

The Role of Statistics and the Statistician

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“Do (workers elsewhere) immediately embrace the statistical method as an integral thread in the fabric of their own enterprises and decision making ventures, or have we become isolated and irrelevant?” Set against the backdrop of ASA’s first century of writers, we attempt to cast a critical eye at the role of statistics and the role of the statistician, both in its practice and in the training and preparation of the practitioner for the next century. This includes addressing the role of the Association and the profession.

It is important, indeed past time, that we pause, as individuals and as a profession, to ponder the role of our statistics profession together with our role as statisticians in its practice and in its training and preparation as we move into the 21st Century. Let us do this by drawing upon our heritage to direct our thinking about the paths that lie ahead.

There are many possible starting points when seeking the past as a springboard for whatever future perspective we seek. My remarks evolve from a reading of *Journal of the American Statistical Association (JASA)* volumes covering the first 100 years of our history 1839–1939. From these, it is quite evident that ASA’s focus was squarely placed on the societal problems of the day. We analyzed and interpreted data to draw conclusions regarding social sciences, political science, health sciences, economics, government, history, and so on, with new statistical theory developed only in order to define or to direct better analyses in the substantive application. Would we describe ourselves this way today? And if not, why not? We need to ask ourselves if our primary concerns are in dealing with the problems of today, 1990–2020 say, such as, problems in health care, law, technology, the environment, and so on.

There are many “histories” that can be gleaned from a reading of these journals. We can trace the development of numerous specific techniques—regression, for example—or

we can trace the emergence of theory in other disciplines, such as demography. We can trace certain types of statistics. We could even track the Presidential addresses. As an aside, it is interesting to note that in our first 70 years, there were just five ASA Presidents each holding office for many years until death. Then, it was decided to include a Presidential Address at the Association’s annual meetings, the first to be delivered by Wright in January 1908. Whereupon (such was its toll perhaps) with President Wright’s passing, there thus began the first of subsequent one-year presidential terms starting with North in 1910.

North in December of 1908 (or was it Wright’s address delivered by North? It is hard to tell; see North 1909) took the membership to task. North spoke of the “organized movement to bring this old and honorable organization out of the rut of mere existence and into the strenuous activities of today.” He was speaking at the end of the first decade of the 1900s when *JASA* publications had become more a catalogue of routine statistical reports, in contrast to the vibrancy of the 1890s during which there were considerable theoretical developments (in the field of application). We had lost our way and had become moribund. We run the same dangers today—instead of tables of data perfunctorily presented, our publications are at times beset on seemingly esoteric mathematics quite removed from the substantive field. North asked

What can be done—what ought to be done—to make the American Statistical Association a vital, predominating force in determining the directions in which statistical science shall advance . . . ?

Soon after, our journal articles became more substantial again, with theoretical results in all substantive fields including mathematical statistics. Of course, it is likely the exigencies brought on by World War I also contributed. North’s call to action can be our call to action, as we too engage our talents, our science, and our expertise to address the problems of the day.

There were articles that were as serious as they were dull, always balanced by serious but fascinating papers. Then, there were those which today seem frivolous. We read Winslow’s (1906) review of a book “Mental and Moral Heredity in Royalty” by Frederick Adams Woods, in which we learn that 832 members of the reigning families in Europe were classified into ten grades for mental qualities and ten grades for moral qualities. Woods obtained an “important correlation between mental and moral traits about .3 as worked out by the Pearson method . . . (about) the same as the correlation between strength of pull and weight.” He found a distinct correlation between moral qualities and the number of offspring reaching adult life—“a hopeful sign for

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Table 1. Christian Names in England, 1571–1622

Name	Count	Frequency	Mean	Standard Deviation
John	3826	times, or about	12.8	per cent.
Thomas,	2777	" "	9.3	"
William,	2546	" "	8.5	"
Richard,	1691	" "	5.6	"
Robert	1222	" "	4.1	"
Edward,	957	" "	8.2	"
Henry,	908	" "	3.0	"
George,	647	" "	2.2	"
Francis,	447	" "	1.5	"
James,	424	" "	1.4	"
Nicholas,	326	" "	1.1	"
Edmund,	298	" "	1.0	"

the future of the race," he says!—as well as correlations in intellectual powers of parent and offspring; and likewise for moral qualities. Whatever we may think today, this article was all seriousness and was viewed as a very significant contribution to biology.

Perhaps the most interesting of the seemingly frivolous entries is the entry with the statistics on Christian names in England from a total of about 30,000 registered in the years 1571–1622 (Table 1), intriguing because these are similar to my perception of the corresponding statistics for today 400 years later (see *Miscellany* 1890).

Well, there are many interesting stories buried in our historical annals. Rather than past roles, I want to focus on the role of statistics and of the statistician today. While our greatest, perhaps only concern is the present and future, it is remarkable how much of our early writings are as applicable today as then. Indeed, it is possible to craft together a rendering of what our roles should be for the 21st Century, by piecing together quotes and viewpoints of our members of a century ago.

1. WHAT IS STATISTICS?

What is statistics? In the history of science of the human endeavor, statistics can make a claim as both one of the newest and oldest of the sciences. Set against a backdrop that no science began until man mastered the concepts and arts of counting, measuring, and weighting, then since these concepts are the very essence of statistical science, we can claim our science to be one of the oldest. Furthermore, Kopf (see King 1936) "indicated that the life tables devised by the statisticians of Augustus Caesar's day were practically applied in Italy for (about) a thousand years." In 1693, Halley (of Halley's comet fame; Halley 1693; see Lancaster 1994, p. 63) is credited as the first to construct life tables based on data. Thus, our science really is quite old age-wise. On the other hand, Willcox (1910) stated that "The work of the statistician is not yet established in this country as a profession and hardly as a career." He opined that "the outlook for statistics depends mainly on the attitude of the government towards the subject," to which we would add industry and academia.

There is the never-ending debate about mathematical statistics and applied statistics, with the pure theoretically mathematical statistics at one extreme and the routine computation of standard statistical tables, possibly with mean

and standard deviations, at the other extreme. My own belief is that all stations along this axis are valid, with the particular application driving what station should be used on any given occasion. Wilson (1930) in his 1929 Presidential Address in discussing the role of mathematics and statistics, said it as well as anyone when he explained:

Probably the majority of problems to which the statistician must turn his attention are in reality somewhat intermediate between those in which the technique to be applied is clear and those in which no technique, at least of a mathematical sort, is advisable. In this methodological no-man's land, the statistician must do the best he can. He may have to develop a new technique; in that case he has two chief reliances, first and foremost a sound and wide acquaintance with the field of activity in which he has to operate, and second a good mathematical background, because it is from that that all techniques are developed; but if choice must be made between familiarity with his subject and familiarity with mathematics, I should unhesitatingly prefer the former. Mathematics is a queer horse and all too easily runs always with its rider; and then there is such a satisfaction in trying its various gaits in all sorts of roads that many a rider has gone off in almost the opposite direction from the path he should have followed. In his pursuit of the solution to some scientific problem, he may have ridden right over his solution to some purely fantastic goal.

Wilson goes on

What we need to foster is useful, appropriate, correct mathematics applied to worth-while scientific problems. . . . whether or not they have reached the stage where any considerable use of mathematics is helpful.

These same thoughts apply today but with computer-based methods added to those of mathematics.

The 75th anniversary of our Association in 1914 coincided with the 1910s when the doors were opened to the mathematical method as an integral component of the new statistics, which methodology defined so much of our discipline in subsequent years—much in the same way I believe the computer-based method will define it in the decades ahead. However, the first 75 years, and equally so the first 100 years, were quite distinctive in other ways too. During that time, we thought of ourselves as social scientists broadly defined. More specifically, we were concerned with the use of statistics as a means for solving the problems of society. In those early years, such problems (at least as far as our journal articles tell the story) focused primarily on sociology, economics, political science, and history. Over a period of time, medical statistics (and later today's biostatistics and biometry) evolved though it must be said that right from our inception considerable attention was paid to health matters, especially diseases, often by those concerned with improving the working and living conditions of the population, and/or by those whose interest was in ascertaining birth and death rates and population sizes. Likewise, as we became more industrialized, industrial statistics emerged in abundance, and from here evolved today's industrial statistician in much the same way as occurred in other areas. Whatever the backdrop, however, there was the persistent insistence that statistics had a major role to play in solving society's problems, and that the statistician must remain "versed in classified facts representing the condition of the people in a state. His is the task of planning, administering and interpreting the intelligence services essential to the working of the Great Society of today" (Mills 1935).

So, what is statistics? Beyond the art of analyzing and interpreting data in a way that the nonspecialist can un-

derstand, any definition becomes the captive of one's use and application area. For statistical methods have evolved from the substantive discipline, and perforce must vary according to subject matter—medicine, engineering, physical sciences, pharmacy, government, and so on. Indeed, a similar list was spelled out by Ogburn (1932) when advocating that the ASA “expand in such a way as to sweep more and more different subjects into its orbit.” We observe that soon thereafter Sections emerged as part of the ASA infrastructure. If I may distort one of Ogburn's pictures, just as different artists will paint scenes with their own interpretation, so do different subject matter experts have different statistical tools on their palette; yet all produce a product in harmony with the reality being described.

Back to what is statistics? And our 75th anniversary. To celebrate that occasion, a number of articles on “Statistics in . . . business, economics, sociology, government, biology, law, history, . . .” were published. These were all very fascinating articles and provide interesting reading for those inclined. The most intriguing though is the one on the service of statistics to history by Hull (1914). Among his many quotable contributions, he stated

In the address put forth by the Association at the period of its first establishment, its spokesman, the polygraphic Professor Edwards of the Andover Theological Seminary, had defined statistics as “the ascertaining and bringing together of those facts which are fitted to illustrate the conditions and prospects of society.” It followed that “every subject in truth forms a part of statistics” and he naturally concluded that the labors of the Association should prove “of inestimable value to the future historian in our own and other lands”; “Statistics is history in a state of progression, statistics are history at a stand”; and “since the subject matter of statistics is largely social and economic, the future historian . . . must make larger and larger use of the statistics that are and of the statistics that are to be.”

Finally, earlier Wright, ASA President (1897–1909), had adopted the premise that “history is past statistics, statistics is present history,” as a part of ASA's creed (Wright 1908).

2. WHAT IS A STATISTICIAN?

Before addressing the role of the statistician, let us ask ourselves “What is a statistician?” No doubt we all have individual answers likely to be more distinct than we might realize though we probably all include minimally the statistician as one who will analyze, who will draw inferences from data and thence who will interpret these data. However, I wonder how many of us have a definition or picture that matches that of Rorty (1931), who claims the statistician

...is, in effect, a Sherlock Holmes of figures, who must work mainly, or wholly, from circumstantial evidence. So the statistical detective must learn to approach each complicated problem from as many independent angles as possible and must combine and weigh and balance the results of the different solutions at which he arrives. . .

In this connection the criminal parallel is too tempting not to be carried a step further—for the trained worker will never complete and pass final judgment upon an analysis without first appointing counsel for the defense. In other words, after establishing his proof, he will promptly set to work, in person or by capable proxy, to show that the whole demonstration, if it proves anything at all, leads to the exact opposite of the conclusions originally announced. . .

If the statistician can learn thus wholeheartedly to wreck his own fondest hopes in the manner I have described, he will have taken his first firm step in the scientific pathway.

Rorty proceeds to develop his hypothesis and then concludes:

It is this checking of circumstantial evidence by the forcing of a direct confession from the statistical culprit that may properly be described as the application of the statistical third degree. And no professional sentimentalism should be allowed to prevent a full development of the possibilities of this procedure. The statistician, as the chief pathfinder among scientific pioneers, must necessarily combine that vision which comes from fertility, breadth, and incisiveness of hypothesis, with the balance and sureness of step of the scientific method as a whole. But, above all, he must possess something of the rude spirit of the frontiersman and must seek his results in every legitimate way, regardless of refinements of method and rigidity of conventions.

The idea that we don the mantle of being a statistical Sherlock Holmes is very compelling.

3. EDUCATION AND TRAINING

The responsibilities of educating and training future statisticians ring loud and clear throughout our history. The passionate statistician Florence Nightingale, to whom statistics and the statistical method were as a religious exercise, wrote imploringly to a British official that “What we want is not so much (or at least not at present) an accumulation of facts, as to teach men who govern the country the use of statistical facts”; see Kopf (1916). She further proposed to found a professorship or lectureship in applied statistics at Oxford. Can we positively say today that our national leaders are versed in the statistical method, or do we need a modern day Florence Nightingale to speak again? We should be those speakers, of course!

The clarion calls throughout our literature tended to follow the same themes. Early on, the calls typically were that a course in statistics be a mandatory part of a degree program in political science, in economics, or whatever. Many comments turned on the demand for trained statisticians whilst noting the inadequacy in the quality of that education; others spoke of the gap between the academic training and the needs of the employers.

Today, our educational programs are long overdue for an overhaul. Our statistics majors are entering programs that are remarkably similar to those offered for the past 40 odd years, though possibly some new topics have been added. Also, exposure to computer packages has occurred so as to ease the computational burden of large data sets. This assumes students are even exposed to real (i.e., not artificial and therefore often small or concocted) data sets. Not unnaturally, the trend has been for programs to emulate the strongly theoretically mathematical statistics programs which have enjoyed high status and visibility. While it is my firm belief that there is an important place for this so-called “pure theoretical” emphasis—indeed I believe that all programs should have some courses and some faculty steeped in these areas—it is also my belief wholeheartedly that to train our students for the 21st Century, it will be necessary for the often exclusively theoretically based program to move toward what we might call an “applied theoretical” and/or an “applied-applied” emphasis to remain viable, rather than the reverse. Buried within my comments here is the need to train students in report writing which includes

rewriting the statistical conclusions in the language of the discipline/problem which created the data set. Likewise, students should be similarly trained in the oral presentation of the material. Time is of the essence. If we do not shift our present emphases, we will quickly find job opportunities that should be filled by our graduates will instead be filled by nonstatistical experts.

Regardless of the emphasis along the pure-applied axis, a major change in the landscape relates to computing skills. We can draw an analogy with the developments in statistical science that began 70–80 years ago with the “introduction” of mathematics as an essential tool first in the research side (primarily through the door of correlation and related concepts) and later in the instructional side with the depth of mathematics today varying depending on the degree to which the major is more, or less, a theoretical mathematical statistics program. Today, for the 1990s and beyond, it is my belief that this traditional approach has to be supplemented by the “introduction” of computational tools. Recent years have seen research developments in, for example, imaging, neural nets, resampling methods, and so on, which could not have occurred without the computer. It is time I believe to bring into the classroom courses that provide the graduate the tools to develop computational statistical methods and/or to use those being developed by others. Just as we require prerequisites in mathematics (typically calculus, linear algebra, and so on), so we should add prerequisites in computer science (e.g., programming, algorithmic methods, etc.). These computational skills of which we speak here are distinct from using the computer as a bigger and better calculator either directly or via statistical packages, a given in today’s world.

Important as our statistics majors assuredly are, equally important are our introductory service courses offered to our nonmajors. As elaborated in Billard (1997), we need to approach these quite differently than is traditionally done. In particular, I believe we should develop courses in “Statistics in Society” (or some such equivalent), that instill in students an appreciation of statistics rather than attempt to teach them (but a few of thousands possible) specific methods. That is, rather than the negative image of a “hated” course, we should seek diligently to offer a “beloved” course. We have squandered the golden opportunity handed to us to reach future leaders and lawmakers through these service courses especially those in the core general studies program.

Before leaving the question of the service course, there is another perspective to ponder. We are reminded of the dictum (attributed to H. G. Wells) that “statistical thinking will one day be as necessary for efficient citizenship as the ability to read and to write” (or words to that effect). That day has long come. To this, we add Schwartz’ (1993) exhortation that the distinction between scientific truths and pure science (by establishing and testing hypotheses by data gathering) has a central role in the basic undergraduate education. Furthermore, the principles upon which a core general studies program is founded stand on the premise of broadening the students’ vision of the world around them, to seek an inquiring mind, and so on, whilst achieving a bal-

ance across the sciences, arts, and humanities. If we examine these closely, it seems paramount and abundantly clear that a course on statistics, or on data analysis, or statistics in society, should be a mandatory (not an option) course of this core curricula. Thus, those of us in academia have a dual responsibility here—to revamp the methods course(s) we currently offer and work toward having such a course as an integral part of the undergraduates general studies program. See Billard (1994).

4. OUR PUBLIC PERSONA

While it is essential that we make the kinds of changes to our educational enterprises as indicated above, any course on “Statistics in Society” is but one route necessary in the dissemination of our discipline, in our outreach to the traditional non-user as to the importance of our science. The problem is not new; let me draw upon Pidgin’s (1890) response to the Association’s request that he present a paper on the subject “How to make statistics popular” for a public pathetically hungry for anything and everything of a statistical nature. (It still is today).

Pidgin’s first avenue for popular dissemination was the printing press (or today, the Web page). In particular, he suggested that columns of tables be translated into lines of text, but not just any text. To use his example, if he says that 23,459,103 persons in Germany out of 46,918,206 have blue eyes and flaxen hair, the audience has no idea of what impression he is conveying; but if he says 50% or half have blue eyes and flaxen hair, then there is a statistical point which should stay with them. That is, percentages are easier to grasp. Along these same lines, graphical representations of tabulations are usually easier for the reader to understand the message being conveyed. Whatever the format, conclusions and deductions should be succinct, so to be read easily by the busy citizen.

Newspapers were suggested as an incalculable service (as are other contemporary media) in the dissemination of statistical information. Again, there is a caveat—the journalist is busy. Therefore, Pidgin suggested the statistician summarize the statistical results into a few compact paragraphs, and making it to be so “conspicuous by kind of type or prominent position that the busy editor sees it and transfers it to the columns of his paper.” These abstracts written in popular form would be sent to media outlets, writers, speakers, and so on. That is,

... the purpose is to make statistics popular by making them easily attainable, to express great facts in short sentences, so that the active pushing American can read as he runs and remembers what he reads.

Pidgin concluded that be they editors, statisticians, statistical publications, statistical bureaus, or whatever, “... all dispensers of statistics must supply them in such form that they will catch the eye, appeal to the mind, and linger in the memory.”

We do not want to make our audience (or our service-course-undergraduate students) expert statisticians. Rather, we concur with Huebner (1909) that we “seek to enable the layman whether in public life or private business, to better understand the results obtained by the statisticians.”

That is, to paraphrase Storey (1914), the statistician must understand the mind of the public and of the reader; he must put himself in that reader's place and design his exhibit from their standpoint, not from his own. Too often today, we neither create nor take the opportunities presented to us to educate the nonstatistician. And when we do, we write our articles (beautifully perhaps) for a statistically literate audience rather than to the public forum we seek to reach.

5. THE ROLE OF THE ASA

So, where are we? We have looked at what constitutes statistics and what is a statistician. We have touched on training. We have also considered aspects of how best to disseminate statistics and statistical sciences. Let us look briefly at one final aspect and that is the role of the ASA toward these questions. This is the one glaring hole in our Association today when we compare our relative paucity of efforts to reach the public compared to the considerable efforts expended by our members for at least the first 100 years. Indeed, one could say, such efforts and concerns were our central and primary focus. The story here starts with the founding of the Association. The ASA was established specifically to wrestle with issues surrounding the nation's census taking, a ten-year event dating from 1790. Our Boston forefathers were disturbed by the antiquated methods essentially unchanged from 1790 and still planned for the 1840 census. Understandably, much of the attention and journal writings of the 1800s were concentrated on the censuses in some way—how they were conducted, what information was to be sought, publication of the resulting statistical tables, what the data revealed, and so forth. Much of this was done by the membership. Throughout this time, however, the Association itself sought to influence government and congressmen urging them to implement procedures and/or to enact legislation that would ensure improvement in the quality of statistics gathered. So critical was this deemed to be that then ASA President Walker urged the establishment of the Washington Statistical Society in 1896 so that members in Washington could meet regularly to “promot(e) the discussion of statistical methods, statistical results and statistical principles” among the local body (see Walker 1897).

Perhaps the most visible outcome, beyond the recognizable and substantial improvement in the basic principles underlying the census taking introduced by Walker, was the 1902 bill to establish a permanent Census Bureau. Until then, according to North (1908), coordination and correlation of government statistics were impossible because it was no bureau's role to effect it. North opined that

No single thing, save only the requirement for a decennial census in the Federal Constitution, has done so much to promote the study and to perfect the methods of statistics as that legislation, to which Congress consented with the utmost reluctance and with much misgiving.

The demand to maintain contacts with government echoed through our pages. Mills (1935) eloquently expostulated on the importance of the contacts between statisticians and government, and that it was the Association's responsibility to maintain these contacts. He, together with Rice, advocated the creation of advisory committees to ef-

fect this. Many such advisory committees (with ASA and agency memberships) were reestablished in the last 8–10 years. Koren (1913) and Gifford (1914) focused on attracting all those engaged in statistical work; Parmalee (1915), Willcox (1914), and Weber (1914), among many, all attested to the importance of our role in this regard. Mitchell (1919) urged “the Association to play a more active role in public affairs than in the past,” and noting that the Association's President had been asked by the Secretary of Commerce “to advise the Director of the Census on matters of statistical principle and on the selection of statistical experts,” he hoped this would forsage real and lasting cooperation.

In contrast, today, it would seem we have lost our way, or our voice, in guiding and in using statistics responsibly in government, in society, in the workplace, the marketplace, and so forth. Perhaps, however, we are starting to recover it. Early in 1996, we responded to a request from Congress, specifically the Subcommittee on Government Management, Information and Technology of the Government Reform and Oversight Committee of the U.S. House of Representatives, to testify on the Statistical Consolidation Act of 1995, H.R. 2521, known as the Horn Bill. The April and May issues of *Amstat News* provided extensive reports of this testimony (see Billard 1996a,b; Humm 1996).

Also in 1996, we began responding to an issue of a different stripe. As part of its constitutional role, Congress is reviewing how the Census should be executed. Those of us—and I hope that is most of us!—who have paid attention have been disturbed by some recent assessments of fundamental statistical methodology. If Congress wants to ignore basic scientific tenets for political purposes, that is their prerogative. When, however, they want to ignore these tenets because they believe the statistical profession cannot agree on what is or is not clear and established statistical science, then we have a responsibility to speak up for the integrity of our discipline (this apart from our concerns as taxpayers). Therefore, in my capacity as President, in the Spring 1996, I established a Blue Ribbon Panel (comprised of John Rolph, Chair, Wayne Fuller, John Neter, Janet Norwood, Richard Rockwell, and Donald Rubin) to study some of these methods, in particular sampling, as they pertained to the 2000 Census. The panel's report, together with the executive summary, the list of panel members and its charge were sent on September 3, 1996, to all members of the Senate Appropriations and Government Affairs Committees and of the House Appropriations and Governmental Affairs and Oversight Committees, among others. This material appeared in the October issue of *Amstat News*. Let us be content here with the observation that the panel endorsed the use of statistical sampling in the Census of 2000 and tried to assure Congress that sampling is consistent with prevailing sound statistical practice. As with all scientific knowledge, statistical knowledge changes over time. Whatever might be our political persuasions, we do have a professional obligation to maintain the importance of using the best statistical techniques currently available.

The issue is still unresolved. However, our report's existence has attracted not inconsiderable attention. For example, it was mentioned in a *National Journal* article, *Wired*

magazine, and in a November 1996 *Science* article on the census and sampling. This is certainly encouraging. However, there is much more we could and should be doing.

Even if the report received no more than a cursory look, its very existence is I believe of even greater importance. It is critical that our Association exercise its responsibility in ensuring the correct and appropriate use of statistical science in resolving crucial problems of society. Without this public persona, we have an unnecessarily uphill battle in convincing others of the useful role we can play as partners of their own undertakings. We have spent a lot of time talking to ourselves, neglecting those outside our immediate ken. Let us determine to take the appropriate corrective actions. Whether it be government as here, academia, industry, or the private sector, wherever statistics and statisticians reside, it is the role and purpose of the ASA "to encourage the use and perfect the purposes of a scientific method" (Newcomb 1909).

Let me conclude with portions of the conclusion of my Chicago address (see Billard 1997).

Statistics as a discipline cannot exist by itself. Yet, with obvious exceptions of course, many of us as individuals and certainly as an Association have of late withdrawn within ourselves. We have to ask: Are we addressing the needs of audiences that seek us out? Are we even connected to these audiences? What constituted good statistical practice occupied the minds of our nineteenth century members. Yet, to read our journals today, serious questions about our destiny blare out, not by what is published, but by what is not published.

We must ask ourselves

Do public servants, government officials, industrial managers, scientists of all persuasions, etc., immediately embrace the statistical method as an integral thread in the fabric of their own enterprises and decision making ventures, or have we become isolated and irrelevant?

Of course, we want to believe the answer to this is a resounding yes; yes, other workers do embrace statistics and do approach us. Unfortunately, instead, we uncomfortably admit the reality is not always—not as much as we expect.

Therefore, we ask: How do we reassert the crucial role we see for statistics? Again, from Chicago,

It is up to us as an Association to chart a course that focuses on the unique strengths inherent to statistics and its boundless opportunities to play pivotal and indispensable roles in resolving contemporary issues, a course that guarantees the success of our profession and of statistical science.

We ourselves know of the importance and relevance of our science. It is up to us to behave and respond to those in other disciplines and to the public in such a way that they too will understand the essential role we command in the successful advancement of their own craft. May the future roles of statistics and of statisticians be that beautiful (Beethoven) symphony that brings music to our ears! Thank you.

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