Applewhite, et al. v. Commonwealth of Pennsylvania, et al.
No. 330 MD 2012

EXHIBIT 2

Petitioners' Disclosure of Expert Reports

Applewhite, et al., Plaintiff, v. Commonwealth of Pennsylvania, *et. al.* Defendant,	Case No. 330 MD 2012

EXPERT DECLARATION OF DAVID A. MARKER

1. Background and Qualifications

Ph.D., Biostatistics, University of Michigan, Ann Arbor, 1995
M.A., Statistics, University of Michigan, Ann Arbor, 1980
B.S., Mathematics, University of Maryland, 1978

I am an Associate Director and Senior Statistician at Westat, where I have worked since 1983. Westat is one of the largest data collection contractors for the United States government.

I am a senior statistician with more than 30 years of experience in data collection, survey research, sampling methodology, survey response rates, survey evaluation, data analysis, imputation, modeling, project management, quality control and improvement, and small area statistics. My primary field of graduate study was survey sampling, both classical and Bayesian approaches, and my Ph.D. dissertation topic was small area estimation. I have worked on studies in the fields of health, housing, energy, social services, transportation, and the environment, as well as in the commercial sector.

I have designed, analyzed, and overseen survey data collections for the Federal government for 30 years. Recent projects have included surveys of long-distance truck drivers, family day care centers, operators of hydraulically fractured wells, and residents of an Indian reservation. Federal government agency clients have included Health and Human Services (NIH, CDC, Assistant Secretary for Policy and Evaluation); Agriculture (Food and Nutrition Service, Federal Grain Inspection Service); Commerce (Census, Patent and Trademark Office); Education; Environmental Protection Agency; Labor (OSHA, Bureau of Labor Statistics); Justice; Housing and Urban Development; Energy Information Administration; and Treasury.

I am an internationally recognized consultant in improving the quality of data collection and reporting, having been invited to conduct training sessions for the Swedish, Norwegian, and Finnish Governments on improving the quality of their data collection activities. I have conducted and reported on audits of Danish, The Netherlands, and South African

government data collection procedures. I have also appeared as an expert witness before Federal, state, and local governments.

I have appeared as an expert witness in only one other court case. In the voter ID case State of Texas v. Eric Holder, Jr. (Case No. 1:12-v-00128), I appeared on behalf of the interveners reviewing the survey results presented by the State of Texas and the Court of Appeals cited and credited my opinions on that survey and survey methodology in its opinion.

The American Statistical Association is the largest organization of statisticians in the world. I have served on its Board of Directors (2009-2011); been elected a Fellow (2004); chaired its Scientific and Public Affairs Advisory Committee (2005-2010); served as Program Chair Elect and Chair of its Survey Research Methods Section (2007-2008); and received a Distinguished Achievement Award (2008) from, and been Liaison Officer (1998-2004) for, its Section on Statistics and the Environment.

I recently served as Chair of the Nominating Committee of the International Association of Survey Statisticians (2010), a section of the International Statistical Institute, of which I am an Elected Member (2001). I was a member of the National Academy of Sciences Panel on Research and Development Priorities for the U.S. Census Bureau's State and Local Government Statistics Program (2006-2007) and two NAS workshops. In five different years I have served as a Panel Member for the U.S. Census Bureau Director's Award for Innovation. I have also served as President Elect, President, and Past President of the Washington Statistical Society (2002-2005).

I have served on the Organizing Committees for both the Third International Conference on Establishment Surveys (Montreal Canada, 2007) and the International Conference on Improving Surveys (Copenhagen, Denmark, 2002). I am currently an Associate Editor of the *Journal of Official Statistics* and have been a referee for the *Journal of the American Statistical Association*, *Journal of Official Statistics*, *Journal of the Royal Statistical Society, Journal of Survey Statistics and Methodology, Statistical Science, Public Opinion Quarterly,* and *Metron*. I have published a dozen journal articles and chapters in four books.

My hourly rate is $250 per hour, which I am charging to the Petitioners in this case. My curriculum vitae is attached as Exhibit A.

2. Overview

I have been asked to review and respond to the submission and testimony of Dr. Matt Barreto at the Preliminary Injunction hearing, his cross-examination, and the Commonwealth Court's first preliminary injunction opinion as it relates to Dr. Barreto's testimony and survey methodology.

3. Findings

There are three main issues I would like to discuss: (1) the survey estimate of hundreds of thousands of Pennsylvania citizens who do not have one of the forms of ID required for voting under Pennsylvania law; (2) the number of citizens without a PennDOT ID with

another acceptable form of ID is small; and (3) whether a survey can estimate knowledge of the existence and substance of a law.

3.1 Citizens without one of the specified forms of identification

The survey found (Table 1) that 12.8% of registered voters, 1,055,000 (95% confidence interval ±165,000), don't have one of the acceptable forms of ID, with many others not knowing they would need one of these. The similar estimates for eligible voters are 14.4% and 1,364,000 (±180,000). Of these voters, somewhat less than one-third of those without a valid ID were a result of a non-conforming name (4.1% out of 12.8% for registered voters) (Table 4). Excluding name conformity, the survey found that 8.7% of registered voters, 717,000, don't have one of the acceptable forms of ID.

These survey estimates are based on a random digit dialing (RDD) survey of 1,285 responding eligible voters, 1,097 of whom were registered to vote. The survey included cell phone numbers as well as landlines. (Poor quality surveys are often restricted to those with landlines. Landlines are generally easier to contact, but can exclude a quarter of all households, and those with only landlines under represent the young, poor, and other parts of the population.) Three attempts were made to contact each sampled number during a field period of 12 days (June 21-July 2, 2012). The survey achieved a 24% response rate.

The cross-examining lawyer and the judge raised questions about the accuracy of the survey results. In particular, the cross-examining attorney raised concern that with only a 12-day field period it is likely that "this might be during a vacation season and people would not be home." He suggested this might introduce bias in the results. The Judge in his initial opinion wrote that "he had doubts about the survey execution: response rate; and timing," raising a concern that with a 24% response rate there is potential for bias if the nonrespondents are not similar to those who do participate.

It is true that there are inherent limitations whenever one samples a portion of the population to draw inferences about the overall population. Like all surveys, Dr. Baretto's methodology and results must be carefully analyzed to assure that the survey was properly conducted and the results properly interpreted. Based on my experience and well-accepted standards for conducting surveys of this kind, the methods described by Dr. Baretto are consistent with high quality public opinion surveys.

In particular, Dr. Baretto's response rate of 24% is well within what is considered reliable for this type of survey, he properly analyzed his data to minimize biases, and the conclusions he presented reliably flowed from that data. In light of the Court's concerns about response rates, I have analyzed Dr. Baretto's survey for identified sources of potential nonresponse bias, examined how he addressed potential bias, and asked whether any remaining potential biases call into question the results. I found that Dr. Baretto's survey strongly supports the conclusion that there are hundreds of thousands of Pennsylvania voters who lack acceptable ID under Act 18.

The Pew Research Center is often considered a leader in public opinion surveys. Last year they reported on recent trends in the field (Pew, 2012). They described how their standard

survey has a maximum of 7 calls over 5 days and obtains a 9% response rate; while their high-effort survey makes 25 call attempts on landlines and 15 to cell phones over two and a half months, plus advance letters, refusal conversion efforts, and a financial incentive for participation. This increased effort achieves a 22% response rate. Thus the 24% response rate achieved in the submitted survey is consistent with a well-run survey.

Federal government-sponsored surveys frequently are able to achieve a higher response rate to minimize these potential biases. This is accomplished through longer field periods, more attempts to each telephone number, mailed reminders (to those with known addresses), financial incentives, and even in-person visits. Given the time limits necessitated by the pending hearing and other practical limitations in a survey of this kind, Dr. Baretto could not reasonably utilize all of these techniques to increase response rates. As a comparison, here are recent typical response rates for Federal government sponsored surveys, such as those done by the Census Bureau or Westat, where the data are to be used for policy purposes.

- High quality in-person surveys (e.g. U.S. American Community Survey (ACS) or the National Health and Nutrition Examination Survey (NHANES)) achieve response rates at or above 80 percent.

- Telephone surveys from a list of phone numbers typically achieve response rates of 30 to 50%.

- Telephone surveys using random digit dialing (RDD, not a list of known phone numbers) where anyone can answer for the household achieve 30 to 50%.

- RDD surveys with a randomly selected adult respondent needing to respond (so a call back to reach that specific respondent is often needed) can achieve 20 to 30%.

Dr. Baretto's survey falls into the second-to-last last category -- a random digit dialing survey requiring a response from any adult voter. His 24% response rate is consistent with the response rates typically achieved for such surveys.

The U.S. Office of Management and Budget requests that any "survey with an overall unit response rate of less than 80 percent conduct an analysis of nonresponse bias." (OMB, 2006) I conducted such an analysis as described below.

As the Court recognized, the importance of achieving a high response rate is that it protects against the situation where the non-respondents are different than the respondents even after what can be done with weighting. So are those who are on vacation similar to those who were available, after controlling for age, race, and sex? Typically the answer is that for many questions respondents and non-respondents are very similar, but for a few key items they can be quite different.

The cross-examining attorney suggested that people who take a week long vacation are probably more likely to have a driver's license than the average resident (since many will drive on vacation and have higher income). Assuming that concern to be true, it is important to recognize that the only ones who weren't able to be reached by the survey are

those on vacation without a cell phone, which is a fairly limited group. Regardless, let's assume that all those on vacation are half as likely to be without an ID as respondents. Even if those on vacation account for the entire 76% who didn't respond (clearly an overstatement), it would imply that 7.9%[1] of registered voters don't have an ID, 660,000. (For eligible voters the corresponding estimates are 9.0% and 853,000.) Thus, even assuming that the cross-examining attorney's concerns had merit, Dr. Baretto's survey still shows that hundreds of thousands of Pennsylvania voters lacked acceptable ID.

It is also important to note that nonresponse bias could run the other way -- that is, Dr. Baretto's survey underestimated the number of Pennsylvanians without a valid ID. For example, Pew (2012) compared their survey respondents (with a 22% response rate, similar to Baretto's 24%) to those from the Current Population Survey (CPS) conducted by the U.S. Census Bureau, which obtains a 91% response rate. The Pew survey overrepresented college graduates (33% instead of 28%) and underrepresented those with high school or below (36% instead of 43%). According to Table 23, only 7.7% of Pennsylvania registered voter college graduates are without a valid ID, while 14.2% without a high school degree and 13.1% of those with only a high school degree are lacking a valid ID. So over representing college graduates will underestimate Pennsylvanians without a valid ID.

Dr. Baretto also properly adjusted his results to minimize potential bias. One important method for improving survey estimates when there are many nonrespondents is to adjust the survey weights so that the total distribution matches known totals from high quality government surveys such as the American Community Survey (ACS). That Dr. Baretto did this by "raking" to ACS totals is an important quality step. Raking is a process where you make sure that the totals match on multiple dimensions, for example by age, race, and sex. (The name comes from the concept of smoothing a garden. If the soil has hills and valleys and you want to make it all even and flat; you rake the soil in one direction (say east-west) and then the opposite direction (north-south). You then repeat this raking process until it is flat in both directions.) Here, Dr. Baretto had to make only small adjustments. The fact that the adjustments to Dr. Baretto's survey were small indicates that the survey in fact was able to get participation from similar percentages of residents of different ages, race and sex.

The trial judge also expressed concern about how the survey treated the requirement of Act 18 that your name on an ID must "substantially conform" with that on the voter list. Since it is unknowable how this term will be interpreted by election judges across the state, the survey asked if the name on your ID is "your full legal name, exactly as it would appear on the Pennsylvania voter registration record." Clearly some of those who don't exactly match will be judged to substantially conform, for example "Rich" for "Richard", but some also will be judged not valid, for example the many people who changed their name upon getting married and haven't updated their ID. As noted above, according to Table 4, somewhat less than one-third of those without a valid ID were a result of a non-conforming name (4.1% out of 12.8% for registered voters). Since at least some of these will not be acceptable, it is clear that the treatment of "substantially conform" does not affect the basic findings of the survey that hundreds of thousands are without a valid ID.

[1] .24*.128+.76*.064=.0790

The above analyses of potential nonresponse bias show that reporting the number of Pennsylvanians without an ID to be in the many hundreds of thousands can be reported with high confidence notwithstanding the concerns expressed in the trial judge's opinion last year about potential nonresponse bias.

3.2 Citizens without a PennDOT ID but with another specified form of ID

Table 3 shows that approximately 10% of Pennsylvanians don't have a PennDOT ID (9.3% of registered voters, and 10.7% of eligible). At the time of the survey only 0.6% had another form of valid non-expired ID but not a PennDOT ID. In the last year this number has probably grown as some institutions have added expiration dates to their standard ID. I am aware that many colleges and universities in Pennsylvania in particular have added expiration dates to their IDs since the survey was conducted. This raises the question of whether it is still true that the vast majority of those voters who lack a PennDOT ID do not have another form of acceptable ID.[2]

According to the U.S. National Center for Education Statistics, in the fall of 2011 there were 788,000 people enrolled in degree-granting institutions in Pennsylvania (NCES, 2012). However, it appears that few of those without a PennDOT ID are students. The survey results found that only 3.2% of those without an ID were under 25 years old, with another 10.1% not providing their age. Nearly half (48.1%) reported being at least 50 years old. So even with many Pennsylvania schools now providing IDs with expiration dates, this won't have much of an impact on the number of registered voters without a valid ID.

3.3 Survey estimates of knowledge of law

Judge Simpson determined the survey results "to be not credible" regarding public knowledge of the voter ID law in Pennsylvania because they "were contrary to testimony by most, perhaps all, of the lay witnesses who testified for Petitioners." Lay witnesses who participated in the injunction hearing are by definition aware of the law in question. In contrast, a survey provides a large, widespread cross-section of the entire state. While those testifying may represent actively involved Pennsylvanians (or became educated about the law ***because*** they were testifying), the survey describes the state of knowledge of average citizens across the State at the time the survey was conducted.

4. Conclusions

Dr. Baretto presented evidence based on a telephone survey of Pennsylvania residents conducted in late June and early July of 2012. The description of the survey shows it to be consistent with high quality public opinion surveys. By weighting the results to be consistent with control totals found in high-quality government surveys, Dr. Baretto improved the

[2] I also understand that fewer than 17,000 free PennDOT or DOS IDs for voting have been issued since Act 18 was adopted. Some of those IDs were issued after the survey was conducted. But these issuance numbers are too small to materially affect the survey findings.

reliability of the survey estimates. Even recognizing the possible biases that may exist with a 24% response rate, it is clear that:

- The survey reliably estimated that approximately 1,000,000 registered voters, and more than 1,000,000 eligible voters in Pennsylvania did not have a valid ID according to Act 18 when requiring an exact name match;

- The survey reliably estimated that approximately 700,000 registered voters and approximately 950,000 eligible voters in Pennsylvania did not have a valid ID according to Act 18 ignoring name mismatches.

- Based on the survey results, few of those without a valid ID are students, so revised formats for school IDs will not change these estimates and the survey's finding remains true that the vast majority of voters who lack a PennDOT ID also lack another form of acceptable ID; and,

- Survey estimates are a more reliable method for understanding the general population's knowledge of a law than anecdotal evidence based on selected participants in a court case.

I reserve the right to add to my testimony based on proceedings at the trial. I declare under penalty of perjury that this report is true and correct to the best of my knowledge.

Dated: June 30, 2013

Respectfully submitted,

David A. Marker
Columbia, Maryland

References

National Center for Education Statistics (2012) Digest of Education. http://nces.ed.gov/programs/digest/d12/tables/dt12_242.asp

Office of Management and Budget (2006). Standards and Guidelines for Statistical Surveys. http://www.whitehouse.gov/sites/default/files/omb/assets/omb/inforeg/statpolicy/standards_stat_surveys.pdf

Pew Research Center for the People & the Press (2012). Assessing the representativeness of public opinion surveys. http://www.people-

press.org/2012/05/15/assessing-the-representativeness-of-public-opinion-surveys/

Source Material

Expert Report of Dr. Matt Barreto

Trial testimony of Dr. Barreto

August 2012 Court Opinion, *Applewhite v. Commonwealth*

Survey data from Dr. Barreto

Transcript of June 5, 2013 Deposition of Ron Ruman

September 2012 PennPIRG report available at http://www.pennpirg.org/reports/pap/good-bad-ugly-colleges-voter-protection-actions-preventing-student-disenfranchisement-pa

April 2012 PennPIRG report available at http://www.pennpirg.org/news/pap/vast-majority-pa-college-ids-not-valid-voting

David A. Marker, Ph.D.

Summary

Dr. David Marker is a senior statistician and Associate Director with 30 years of experience in data collection, survey research, sampling, survey evaluation, data analysis, imputation, modeling, project management, quality control and improvement, and small area statistics. Dr. Marker's primary field of study was survey sampling, both classical and Bayesian approaches. His Ph.D. dissertation topic was small area estimation. He has worked on studies in the fields of health, housing, energy, social services, transportation, and the environment, as well as in the commercial sector. Dr. Marker is an internationally recognized consultant in total quality management, having been invited to conduct training sessions for the Swedish, Norwegian, Finnish, and South African Governments on improving the quality of their data collection activities. Dr. Marker has also appeared as an expert witness before Federal, state, and local governments. In 2012 he appeared as an expert witness on surveys in the case of State of Texas v. Eric H. Holder Jr.

Education

Ph.D., Biostatistics, University of Michigan, Ann Arbor, 1995
M.A., Statistics, University of Michigan, Ann Arbor, 1980
B.S., Mathematics, University of Maryland, 1978

Relevant Project Experience

Westat (1983 to Present) – Senior Statistician and Associate Director

Professional Achievements

American Statistical Association: Board of Directors (2009-2011); Elected Fellow (2004); Chair, Scientific and Public Affairs Advisory Committee (2005-2010); Program Chair Elect and Chair, Survey Research Methods Section (2007-2008); Distinguished Achievement Award (2008) and Liaison Officer (1998-2004), Section on Statistics and the Environment
Chair, Nominating Committee, International Association of Survey Statisticians (2010)
Member, National Conversation on Public Health and Chemical Exposures Monitoring Working Group, Centers for Disease Control and Prevention (2009-2010)
Organizer, American Statistical Association Workshop on a Statistical Consensus on Climate Change, Boulder, CO (2007)
Member, National Academy of Sciences Panel on Research and Development Priorities for the U.S. Census Bureau's State and Local Government Statistics Program (2006-2007)
Member, Organizing Committee, Third International Conference on Establishment Surveys (2005-2007)
Washington Statistical Society: President Elect, President, Past President (2002-2005); Elected Member, Board of Directors (1997-1999); Methodology Program Chair (1988-1989)
Elected Member, International Statistical Institute (2001)

Panel Member, Director's Award for Innovation, U.S. Census Bureau (2004, 2005, and 2009)
Member, Organizing Committee, International Conference on Improving Surveys, Copenhagen, Denmark, August 2002
Member, Transportation Research Board Roundtable on Personal Travel Surveys (2001-2003)
Member, National Technical Advisory Committee for the National Jewish Population Survey 2000 (1998-2003)
Member, National Review Board for the Schools and Staffing Survey, National Center for Education Statistics (1989-1996)
Co-organizer and Speaker, Quality Assurance in Government Symposia, Washington Statistical Society (1988-1992, 2003)
Member, Workshops on Small Area Estimation for the Defense Manpower Data Center and Methodological Approaches to the Preparation of Small Area Estimates, National Academy of Sciences
Associate Editor, *Journal of Official Statistics*
Referee: *Journal of the American Statistical Association*, *Journal of Official Statistics*, *Journal of the Royal Statistical Society, Statistical Science, Public Opinion Quarterly, Journal of Survey Statistics and Methodology,* and *Metron*

Selected Publications, Reports, and Presentations

Publications and Reports

Lee, H.J., and Marker, D.A. (2011). Resampling variance estimation for two-phase sample. *Proceedings of the Survey Research Methods Section of the American Statistical Association.*

Deziel, N.C., Viet, S.M., Rogers, J.W., Camann, D.E., Marker, D.A., Heikkinen, M.S., Yau, A.Y., Stout, D.M., II, and Dellarco, M. (2011). Comparison of wipe materials and wetting agents for pesticide residue collection from hard surfaces. *Science of the Total Environment.* [Epub ahead of print]

Marker, D.A., and Stevens, D. (2009). Sampling and inference in environmental surveys. In D. Pfeffermann and C.R. Rao (Eds.), *Handbook of statistics 29A—Sample surveys: Inference and analysis* (pp. 487-512). Amsterdam: North Holland.

Marker, D.A. (2008). Methodological review of "Mortality after the 2003 invasion of Iraq: A cross-sectional cluster sample survey." *Public Opinion Quarterly*, 72(2), 345-363.

Martin, J., and Marker, D.A. (2007). Informed consent: Interpretations and practice on social surveys. *Social Science and Medicine*, 65, 2260-2271.

Marker, D.A., and Machado, J. (2007). Web usage in a business panel survey. *Proceedings of the 2007 International Conference on Establishment Surveys* [CD-ROM]. Alexandria, VA: American Statistical Association.

Czajka, J.L., and Marker, D.A. (2007). Recommendations for and research and development priorities for the Census Bureau State and Local Government Statistics Program. *Proceedings*

of the 2007 International Conference on Establishment Surveys [CD-ROM]. Alexandria, VA: American Statistical Association.

Marker, D.A., Wool, M., and Bergeron, E. (2006). *British Columbia Copyright Survey* (Prepared under contract to the Common Business Services Division, British Columbia Provincial Government). Rockville, MD: Westat.

Marker, D.A., and Morganstein, D.R. (2004). Keys to successful implementation of continuous quality improvement in a statistical agency. *Journal of Official Statistics,* 20(1), 125-136.

Marker, D. (2004). Using real-time process measures to improve data collection. *Proceedings of the European Conference on Quality and Methodology in Official Statistics,* p. Q2004.

Mode, N.A., Conquest, L.L., and Marker, D.A. (2002). Incorporating prior knowledge in environmental sampling: Ranked set sampling and other double sampling procedures. *Environmetrics*, 13, 513-521.

Jacobs, D.E., Clickner, R., Zhou, J.Y., Viet, S.M., Marker, D.A., Rogers, J.W., Zeldin, D.C., Broene, P., and Friedman, W. (2002). The prevalence of lead-based paint hazards in U.S. housing. *Environmental Health Perspectives*, A599-A606.

Vojta, P.J., Friedman, W., Marker, D.A., Clickner, R.P., Rogers, J.W., Viet, S.M., Muilenberg, M.L., Thorne, P.S., Arbes, S.J., and Zeldin, D. (2002). First National Survey of Lead and Allergens in Housing: Survey design and methods for the allergen and endotoxin components. *Environmental Health Perspectives*, 110, 527-532.

Rogers, J., Marker, D., and Broene, P. (2002). *Comparison of composite samples and individual samples of lead from the NSLAH* (Prepared under contract to the National Research Center for Statistics and the Environment). Rockville, MD: Westat.

Marker, D.A. (2001). Producing small area estimates from national surveys: Methods for minimizing use of indirect estimators. *Survey Methodology*, 27(2), 183-188.

Marker, D.A., and Morganstein, D.R. (2001). Comments on "Can a statistician deliver?" by Platek, R., and Särndal, C.E. *Journal of Official Statistics*.

Marker, D.A., Judkins, D.R., and Winglee, M. (2001). Imputation in large-scale complex surveys. In B. Groves et al. (Eds.), *Survey nonresponse* (pp. 329-341). New York, NY: John Wiley and Sons.

Shapiro, G., Utter, D., Mix, W., Croos, J., Marker, D., and Bondy, N. (2001). Sample design issues for surveys involving the observation of drivers. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Waksberg, J., Levine, D., and Marker, D. (2000). *Assessment of major Federal data sets for analyses of Hispanic and Asian or Pacific Islander subgroups and Native Americans. Task 2 report: Inventory of selected existing databases* (Prepared under contract to the U.S. Department of Health and Human Services). Rockville, MD: Westat.

Marker, D., and Morganstein, D. (2000). A conversation with Joseph Waksberg. *Statistical Science,* 15(3), 299-312.

Marker, D.A. (1999). Organization of small area estimators using a generalized linear regression framework. *Journal of Official Statistics,* 15(1), 1-24.

Mode, N.A., Conquest, L.L., and Marker, D.A. (1999). Ranked set sampling for ecological research: Accounting for the total cost of sampling. *Environmetrics*, 10, 179-194.

Judkins, D., Marker, D.A., and Waksberg, J. (1999). *National Health Interview Survey: Research for the 1995-2000 redesign* (NCHS Series 2, Number 126). Hyattsville, MD: National Center for Health Statistics.

Marker, D.A., Mode, N.A., and Conquest, L.L. (1999). When is ranked set sampling the appropriate sampling design? *Proceedings of the Survey Research Methods Section of the American Statistical Association.*

Yansaneh, I.S., Wallace, L., and Marker, D.A. (1998). Imputation methods for large complex datasets: An application to the NEHIS. *Proceedings of the Survey Research Methods Section of the American Statistical Association,* pp. 314-319.

Marker, D.A., Alecxih, L., and Corea, T. (1998). *Deriving state-level estimates from three national surveys: A statistical assessment and state tabulations* (Prepared under contract to the Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health and Human Services). Rockville, MD: Westat.

Morganstein, D., and Marker, D.A. (1997). *Continuous quality improvement in statistical agencies.* In L. Lyberg et al. (Eds.), *Survey methodology and process quality* (pp. 475-500). New York: John Wiley & Sons.

Marker, D.A., and Edwards, W.S. (1997). Quality of the DMI file as a business sampling frame. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Marker, D.A., Bryant, E., Wallace, L., and Yansaneh, I. (1996). *National Employer Health Insurance Survey (NEHIS) Final methodology report. Volume I: Statistical methodology* (Prepared under contract to the National Center for Health Statistics). Rockville, MD: Westat.

Marker, D.A. (1995). *Small area estimation: A Bayesian perspective.* Unpublished doctoral dissertation. University of Michigan, Ann Arbor, MI.

Marker, D.A., and Allen, B. (1995). Unit eligibility and response rates in the 1994 NEHIS. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Wallace, L., Bryant, E.C., Chapman, D.W., Marker, D.A., and Moriarty, C.L. (1995). Weighting and estimation procedures for the 1994 NEHIS. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Kalton, G., Levine, D., Marker, D., and Sharp, L. (1994). *Methods to enumerate persons with no usual place of residence using sampling and estimation* (Prepared under contract to the U.S. Bureau of the Census). Rockville, MD: Westat.

Marker, D.A., Bryant, E., and Moriarty, C. (1994). National Employer Health Insurance Survey sample design. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Marker, D., and Waksberg, J. (1994). Small area estimation for the U.S. National Health Interview Survey. *Statistics in Transition* (Warsaw)*,* 1(6), 747-768.

Sirken, M.G., and Marker, D.A. (1993). Dual frame sample surveys based on NHIS and state RDD surveys. *Proceedings of the 1993 Public Health Conference on Records and Statistics.*

Marker, D. (1993). Small area estimation for the National Health Interview Survey. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Marker, D.A., and Ryaboy S. (1993). The quality of environmental databases. In C.R. Cothern and N.P. Ross (Eds.), *Environmental statistics, assessment and forecasting* (pp. 315-329). Boca Raton, FL: Lewis Publishers.

Marker, D., Waksberg, J., and Athey, L. (1990). Identifying geographic location from respondent interviews using RDD surveys. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Marker, D. (1989). Computing jackknife variance estimates with certainty and noncertainty PSUs. *Proceedings of the American Statistical Association Section on Survey Research Methods.*

Marker, D., Bryant, E., Flyer, P., Michael, J., and Morganstein, D. (1988). *Five scenarios for detecting ground-water contamination* (Prepared under contract to the Environmental Protection Agency). Rockville, MD: Westat.

Marker, D., and Morganstein, D. (1988). Statistical process control; why we need it. In J. Mortimer (Ed.), *Statistical process control: An IFS executive briefing.* IFS Publications United Kingdom, Springer-Verlag.

Marker, D., Waksberg, J., and Braden, J. (1988). *NEISS sample update: Final report* (Prepared under contract to the Consumer Product Safety Commission). Rockville, MD: Westat.

Marker, D., and Morganstein, D. (1988). SPC for tube fabrication. *The Fabricator,* May/June.

Marker, D. (1987). *Technical review of statistical methodology for variance estimation of ground-water data* (Prepared under contract to the Environmental Protection Agency). Rockville, MD: Westat.

Marker, D., Michael, J., and Flyer, P. (1987). Statistical test procedures for measuring ground-water contamination. *Proceedings of the American Statistical Association Social Statistics Section.*

Dietz, S.K., Light, H., and Marker, D. (1984). *Survey of shelters for the homeless* (Prepared under contract to the Agency for Housing and Urban Development). Rockville, MD: Westat.

Dietz, S., Marker, D., and Waksberg, J. (1984). *Voucher demonstration site selection and weighting procedures* (Prepared under contract to the Agency for Housing and Urban Development). Rockville, MD: Westat.

Kuchak, J., West, W., Pogozelski, M., Miller, W., and Marker, D. (1983). *A study of child care users and providers in Montgomery County* (Prepared under contract to the Montgomery County Department of Family Services).

Marker, D. (1983). Organization of small area estimators. *Proceedings of the American Statistical Association Survey Research Section.*

West, W., Marker, D., and Cohen, M. (1983). *Review and analysis of imputation procedures* (Prepared under contract to the Energy Information Administration).

Burton, B., and Marker, D. (1982). *Imputation and estimation procedures for the EIA-782 Survey* (Prepared under contract to the Energy Information Administration).

Presentations

Smith, M., Marker, D.A., Rogers, J., and Clickner, R. (2011, August). *Statistical models for developing national limitations on water pollution discharges by industry*. Invited presentation at the World Statistical Congress, Dublin, Ireland.

Marker, D.A. (2008, June). *Statistics and public policy*. Presentation to the RAND Corporation, Pittsburgh, PA.

Marker, D.A. (2002, August). *Improving the quality of surveys*. Keynote presentation at the International Conference on Improving Survey, Copenhagen, Denmark.

Marker, D.A. (2001, November). *Statistical methods for efficient data collection in large-scale exposure and epidemiological studies*. Invited presentation at the 11th Annual Meeting of the International Society of Exposure Analysis, Charleston, SC.

Marker, D. (2001, April, and 1999, August). *Producing small area estimates from national surveys: Methods for minimizing use of indirect estimators.* Invited presentations at the International Conference on Small Area Estimation and Related Topics, Potomac, MD, and the International Conference on Small Area Estimation, Riga, Latvia.

Burr, M.A., Levin, K.Y., Marker, D., and Becher, A. (2000, May). *Computing adjustment factors for introducing a middle alternative in two customer satisfaction studies.* Presented at the 55th Annual Conference of the American Association for Public Opinion Research, Portland, OR.

Marker, D., and Morganstein, D. (1999, August). *Continuous quality improvement in statistical agencies* (2-day short course). Presented in conjunction with the 52nd Meeting of the International Statistical Institute, Riga, Latvia.

Marker, D. (1999, May). *Sample designs for environmental data collection: Ranked set sampling and composite sampling*. Presented at the Environmental Protection Agency Conference on Environmental Statistics and Information, Philadelphia, PA.

Marker, D., and Lyberg, L. (1998, March). *Continuous quality improvement in statistical agencies* (2-day short course). Presented by the Joint Program in Survey Methodology, Crystal City, VA.

Marker, D., and Morganstein, D. (1997, August). *Continuous quality improvement in a statistical agency* (workshop). Presented at the 51st Meeting of the International Statistical Institute, Istanbul, Turkey.

Marker, D.A. (1995, April). *Discussion of small area estimation papers by Malec and Sedransk and by Fay*. Presented at the Seminar on New Directions in Statistical Methodology, Office of Management and Budget.

Marker, D.A., and Morganstein, D.R. (1995, March). *Discussion of small area estimation papers by Malec and Sedransk and by Falorsi, Falorsi, and Russo*. Presented at the Annual Research Conference, U.S. Bureau of the Census, Washington, DC.

Marker, D., and Morganstein, D.R. (1995, April). *TQM in a statistical agency*. Short course tutorial presented at the International Conference on Survey Measurement and Process Quality, Bristol, England.

Marker, D. (1994, January). *TQM in the service sector*. Short course tutorial presented at the American Statistical Association Winter Meeting, Atlanta, GA.

Marker, D. (1993, June). *Quality improvement of a large-scale customer satisfaction survey*. Invited presentation at the Quality and Productivity Research Conference, Knoxville TN.

Marker, D. (1993, August; 1992, October). *Small area estimation for the National Health Interview Survey*. Invited presentations at the American Statistical Association meetings in San Francisco, CA, and the International Conference on Small Area Statistics and Survey Designs, Warsaw, Poland.

Marker, D., and Morganstein, D. (1990, June; 1991, September). *Statistical methods for quality assurance*. Presented to the Washington Statistical Society Quality Assurance in the Government Symposium, Washington, DC.

Marker, D. (1991, August). Discussant for three papers on survey design and small area estimation at the Demographic and Health Surveys World Conference, Washington, DC.

Marker, D. (1991, August). *Quality control activities for data collection systems*. Presented to the Energy Information Administration.

Marker, D. (1991, April). *Statistical methods for quality improvement of surveys*. Presented to the Institute for Social Research, University of Michigan, Ann Arbor, MI.

Marker, D. (1991, January). *Sample designs in the presence of temporal variability*. Presented to the American Statistical Association Winter Conference, New Orleans, LA.

Marker, D. (1990, December). *Statistical methods for quality improvement*. Presented to Statistics Sweden, Vasteras, Sweden.

Marker, D., and Morganstein, D. (1988, May; 1989, May). *What is quality?* Presented to the Washington Statistical Society Quality Assurance in the Government Symposium, Washington, DC.

Burton, B., and Marker, D. (1982). *Imputation issues related to the EIA-782*. Presented at the Small Conference on the Improvement of the Quality of Data Collected by Data Collection Systems, Oak Ridge, TN.