

Matthew F. Bingham, Principal Economist

Veritas Economic Consulting

1851 Evans Road, Cary, NC 27513

PRACTICE AREAS

- Fisheries Economics
- Survey Research
- Survey Design
- Econometrics
- Water Resource Economics

EXPERTISE

- Mathematical Modeling
- Statistical Analysis
- Market & Nonmarket Valuation
- Benefit-Cost Analysis

EDUCATION

M.S., Economics, University of North Carolina at Chapel Hill, 1996

B.A., Economics, North Carolina State University, Raleigh, NC, 1992

RECENT PUBLICATIONS

- Bingham, M.F., Z. Li, K.E. Mathews, C. Spagnardi, J. Whaley, S. Veale, and J. Kinnell. 2011. "An Application of Behavioral Modeling to Characterize Urban Angling Decisions and Values." *North American Journal of Fisheries Management* 31:257–268.
- Ray, R., V. Craven, J. Kinnell, M. Bingham, M. Freeman, and B. Finley. 2007. "A Statistical Method for Analyzing Data Collected by a Creel/Angler Survey (Part 2)." *Journal of Toxicology and Environmental Health, Part A* 70:496–511.
- Johnson, F.R., M.F. Bingham, and B. Kanninen. 2006. "Experimental Design for Stated Choice Experiments." In *Valuing Environmental Amenities Using Stated Choice Studies: A Common Sense Approach to Theory and Practice*, ed. B. Kanninen. Dordrecht, The Netherlands: Springer.

Mr. Bingham is a Principal Economist and Founding Partner of Veritas Economic Consulting (Veritas). He has led Veritas' custom modeling design and development efforts which have included designing, administering, and analyzing the results of complex scientific surveys. Mr. Bingham has designed, pretested, administered, and analyzed the results of more than 19 complex scientific surveys, and he has developed the experimental design of numerous discrete choice experiments. Specific examples of Mr. Bingham's survey research experience and expertise include each of the following:

- Developed the experimental design and econometrically modeled the results of the discrete choice experiment in the 2013 New Jersey Outdoor Recreation Survey (Bingham et al., 2014).
- Integrated data from two population surveys of recreational fishing (2013 and 2000 New Jersey Outdoor Recreation Surveys) with two on-site recreational fishing studies (2011-12 and 2000-01 Passaic River Creel/Angler Surveys) to estimate baseline risk fish consumption (Kinnell and Bingham 2014).
- Developed a bio-economic model of the New England and Gulf of Mexico commercial fisheries to evaluate the biological and economic effect of catch shares in each fishery (Bingham et al., 2010)
- Developed the experimental design of the discrete choice experiment in the 2015 and 2018 Electricity Service Plan Surveys. Used the results to develop an electricity service plant market size adoption model to estimate electricity customers' preferences for electricity service plans (EPRI 2019; Neenan et al., 2016).

Mr. Bingham has provided and/or presented the results of his models for policy analysis, regulatory impact analysis, regulatory compliance, expert testimony, and litigation support. The results of Mr. Bingham's research have been used by and/or presented and submitted to the U.S. House of Representatives, Electric Research Power Institute (EPRI), the U.S. EPA, NOAA, the U.S. Dept. of the Interior (DOI), the U.S. Fish & Wildlife Service (USFWS), the U.S. Army Corps of Engineers (USACE), the Federal Energy Regulatory Commission (FERC), the CA Regional Water Quality Control Board, the FL Dept. of Environmental Protection (FADEP), MI Dept. of Natural Resources (MDNR), the NJ Dept. of Environmental Protection (NJDEP), the NJ Office of Maritime Resources (NJOMR), the PA Dept. of Environmental Protection (PADEP), the RI Dept. of Environmental Management (RIDEM), the TX Commission on Environmental Quality, the TX Parks & Wildlife Dept., and the WI Dept. of Natural Resources.

KEY PROJECTS

Designed and analyzed the results of the 2013 Alaska Outdoor Recreation Survey

Designed, pretested, administered, and analyzed the results of the 2014 Electricity Service Plan Survey

Experience

Veritas Economic Consulting, Cary, NC
Principal Economist and Founding Partner, 2006 to present

Triangle Economic Research, Durham, NC
Senior Economist, 2000 to 2006
Economist, 1997 to 2000

Walt Disney Attractions, Hong Kong
Risk Analyst, 1997

Environmental Controls Technology, Raleigh, NC
Head Statistician, 1995 to 1997

University of North Carolina, Chapel Hill, NC
Course Developer, 1996
Economics Instructor, 1991 to 1995

Project Experience

Survey Research, Design, and Administration

- Designed, pretested, and administered the 2018 Electricity Service Plan Knowledge, Interests, Intent, and Perceptions for Electricity Service Plans Survey (EPRI 2018).
- Designed, pretested, administered, and analyzed the results of the 2018 Electricity Service Plan Survey.
- Designed, pretested, administered, and analyzed the results of the 2016 Residential Solar Adoption Survey (EPRI 2017).
- Developed the experimental design of a discrete choice experiment to estimate electricity customers' preferences for residential solar alternatives.
- Developed the experimental design and econometrically modeled the data for the discrete choice experiment in the 2015 Electricity Service Plan Survey to estimate electricity customers' preferences for electricity service plans (Neenan et al. 2016; EPRI 2019).
- Developed a methodology for integrating revealed and stated preference survey data with on-site angler survey data to develop estimates of baseline risk fish consumption (Bingham & Kinnell 2014)
- Developed the experimental design and econometrically modeled the results of the discrete choice experiment in the 2016 Residential Solar Survey. Used the results to estimate electricity customers' preferences for residential solar alternatives and develop the Residential Solar Adoption Model (EPRI 2017a; EPRI 2017b).
- Managed the design, pretesting, administration, and analysis of the 2014 National Electricity Service Plan Survey (EPRI 2014)
- Managed the design, pretesting, administration, and analysis of the Local Power Company Electricity Service Plan Survey (the American Public Power Association's [APPA] Demonstration of Energy and Efficiency Developments [DEED] and EPRI) (EPRI 2015).

- Co-authored textbook chapter “Experimental Design for Stated Choice Experiments” (Johnson, Bingham, and Kanninen 2006).
- Designed and analyzed the results of the 2013 Alaska Outdoor Recreation Survey
- Designed intercept and mail surveys for the Alaska Energy Authority’s 2013 Susitna-Watana Hydroelectric Project to develop the demand models for fishing, hunting, and other recreation.
- Designed, pretested, administered, and analyzed of the results of the 2013 New Jersey Outdoor Recreation Survey (Kinnell and Bingham 2014; Bingham et al. 2014).
- Developed the experimental design of the discrete choice experiment in the 2013 New Jersey Outdoor Recreation Survey (Bingham et al., 2014).
- Managed the design, administration, and analysis of the 2012 Texas Electric Vehicle Survey.
- Supported the design and analysis of the 2011-2012 Lower Passaic River Creel/Angler Survey.
- Developed a preference function of urban angler site-choice decisions to estimate the benefits of urban angling improvements.
- Managed the administration and analysis of the 2011 TVA Electric Vehicle Survey.
- Managed the design, pretesting, administration, and analysis of the 2010 TVA and Southern Company Electric Vehicle Survey (Electric Power Research Institute 2011g, 2011h).
- Managed the design, pretesting, and analysis of the 2010 Survey of Water Users within the Upper Great Lakes (Veritas Economics and ECT 2011).
- Managed the design, pretesting, and training for an exposure assessment survey for a river in the Northeast.
- Develop a methodology combining on-site angler survey data with boat-based angler counts to estimate the population of urban anglers (Kinnell et al., 2007; Ray et al., 2007a; Ray et al., 2007b).
- Managed the design, pretesting, training, and administration of the Passaic River Creel/Angler Survey (Kinnell et al. 2007; Ray et al. 2007a; Ray et al. 2007b; Finley et al. 2003).
- Managed the design, pretesting, and administration of the 2000 New Jersey Outdoor Recreation Survey (Bingham et al. 2011; Kinnell et al. 2006).
- Participated in design, pretesting, and administration of a telephone-mail 1998 Wisconsin Outdoor Recreation Survey (MacNair and Desvousges 2007; Murdock 2006).

New Product Adoption

- Developed the experimental design of the discrete choice experiment in the 2015 and 2018 Electricity Service Plan Surveys. Used the results to develop an electricity service plant market size adoption model to estimate electricity customers’ preferences for electricity service plans (EPRI 2019; Neenan et al., 2016).
- Developed model to measure residential adoption of solar technology (EPRI 2017).
- Analyzed customer selection of electricity service plans (EPRI 2015).
- Developed models to measure customer expectations and purchase plans for electric vehicles (EPRI 2011g, 2011h; Neenan and Kinnell 2012).
- Developed models of choice behavior for new pharmaceutical products (Bingham, Johnson, and Miller 2001).

*Policy Analysis, Regulatory Impact Analysis, and Regulatory Compliance***Section 316(a) and (b) of the Clean Water Act**

- Currently developing r(10), (11), (12), and/or (13) regulatory submissions at more than 50 facilities throughout the United States for
 - AEP
 - Alliant
 - Consumers Energy
 - Dairyland Power Cooperative
 - Detroit Edison
 - Dominion Power
 - Duke Energy
 - Dynegy
 - Exelon
 - Florida Power and Light
 - Gulf Power
 - Hawaii Electric Company (HECO)
 - Nebraska Public Power District (NPPD)
 - Omaha Public Power District (OPPD)
 - Tampa Electric Company
 - Tennessee Valley Authority (TVA).
- Prepared various compliance documents and regulatory submissions under the 2004 version of the rule for AES, Dominion, EPRI, Exelon, LADWP, Mirant, Nebraska Public Power, Pacific Gas and Electric, PPL, Reliant, Southern Company, and Tampa Electric Company.
- Reviewed and provided comments for EPRI on EPA's Stated Preference Survey that is designed to support the development of nonuse benefits associated with plant-level impingement and entrainment reductions (EPRI 2012, 2011a, and 2010).¹
- Participated as a Principal Investigator in the following studies implemented as part of EPRI's Closed-Cycle Cooling Retrofit Research Program to evaluate the implications of the U.S. Environmental Protection Agency (EPA) establishing closed-cycle cooling retrofits as "best technology available" (BTA) for fish protection under Clean Water Act §316(b) (EPRI 2011b):
 - ♦ Supported the analysis of the national costs associated with a closed-cycle cooling retrofit requirement (EPRI 2011c)
 - ♦ Developed a national estimate of the economic benefits of a national closed-cycle cooling retrofit requirement (EPRI 2011d)
 - ♦ Analyzed the financial, economic, and reliability impacts of a national closed-cycle-cooling retrofit requirement (EPRI 2011e and 2011f).
- Provided industry-specific comments for Exelon regarding EPA's 2011 draft 316(b) Rule (Kinnell et al. 2011a, 2011b).
- Developed and integrated population-dynamic models with economic benefit estimates to conduct and submit site-specific, benefit-cost evaluations of alternative I&E reduction technologies at Huntington Beach (EPRI 2007); Salem Harbor (Kinnell et al. 2008a),

¹ See the Selected Reports section for the full citation and available location of each report.

Manchester Street (Bingham et al. 2009a), Canal (Bingham, Mathews, and Kinnell 2009), and four Midwestern generating stations (Bingham et al. 2009b, 2009c, 2009d, 2009e).

- Used Veritas' Environmental Policy Simulation Model (EPSM) to evaluate the economic, financial, and reliability impacts associated with a closed-cycle cooling retrofit requirement at Mirant's Canal Generating Station (Bingham, Mathews, and Kinnell 2009).
- Participated in industry workshops to explain the role of benefit-cost analysis in 316(b) regulations and participated in utility workshops and conferences as experts on the significance of economics in 316(b) compliance.
- Developed preliminary benefit estimates of impingement and entrainment reductions to inform the evaluation of compliance alternatives at three confidential East Coast Nuclear Generating Station, seven East Coast fossil generating stations, and the Muskingum, Jack Watson, Berry, Brunner Island, J.C. Corette, Handley, Mountain Creek, Eddystone, Cromby, Schuylkill, and Fairless Hills Generating Stations.
- Statistically modeled sampled I&E data to develop annual estimates and evaluate the reductions associated with pre-existing I&E reduction technologies. Included this analysis in regulatory submissions for the Eddystone (Kinnell et al. 2008b), Fairless Hills (Kinnell et al. 2008c), Schuylkill (Kinnell et al. 2008d), Cromby (Kinnell et al. 2008e), Handley (Kinnell et al. 2008f), and Mountain Creek (Kinnell et al. 2007) generating stations.
- Supported the development of an Expert Report on the impacts of impingement and entrainment at PGE's Diablo Canyon Plant (Bingham et al. 2005).
- Worked with the Utility Water Act Group (UWAG) and other industry groups to provide comments on the development of the 2006 Phase II 316(b) rule and the Proposed Phase III 316(b) Rule (Bingham, Desvousges, and Mohamed 2003; Desvousges et al. 2002, 2005a, 2005b, 2005c).
- Conducted strategic assessments and developed Proposals for Information Collection (PICs) to identify cost-effective 316(b) compliance options at facilities throughout the United States.

National Environmental Policy Act (NEPA)

- **Susitna-Watana Hydroelectric Project (Susitna River at Watana Creek, Alaska)**—Developed recreation demand models to evaluate the potential impacts of the Susitna-Watana Hydroelectric Project (<http://www.susitna-watanahydro.org>) on fishing, recreational boating, hunting, and snow machining (Kinnell et al. 2013). The results of Veritas' research are being conducted as part of the Socioeconomic and Transportation Resources Study Plan (AEA 2012) for use in the Federal Energy Regulatory Commission's (FERC) Integrated Licensing Process (ILP). Under the ILP, FERC staff, pursuant to the National Environmental Policy Act (NEPA), will prepare an Environmental Impact Statement (EIS), which FERC will use to determine whether, and under what conditions, to issue a license. As part of the project effort, Veritas has developed and supported the administration of the 2013 Alaska Outdoor Recreation Survey, a survey administered to 10,000 Alaska residents to collect information on their fishing, hunting, boating, and snow machining activities.
- **Socioeconomic and Incremental Analyses of Potential Dam Removal on Boardman River, Grand Traverse and Kalkaska Counties, Michigan**—The Boardman River Dams Committee considered management options for a group of hydroelectric and lake-level control structures on the Boardman River. Veritas conducted economic simulation modeling to integrate results from various disciplines, forecast changes in resource

values, and help with communication and decision-making. In a related effort to address NEPA requirements, Veritas updated the simulation model to assess the socioeconomic impacts of removing the Brown Bridge Dam only. Veritas staff produced several reports and a book chapter related to efforts on the Boardman River, including Bingham and Kinnell (2012).

- **Integrated Assessment of Restoring Natural Flows in the Clinton River Watershed, Michigan**—Veritas developed the socioeconomic components of an integrated assessment to evaluate ecologically and economically sound approaches to flow management of the Clinton River. The assessment evaluated the impact of flow regulation policies on water quality, fish and wildlife habitat, recreational opportunities in and along the river, property values, income, and taxes. Veritas created a sophisticated travel-cost-based recreation site-choice simulation model. This geospatial model simulates recreation behaviors for visitors to 132 fishing sites, 89 paddling sites, and 92 parks. Visit costs are quantified as a matrix of travel costs between every site and each ZIP code in Oakland County, Michigan. Site quality is specified at the monthly level for relevant characteristics, such as catch rate and paddling quality. Users of the model can specify site characteristics for recreational fishing, canoeing, kayaking, and park sites under both current conditions and potential management plans. Doing so enables the user to simulate resource pressure and value as well as resulting market-level economic and tax impacts under policy-relevant specifications.
- **Comprehensive Assessment of Economic and Ecological Benefits and Incremental Analysis of Potential Urban River Rehabilitation Alternatives**—Developed a conceptual framework and economic model to account for and integrate the economic and ecological benefits associated with potential urban river restoration alternatives. Analysis followed the type of assessment the US Army Corps of Engineers (USACE) would conduct to evaluate the incremental costs and benefits of restoration alternatives following its Principals and Guidelines. The analysis framework is highlighted in Deason, Dickey, Kinnell, and Shabman (2010) which received the 2011 Best Policy-Oriented Paper Award by the American Society of Civil Engineers (ASCE) and the Environmental and Water Resources Institute (EWRI). Other examples of the research efforts and corresponding results from this research can be found in Bingham et al. (2011) and Kinnell et al. (2006).

Section 169 of the Clean Air Act

- Conducted an economic assessment of the employment impacts expected to occur as a result of requiring retrofits of a confidential power plant's existing air pollution control equipment.

Sections 304 and 402 of the Clean Water Act

- Conducted an assessment of the economic and community impacts associated with the hypothetical closure of Buckeye's Foley Plant in Taylor County, Florida (Bingham et al. 2008).

Electricity Pricing

- Analyzed Oklahoma Gas & Electric variable peak pricing impacts using electricity demand models (Neenan et al. 2015).
- Measured customer preferences for alternative electricity service plans (EPRI 2015).
- Developed methods for characterizing customer preferences for electricity service plans (EPRI 2012).

Custom Models

- Designed and developed the Electric Vehicle Adoption Model which forecasts location-specific electric vehicle adoption under a variety of scenarios.
- Designed and developed regional economic-engineering models of electricity production and distribution to evaluate the economic, pricing, and production impacts associated with environmental regulations (the Environmental Policy Simulation Model).
- Designed and developed a state-of-the-art electricity reliability model that evaluates the impact of new technologies on electricity production, efficiency, and grid reliability.
- Designed and developed an economic model to account for and integrate the economic and ecological benefits associated with potential urban river restoration alternatives.
- Designed and developed the Panama Canal Route Competitive Analysis Prototype that analyzes the impacts of Panama Canal pricing schemes, and additional variables, on the relative competitiveness of the Panama Canal route.
- Developed numerous economic models to support benefit-cost analysis of best technology available (BTA) for reducing adverse environmental impacts (AEI) at individual generating stations across the country.
- Designed and analyzed complex models that explain and predict recreator behavior and visitation frequency for exposure assessments.

Benefit/Cost and Economic Impact Analysis

- Evaluating the economic impact of a mine closure in the Southwest.
- Evaluated the economic impacts of EPA's proposed regulation of coal combustion residuals (Bingham et al. 2011).
- Evaluating the economic impacts of toxic algal blooms in Lake Erie.
- Evaluated the economic impacts of management alternatives for the Boardman River Dams (Bingham and Kinnell 2012).
- Developed a framework for evaluating the benefits and costs and investments in electric vehicle infrastructure (EPRI 2010).
- Evaluated the economic impacts associated with recreational development alternatives for Doe Mountain, Tennessee (Kinnell et al. 2011c).

Natural Resource Damage Assessment and Restoration (NRDAR) and Exposure Assessment

- Developing estimates of the natural resource damages and the benefits of restoration projects for a confidential site in the Mid-Atlantic.
- Supporting the evaluation of potential natural resource damages and the exposure assessment for a confidential site in the Northwest.
- Developing a settlement package for a confidential site in the Southeast.
- Participated in the Passaic River Cooperative Assessment.
- Developed preliminary damage estimates for a confidential river and lake system in the Midwest.
- Developed damage estimates that supported the settlement process for the *Cosco Busan* NRDA.
- Assessed natural resource damages as a result of hazardous substance releases including PCBs, dioxin, and mercury.
- Analyzed survey data using random utility modeling.

- Researched the historical degradation of natural resources to develop proper estimates of baseline.
- Reviewed/critiqued trustee assessments of natural resource damages as a result of hazardous substance releases.
- Collected and evaluated existing information on the characteristics and use of recreation areas.
- Identified and evaluated relevant valuation studies in the economic literature for transfer to natural resource damage applications.
- Estimated nonmarket values for recreation activities.
- Analyzed contingent-valuation and travel-cost data on the value of recreation activities.
- Evaluated conceptual and empirical issues associated with estimating nonuse values.

Software

- Electricity Service Plan Software User Manual (EPRI 2019)
- Residential Solar Adoption Model Software (EPRI 2017).
- Electricity Service Plan Preferences Estimator Tool (EPRI 2015).
- Personal Transportation Module of the U.S. Regional Economy, Greenhouse Gas, and Energy (US-REGEN) Model (EPRI 2013).
- Environmental Policy Simulation Model (EPSM) (Veritas Economic Consulting 2011).

Expert Reports

- Helped develop an expert report and critique of Charles Cicchetti and Richard White's analysis and expert reports on recreation losses (Kinnell 2016).
- Wrote an expert report on the impacts of impingement and entrainment at PGE's Diablo Canyon Plant (Bingham et al. 2005).

Publications

Neenan, Bernard, Jason Kinnell, Matthew Bingham, and Sara Hickman. 2016. "Consumer Preferences for Electric Service Alternatives." *The Electricity Journal* 29:62–71.

Barnthouse, Lawrence W., Matthew Bingham, and Jason Kinnell. 2016. "Quantifying Nonuse and Indirect Economic Benefits of Impingement & Entrainment Reductions at U.S. Power Plants." *Environmental Science and Policy* 60:53–62.

Bingham, M.F., J.C. Kinnell. 2014. "EPA's New 316(b) Rule and the Opportunity of Social Costs." *Power* 158(9)48,51–54

Bingham, M.F., and J.C. Kinnell. 2012. "The Role of Socioeconomic and Behavioral Modeling in an Integrated, Multidisciplinary Dam-Management Study: Case Study of the Boardman River Dams." In *Environmental Land Use Planning*, Seth Appiah-Opoku, ed. ISBN 978-953-51-0832-0. Rijeka, Croatia: InTech. Available at <http://www.intechopen.com/articles/show/title/the-role-of-socioeconomic-and-behavioral-modeling-in-an-integrated-multidisciplinary-dam-management->

Bingham, M.F., Z. Li, K.E. Mathews, C. Spagnardi, J. Whaley, S. Veale, and J. Kinnell. 2011. "An Application of Behavioral Modeling to Characterize Urban Angling Decisions and Values." *North American Journal of Fisheries Management* 31:257–268.

- Santoianni, D.A., M.F. Bingham, D.M. Woodard, and J.C. Kinnell. 2008. "Power from Animal Waste—Economic, Technical, and Regulatory Landscape in the United States." *Journal of EUEC* Volume 2, Paper #01. Available at <http://www.euec.com/journal/documents/pdf/Santoianni.pdf>.
- Kinnell, J.C., M.F. Bingham, E.A. Hastings, R. Ray, V. Craven, and M. Freeman. 2007a. "A Survey Methodology for Collecting Fish Consumption Data in Urban and Industrial Water Bodies (Part 1)." *Journal of Toxicology and Environmental Health, Part A* 70:477–495.
- Ray, R., V. Craven, J. Kinnell, M. Bingham, M. Freeman, and B. Finley. 2007b. "A Statistical Method for Analyzing Data Collected by a Creel/Angler Survey (Part 2)." *Journal of Toxicology and Environmental Health, Part A* 70:496–511.
- Ray, R., V. Craven, M. Bingham, J. Kinnell, E. Hastings, and B. Finley. 2007. "Human Health Exposure Factor Estimates Based Upon a Creel/Angler Survey of the Lower Passaic River (Part 3)." *Journal of Toxicology and Environmental Health, Part A* 70:512–528.
- Johnson, F.R., M.F. Bingham, and B. Kanninen. 2006. "Experimental Design for Stated Choice Experiments." In *Valuing Environmental Amenities Using Stated Choice Studies: A Common Sense Approach to Theory and Practice*, ed. Barbara Kanninen. Dordrecht, The Netherlands: Springer.
- Kinnell, J.C., M.F. Bingham, A.F. Mohamed, W.H. Desvousges, T.B. Kiler, E.K. Hastings, and K.T. Kuhns. 2006. "Estimating Site-Choice Decisions for Urban Recreators." *Land Economics* 82(2):257–272.
- Finley, B., T. Iannuzzi, N. Wilson, J. Kinnell, V. Craven, S. Lemeshow, C. Teaf, E. Calabrese, and P. Kosteci. 2003. "The Passaic River Creel/Angler Survey: Expert Panel Review, Findings, and Recommendations." *Journal of Human and Ecological Risk Assessment* 9(3):829–856.
- Bingham, M.F., J.P. Prestemon, D.J. MacNair, and R. Abt. 2003. "Market Structure in U.S. Southern Pine Roundwood." *Journal of Forest Economics* 9(2):1–21.
- Bingham, M.F., A.F. Mohamed, and W.H. Desvousges. 2003. "Hedonic Analysis of Stigma-Based Losses from Groundwater Contamination." Submitted for publication.
- Hauber, A.B., F.R. Johnson, and M.F. Bingham. 2001. "Measuring Stated Preferences for Medical Interventions." *ISPOR News* 7(5):5–6.
- Bingham, M.F., F.R. Johnson, and D. Miller. 2001. "Modeling Choice Behavior for New Pharmaceutical Products." *Value in Health* 4(1):32–44.
- Bingham, M.F., and G. Smith. 2001. "The Role of Health State Experience in Longitudinal Conjoint Analysis of Patient Preferences." *Value in Health* 4(2):194–195.
- Bingham, M.F., and F.R. Johnson. 2001. "Evaluating the Validity of Stated-Preference Estimates of Health Values." *Swiss Journal of Economics and Statistics* 137(1):49–64.
- Smith, G., M.F. Bingham, F.R. Johnson, and B. Bolinder. 2001. "Does Patient Experience Matter? Type II Diabetes Patients' Stated Preferences for Insulin Therapies." *Value in Health* 4(2):115–116.
- Bingham, M.F., and D.J. MacNair. 1999. "An Empirical Comparison of Minimum Absolute Deviations and Ordinary Least Squares Estimates of Consumer Surplus for Beach Recreation." Submitted for publication.

Bingham, M.F., F.R. Johnson, and L. Bell. 1998. "Vox Populi: Stated Preferences for Pharmaceutical Innovations." *Value in Health* 1(1):76.

Working Papers

Bingham, M.F., S.G. Veale, Z. Li, G.S. Crownfield, D.M. Woodard, and J.C. Kinnell. 2014. "Integrating Revealed and Stated Preference Data to Improve the Estimation of Baseline Risk Fish Ingestion." Working Paper No. 2014-03. Available at <http://www.veritaseconomics.com/Working%20Papers/Bingham.et.al.2014.Integrating.RP.and.SP.Data.to.Improve.Estimation.of.Baseline.Risk.Fish.Ingestion.pdf>.

Kinnell, Jason C. and Matthew F. Bingham. 2014. "Developing Baseline Risk Fish Ingestion Estimates for Baseline Human Health Risk Assessments." Technical Working Paper. Veritas Economic Consulting. Cary, NC. Available at <http://www.veritaseconomics.com/Working%20Papers/Kinnell.and.Bingham.2014.Developing.Baseline.Risk.Fish.Ingestion.Estimates.pdf>.

Bingham, M.F., J.S. Kinnell, and Sara G. Hickman. 2012. "The Role of Knowledge in Assessing Nonuse Values for Site-Specific 316(b) Determination: Results and Implications from the National Environmental Impacts Awareness Survey." Working Paper 2012-01. Cary, NC: Veritas Economic Consulting, LLC. Available at <http://www.veritaseconomics.com/Working%20Papers/2012-01.Bingham.Kinnell.Hickman.National.Environmental.Impacts.Awareness.pdf>.

Veritas Economic Consulting. 2011. "Veritas Economics Environmental Policy Simulation Model (EPSM)." Working Paper 2011-01. Cary, NC: Veritas Economic Consulting, LLC. Available at http://www.veritaseconomics.com/Working%20Papers/EPSM_201101.pdf.

Bingham, M.F., K.E. Mathews, J.C. Kinnell, and A.R. Morton. 2006. "What Is Significantly Greater? Properties of Benefit-Cost Comparisons under Section 316(b) of the Clean Water Act." Veritas Working Paper No. 2006-01. Cary, NC: Veritas Economic Consulting, LLC.

Whaley, J.S., M.F. Bingham, J.C. Kinnell, and R.W. Blye. 2006. "Estimating Annual Impingement and Entrainment from Sample Counts." Veritas Working Paper No. 2006-03. Cary, NC: Veritas Economic Consulting, LLC.

Johnson, F.R., K.E. Mathews, and M.F. Bingham. 2000. "Evaluating Welfare-Theoretic Consistency in Multiple-Response, Stated-Preference Surveys." TER Technical Working Paper No. T-0003. Durham, NC: Triangle Economic Research.

Johnson, F.R., and M.F. Bingham. 2000. "Measuring Stated Preferences for Pharmaceuticals: A Brief Introduction." TER Working Paper No. G-0002. Durham, NC: Triangle Economic Research.

Johnson, F.R., W.H. Desvousges, M.C. Ruby, D. Stieb, P. De Civita, and M.F. Bingham. 1997. "Eliciting Stated Health Preferences: An Application to Willingness to Pay for Longevity." TER Working Paper No. T-9704. Durham, NC: Triangle Economic Research.

Selected Reports

Electric Power Research Institute. 2019. *EPRI Program 182 Electricity Service Plan Market Size Model Software User Manual*. Principal Investigators: M.F. Bingham and J.S. Kinnell. Palo Alto, CA: Electric Power Research Institute.

Veritas Economic Consulting. 2018. *Benefits Valuation Study: Alcoa Warrick Power Plant*. Prepared for Alcoa Corporation. Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2018. *Entrainment Reduction Benefits Study: Bayside Power Station*. Prepared for Tampa Electric Company. Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2017. *§ 122.21(r)(11) Benefits Valuation Study, Kahe Generating Station*. Prepared for Hawaiian Electric Company (HECO). Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2017. *§ 122.21(r)(11) Benefits Valuation Study, Waiau Generating Station*. Prepared for Hawaiian Electric Company (HECO). Cary, NC: Veritas Economic Consulting.

Veritas Economic Consulting. 2017. "Appendix D—Evaluation of Economic Effects from Alternative Ocoee River Release Schedules." In [2018] *Ocoee River Whitewater Rafting Agreement: Final Environmental Assessment Polk County, Tennessee*. Project Number 2016-30. Knoxville, TX: Tennessee Valley Authority.

Electric Power Research Institute. 2017. *Photovoltaic (PV) Adoption Influencers: Estimating the Drivers of Residential Solar Choice*. Product ID 3002011012. Principal Investigators: S. Coley, N. Enbar, M.F. Bingham, J.S. Kinnell, S.G. Hickman, V.L. MacPherson, and Z. Li. Palo Alto, CA: Electric Power Research Institute.

Electric Power Research Institute. 2017. *Residential Solar Adoption Model Software User Manual*. Principal Investigators: M.F. Bingham, J.S. Kinnell, S.G. Hickman, and G.S. Crownfield. Palo Alto, CA: Electric Power Research Institute.

Kinnell, Jason C. 2016. "Review and Critique of Charles Cicchetti and Richard White's Analysis and Expert Reports on the Recreation Losses Associated with Lister Avenue Releases." Cary, NC: Veritas Economic Consulting, LLC.

Bingham, M., S.K. Sinha, and F. Lupi. 2015. *Economic Benefits of Reducing Harmful Algal Blooms in Lake Erie*. Submitted to the International Joint Commission, 66 pp. September. Ann Arbor, MI: Environmental Consulting & Technology, Inc.

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Bingham, M.F., and J.C. Kinnell. 2018. "Nonuse: Recent Experiences and Potential Directions." Presented at Great Lakes Interest Group 316(b) Annual Meeting, Detroit, Michigan, October 17.

Bingham, M.F. 2018. "Session C6: Understanding Residential and Commercial Customers Enhancing the Real World Performance of Stated Preference Survey." Presented at Electrification 2018 International Conference & Exposition, Long Beach, California, August 23.

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- Bingham, M.F. 2015. "Evaluating the Social Costs and Social Benefits of Alternative Entrainment Reduction Technologies for Site-Specific 316(b) Compliance." Presented at the EPRI webcast, March 17.
- Bingham, M.F. 2015. "The Social Costs of Cooling Tower Induced Efficiency Losses." Presented at the 18th annual EUEC 2015: Energy, Utility & Environment Conference & Expo, San Diego, California, February 17.
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