the observed patterns over time of inferior performance for customers of non-affiliates rule out random variation as the explanation and imply that many of these differences are systemic throughout the period under study.

14. To assess the relative performance received by non-affiliates, I averaged monthly percentages (or means) across the entire period in each state for BOC & Affiliates, Section 272 Affiliates, and Non-Affiliates.⁸ To assess whether observed differences were consistent, I counted and compared the number of months that non-affiliates receive inferior,

⁷ Sample sizes and standard deviations alone would be insufficient for computing any of the measures of uncertainty for 95th percentiles. Calculations for such measures require access to individual values for all of the largest intervals.

⁸ The averages weight each month equally, because the report omits all samples sizes. Consequently, the average percentages (means) that I report will differ from ones based on values computed directly from the actual data. However, this is the best that can be done with the available data, and there is no reason to expect that the numbers reported here are biased. Comparisons of non-affiliates with BOC & affiliates include only those months where both groups had data.

versus superior, service. Finally, I formally tested the null hypothesis of parity service using Wilcoxon's signed rank test of the null hypothesis that monthly "differences" are centered at zero.⁹

A. Installation Metrics.

15. **Successful Completion According to Desired Due Date (Performance Measurement No. 1).** Customers of non-affiliates were consistently much less likely than customers of BOC & Affiliates to receive successful completion by the desired due date. This finding was consistent over time, state, and service category.

16. Table 1 shows the percentage of on-time completions for DS3 service for each state with more than two months of data. For example, the value of 94.7% for BOC & Affiliates in the first row of Table 1 equals the average of the 20 values appearing in the first rows on pages 1 and 3 of Attachment A-7. In contrast, the average for non-affiliates is only 84.8%. That is, non-affiliates were nearly three times as likely (15.2% versus 5.3%) to have their desired due date missed. Similar differences occurred in each of the other five states for DS3.

17. The differences shown in Table 1 represent consistent patterns of inferior performance received by non-affiliates. The column labeled "Worse" shows the number of months in which non-affiliates received worse service than BOC & affiliates. For Arkansas, non-affiliates received worse service in 12 of 16 months, excluding ties. Overall, out of 117 monthly comparisons in these six states, 94 favored BOC & Affiliates, compared with only 17

⁹ The Wilcoxon signed rank test requires fewer assumptions than a one-sample t-test and is therefore more robust in the presence of outliers (Lehmann, E.L. *Nonparametrics: Statistical Methods Based on Ranks*, Holden-Day, San Francisco, 1975). All computations were performed using SAS, Release 8.2.

that favored non-affiliates (there were 6 ties). The P-value for California is 0.0156, the smallest possible P-value from the signed rank test with only six observations. In other words, from the perspective of the signed rank test, the observed data for California produced the greatest possible evidence against the null hypothesis of parity. All other differences were statistically significant at the 0.01 level.

Table 1
 Percentage Completion by Desire Due Date (PM 1) for **DS3** Service,
 for BOC & Affiliates Versus Non-Affiliates

| State | Months | | Average Percentage across Months | | |
|------------|--------|----------|----------------------------------|----------------|--------------------|
| | Total | Worse | BOC & Affiliates | Non-Affiliates | Difference |
| Arkansas | 20 | 12 of 16 | 94.7 | 84.8 | -9.8* |
| California | 6 | 6 | 85.1 | 73.7 | -11.4 [#] |
| Kansas | 24 | 20 of 22 | 96.9 | 84.1 | -12.8** |
| Missouri | 19 | 16 | 92.2 | 78.6 | -13.6** |
| Oklahoma | 24 | 19 | 91.6 | 82.4 | -9.2* |
| Texas | 24 | 21 | 93.0 | 80.8 | -12.3** |

NOTES: “Worse” counts the number of months in which non-affiliates received worse service—excluding ties, where applicable. Averages are weighted equally across months. The Difference column may not equal the difference of the two previous columns due to rounding.

* Statistically significant (from 0) at the 0.01 level (one-sided signed rank test).

** Statistically significant (from 0) at the 0.001 level (one-sided signed rank test).

[#] P = 0.0156, which is the smallest possible P-value for the signed rank test using a sample of size six.

18. Results for DS1 service in five of six states mimic those for DS3 service.

The percentage where the desired due date is missed was more than three times higher for non-affiliates in Arkansas and Kansas, and at least twice as high in California, Missouri, and Oklahoma. Non-affiliates received poorer service almost every month -- 86 of 93 months -- in these five states. The differences for Arkansas, Kansas, Missouri, and Oklahoma are all significant at the 0.001 level.

Table 2
Percentage Completion by Desire Due Date (PM 1) for **DS1** Service,
for BOC & Affiliates Versus Non-Affiliates

| State | Months | | Average Percentage across Months | | |
|------------|--------|-------|----------------------------------|----------------|-------------------|
| | Total | Worse | BOC & Affiliates | Non-Affiliates | Difference |
| Arkansas | 20 | 19 | 96.4 | 86.5 | -9.9** |
| California | 6 | 6 | 92.2 | 84.4 | -7.8 [#] |
| Kansas | 24 | 23 | 96.1 | 85.9 | -10.2** |
| Missouri | 19 | 15 | 93.9 | 86.2 | -7.6** |
| Oklahoma | 24 | 23 | 93.5 | 83.9 | -9.6** |

NOTES: “Worse” counts the number of months in which non-affiliates received worse service—excluding ties, where applicable. Averages are weighted equally across months. The Difference column may not equal the difference of the two previous columns due to rounding.

** Statistically significant (from 0) at the 0.001 level (one-sided signed rank test).

[#] P = 0.0156, which is the smallest possible P-value for the signed rank test using a sample of size six.

19. Results for DS0 service also show strong, consistent discrimination against non-affiliates in five of six states (all but California). Again, the percentage where the desired due date is missed was at least two or three times higher for non-affiliates. Non-affiliates received poorer service in 100 of 111 months. All average differences were significant at the 0.01 level.

Table 3
Percentage Completion by Desire Due Date (PM 1) for **DS0** Service,
for BOC & Affiliates Versus Non-Affiliates

| State | Months | | Average Percentage across Months | | |
|----------|--------|-------|----------------------------------|----------------|------------|
| | Total | Worse | BOC & Affiliates | Non-Affiliates | Difference |
| Arkansas | 20 | 18 | 94.9 | 82.8 | -12.1** |
| Kansas | 24 | 23 | 98.3 | 86.4 | -11.9** |
| Missouri | 19 | 16 | 93.1 | 83.4 | -9.7* |
| Oklahoma | 24 | 23 | 95.3 | 82.1 | -13.2** |
| Texas | 24 | 20 | 91.9 | 83.1 | -8.8** |

NOTES: “Worse” counts the number of months in which non-affiliates received worse service—excluding ties, where applicable. Averages are weighted equally across months. The Difference column may not equal the difference of the two previous columns due to rounding.

* Statistically significant (from 0) at the 0.01 level (one-sided signed rank test).

** Statistically significant (from 0) at the 0.001 level (one-sided signed rank test).

20. **Time from BOC Promised Due Date to Circuit being Placed in Service (Performance Measurement No. 2).** For DS1 service in Kansas, there was a strong, consistent pattern of more due dates being missed for non-affiliates. Overall, 2.4% of due dates were missed for non-affiliates, compared with just 0.5% for BOC & affiliates (a 5-to-1 ratio). The non-affiliate rate was higher in 21 of 24 months. The signed rank test was significant at the 0.001 level. The rate of missed due dates for non-affiliates was also higher compared with the Section 272 affiliate in all six months for both Kansas and California.

21. **Exchange Access Time to Firm Order Confirmation (Performance Measurement No. 3).** Page 33 of the Auditor's Report refers to an SBC representation about certain unnamed statistically significant comparisons for Performance Measurement 3. The representation is "that the differences were merely the result of random variations (i.e., the statistically significant differences were random occurrences and not systemic)." The intended meaning of this odd statement is hard to fathom. Nonetheless, the data speak clearly. There is indeed a strong, systemic pattern of firm order confirmations taking longer for non-affiliates than for BOC & affiliates or for Section 272 affiliates.

22. In five states (Arkansas, Kansas, Missouri, Oklahoma, and Texas), non-affiliates regularly received fewer firm order confirmations (FOCs) within the first 24 hours than did BOC & affiliates. Table 4 shows results that are statistically significant (at the 0.01 level) for each of the three services. Once again, results favor BOC & affiliates almost every month, with much better service on average than that received by non-affiliates. For example, for DS3 in Arkansas (first row of Table 4), non-affiliates were nearly four times as likely to have to wait

more than 24 hours (24.2% versus 6.5%). In almost every combination of state and service, the ratio was at least 2-to-1.

Table 4
Percentage with Firm Order Confirmation within 24 Hours (PM 3),
for BOC & Affiliates Versus Non-Affiliates

| State | Months | | Average Percentage across Months | | |
|------------|--------|----------|----------------------------------|----------------|------------|
| | Total | Worse | BOC & Affiliates | Non-Affiliates | Difference |
| DS3 | | | | | |
| Arkansas | 20 | 15 of 18 | 93.5 | 75.8 | -17.7** |
| Kansas | 24 | 20 | 86.3 | 73.3 | -13.0* |
| Missouri | 19 | 17 | 91.1 | 73.7 | -17.4** |
| Oklahoma | 24 | 20 of 23 | 93.0 | 79.1 | -13.9** |
| Texas | 24 | 23 | 93.9 | 79.6 | -14.3** |
| DS1 | | | | | |
| Arkansas | 20 | 18 | 98.4 | 94.5 | -3.9** |
| Kansas | 24 | 15 of 22 | 97.8 | 94.9 | -2.9* |
| Oklahoma | 24 | 21 | 98.4 | 95.3 | -3.0** |
| Texas | 24 | 17 of 23 | 96.9 | 94.1 | -2.8* |
| DS0 | | | | | |
| Arkansas | 20 | 14 of 16 | 96.6 | 89.6 | -7.0** |
| Missouri | 19 | 15 of 18 | 94.1 | 90.4 | -3.7* |
| Oklahoma | 24 | 16 of 16 | 97.2 | 87.6 | -9.2** |
| Texas | 24 | 20 of 23 | 93.1 | 86.3 | -6.8** |

NOTES: “Worse” counts the number of months in which non-affiliates received worse service—excluding ties, where applicable. Averages are weighted equally across months. The Difference column may not equal the difference of the two previous columns due to rounding.

* Statistically significant (from 0) at the 0.01 level.

** Statistically significant (from 0) at the 0.001 level.

23. Although there are typically only four or five months of data for Section 272 affiliates, there is also ample evidence of inferior service for non-affiliates relative to those affiliates. Because the audit report omits sample sizes, it is fruitless to attempt formal testing for individual combinations of state and service with fewer than six months of data. However, the overall pattern of discrimination is compelling. For DS3, non-affiliates received fewer FOCs within 24 hours than did Section 272 affiliates in every month in every state—28 out of 28 comparisons. The same held true for DS1 in three states (Arkansas, California, and Texas).

Finally, non-affiliates fared worse in each of four months for DS0 in four states (Arkansas, California, Missouri, and Texas).

B. Repair Metrics.

24. Time to Restore and Trouble Duration (Performance Measurement

No. 5). The Auditor reported the percentage of troubles restored within the first hour. Table 5 shows that non-affiliates received consistently worse performance than BOC & affiliates for DS1 service in Arkansas and Oklahoma and for DS0 service in Arkansas, Kansas, and Oklahoma. Typically, BOC & affiliates were at least 50 percent more likely to be restored within the first hour (e.g., 27.4% versus 16.8% for DS1 in Arkansas). In each case, monthly results consistently favor the affiliated carriers. The difference for DS0 in Kansas was statistically significant at the 0.01 level, and all others were significant at the 0.001 level. Because most of the distribution for this measure was excluded from the report, there is no way to know whether larger disparities may be hidden.

Table 5
Percentage of Troubles Restored within 1 Hour (PM 5),
for BOC & Affiliates Versus Non-Affiliates

| State | Months | | Average Percentage across Months | | |
|------------|--------|-------|----------------------------------|----------------|------------|
| | Total | Worse | BOC & Affiliates | Non-Affiliates | Difference |
| DS1 | | | | | |
| Arkansas | 20 | 19 | 27.4 | 16.8 | -10.6** |
| Oklahoma | 24 | 21 | 23.9 | 17.5 | -6.3** |
| DS0 | | | | | |
| Arkansas | 20 | 19 | 29.8 | 17.6 | -12.2** |
| Kansas | 24 | 16 | 32.0 | 21.5 | -10.5* |
| Oklahoma | 24 | 20 | 27.9 | 15.0 | -12.9** |

NOTES: "Worse" counts the number of months in which non-affiliates received worse service. Averages are weighted equally across months. The Difference column may not equal the difference of the two previous columns due to rounding.

* Statistically significant (from 0) at the 0.01 level.

** Statistically significant (from 0) at the 0.001 level.

25. **Mean Time to Clear Network (Performance Measurement No. 7).** It consistently took longer to clear network troubles for non-affiliates in five different states. Compared with BOC & affiliates, the average time was regularly and significantly longer in Arkansas for both DS1 and DS0, and in Kansas for DS1 (Table 6). Compared with Section 272 affiliates, average non-affiliate times for DS1 were higher every month in California (4 months), Missouri (6 months), and Oklahoma (5 months).

Table 6
Mean Time (in Hours) to Clear Network Trouble (PM 7),
for BOC & Affiliates Versus Non-Affiliates

| State | Months | | Average Number of Hours | | |
|------------|--------|----------|-------------------------|----------------|------------|
| | Total | Worse | BOC & Affiliates | Non-Affiliates | Difference |
| DS1 | | | | | |
| Arkansas | 20 | 15 of 19 | 2.5 | 3.0 | 0.5** |
| Kansas | 24 | 20 | 2.7 | 3.1 | 0.4* |
| DS0 | | | | | |
| Arkansas | 20 | 15 | 2.8 | 3.4 | 0.6* |

NOTES: “Worse” counts the number of months in which non-affiliates received worse service—excluding ties, where applicable. Averages are weighted equally across months. The Difference column may not equal the difference of the two previous columns due to rounding.

* Statistically significant (from 0) at the 0.01 level.

** Statistically significant (from 0) at the 0.001 level.

C. The PIC-Related Metrics.

26. **Time to Restore PIC after Trouble Incident (Performance Measurement No. 6).** Non-affiliates were consistently less likely to have PIC restored within one hour after a DS1 trouble incident in Kansas, Oklahoma, or Texas. Compared with BOC & affiliates, the percentage restored within one hour was lower 14 of 18 months in Kansas and 13 of 18 months in both Oklahoma and Texas. In Kansas, 49.0% were restore for BOC & affiliates versus only 39.5 for non-affiliates (P = 0.012). The respective percentages were 14.8% versus 35.5 in Oklahoma (P = 0.012) and 32.0 versus 27.4 in Texas (P = 0.007). Again, because the

majority of the distribution for this measure is excluded from the tables, additional evidence of discrimination may have been missed.

Robert M. Bell

Robert M. Bell

Dated: this 25th day of March, 2004

Exhibit RMB-1

ROBERT M. BELL

EDUCATION

Ph.D., Statistics, 1980, Stanford University
M.S., Statistics, 1973, University of Chicago
B.S., Mathematics, 1972, Harvey Mudd College

PROFESSIONAL EXPERIENCE

1998-Present – Principal Member Technical Staff, Statistics Research Department,
AT&T Labs - Research, Florham Park, NJ; 2003 AT&T Science and Technology
Medal

1991-1999 -- Senior Statistician, RAND, Santa Monica, California; Head, RAND
Statistics Group (1993-1995); Member, RAND Graduate School Faculty (1991-1998)

1988-1991 -- Statistician, Social Policy Department, RAND, Santa Monica, California

1980-1988 -- Associate Statistician, Economics and Statistics Department, RAND, Santa
Monica, California

1975-1979 -- Teaching Assistant/Research Assistant, Department of Statistics, Stanford
University

1973-1975 -- Consultant and Mathematical Assistant, Economics Department, The
RAND Corporation, (also intermittently during educational leave)

RESEARCH AREAS

Experimental Design and Survey Development. Dr. Bell supervised statistical design of Project Alert, an experiment of drug abuse prevention in thirty California and Oregon junior high schools. This work has involved data collection and analysis for sample selection/assignment, development of a series of 30 page questionnaires, and design of sampling procedures for several secondary analyses.

Data Analysis. Dr. Bell supervised the main data analysis in Project ALERT. He previously supervised analysis of clinical data from the National Preventive Dentistry Demonstration Program, a study of school-based preventive treatments. Data from that study included one to five annual examinations of 30,000 children in 10 communities, over 10,000 replicate examinations, and 20,000 surveys.

Statistical Methodology. Dr. Bell's methodological interests include survey research methods, analysis of data from complex samples, record linkage methods, analysis of missing data, measurement and scaling, robust procedures, empirical Bayes estimation, and sample reuse methods.

PROFESSIONAL ORGANIZATIONS/HONORS

- Member, Committee on National Statistics, National Academy of Sciences, 2001-present.
- Chair, Committee to Review the 2000 Decade Design of the Scientists and Engineers Statistical Data System (SESTAT), National Academy of Sciences, 2002.
- Member, Panel to Review the 2000 Census, National Academy of Sciences, 1998-present.
- Fellow, American Statistical Association, 1998.
- Chair, American Statistical Association Subcommittee, Census Advisory Committee of Professional Associations, 1997-1998; Member, 1995-2000.
- Member, Panel on Alternative Census Methodologies, National Academy of Sciences, 1995-1999.
- Member, Committee on Minorities in Statistics, American Statistical Association, 1995-2000.
- Member, Panel to Evaluate Alternative Census Methods, National Academy of Sciences, 1992-1994.
- Visiting Lecturer for American Statistical Association, 1984-1986.
- Program Chairman, Applied Statistics Workshop, Southern California Section of American Statistical Association, 1984.
- Institute of Mathematical Statistics, since 1979.
- American Statistical Association, since 1974.

PUBLICATIONS

Published Articles

- “Bias Reduction in Standard Errors for Linear Regression with Multi-Stage Samples,” *Survey Methodology*, Vol. 28, 2002, 169-181 (Bell and McCaffrey).
- “School-Based Drug Prevention: Challenges in Designing and Analyzing Social Experiments,” in *Public Policy and Statistics: Case Studies from RAND*, eds. S.C. Morton and J.E. Rolph, Springer-Verlag, New York, 2000.
- “Appropriateness of the Decision to Transfer Nursing Facility Residents to the Hospital,” *Journal of the American Geriatric Society*, Vol. 48, 2000, 154-163 (Saliba, Kington, Buchanan, Bell, et al.).
- “A Clinically Detailed Risk Information System for Cost,” *Health Care Financing Review*, Vol. 21, 2000, 1-27 (Carter, Bell Dubois, Goldberg, Keeler, McAlearney, Post, and Rumpel).
- “Cross-Lagged Relationships among Adolescent Problem Drug Use, Delinquent Behavior, and Emotional Distress,” *Journal of Drug Issues*, Vol., 30, 2000, 283-304 (Bui, Ellickson, and Bell).

“Adolescent Use of Illicit Drugs Other Than Marijuana: How Important is Social Bonding ant for Which Ethnic Groups?” *Substance Use and Misuse*, Vol. 34, 1999, 317-346 (Ellickson, Collins, and Bell).

“Simultaneous Polydrug Use among Teens: Prevalence and Predictors,” *Journal of Substance Use*, Vol. 10, 1999, 233-253 (Collins, Ellickson, and Bell).

“Physician Response to Prenatal Substance Exposure,” *Maternal and Child Health Journal*, 1999, 29-38 (Zellman, Bell, Archie, DuPlessis, Hoube, and Miu).

“Underuse and Overuse of Diagnostic Testing for Coronary Artery Disease in Patients Presenting with New-Onset Chest Pain,” *American Journal of Medicine*, 1999, 391-398, (Carlisle, Leape, Bickel, Bell, et al.).

“Underuse of Cardiac Procedures: Do Women, Ethnic Minorities, and the Uninsured Fail to Receive Needed Revascularization?,” *Annals of Internal Medicine*, Vol. 130, 1999, 183-192 (Leape, Hilborne, Bell, Kamberg, and Brook).

“The Sexual Practices of Asian and Pacific Islander High School Students,” *Journal of Adolescent Health*, Vol. 23, 1998, 221-231 (Schuster, Bell, Nakajima, and Kanouse).

“Does Early Drug Use Increase the Risk of Dropping out of High School?,” *Journal of Drug Issues*, Vol. 28, 1998, 357-380 (Ellickson, Bui, Bell, and McGuigan).

“Impact of a High School Condom Availability Program on Sexual Attitudes and Behaviors,” *Family Planning Perspectives*, Vol. 30, 1998, 67-72 & 88 (Schuster, Bell, Berry, and Kanouse).

“Analytic Versus Holistic Scoring of Science Performance Tasks,” *Applied Measurement in Education*, Vol. 11, 1998, 121-137 (Klein, Stecher, Shavelson, McCaffrey, Ormseth, Bell, Comfort, and Othman).

“Influencing Physician Response to Prenatal Substance Exposure Through State Legislation and Work-Place Policies,” *Addiction*, Vol. 92, 1997, 1123-1131 (Zellman, Jacobson, and Bell).

“Adjusting Cesarean Delivery Rates for Case Mix,” *Health Services Research*, Vol. 32, 1997, 509-526. (Keeler, Park, Bell, Gifford, and Keesey).

“Students’ Acquisition and Use of School Condoms in a High School Condom Availability Program,” *Pediatrics*, Vol. 100, October 1997, 689-694 (Schuster, Bell, Berry, and Kanouse).

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