

## **KENNETH E. TRAIN**

### **Education**

Ph.D. University of California, Berkeley (Economics), 1977  
M.A. University of California, Berkeley (Economics), 1975  
A.B. Harvard University (Economics), 1974

### **Current Employment**

Adjunct Professor Emeritus, Department of Economics, University of California, Berkeley  
Academic Advisor, The Brattle Group

### **Professional Service and Awards**

Distinguished Member Award, Transportation and Public Utilities Group, American Economic Association, 2021.

Editor's Choice Award, for paper published in Water Resources Research, 2012.

Richard Stone Prize in Applied Econometrics, for the best paper in the 2000 and 2001 volumes of the Journal of Applied Econometrics, 2002.

Distinguished Teaching Award, Graduate Economics Association, 2001.

Award for Best Paper in the Energy Journal, International Association of Energy Economists, 2001.

Award for Best Paper, Advanced Research Techniques Forum, American Marketing Association, 2000.

Distinguished Achievement Award, International Energy Program Evaluation Conference, 1995.

Outstanding Teaching Award, Graduate School of Public Policy, 1991.

Outstanding Teaching Award, Undergraduate Economics Association, 1987.

Robert R. Holdren Memorial Lecture, Iowa State University, 2007.

Keynote address, Mexican Statistical Association annual meeting, 2004

Chair, Center for Regulatory Policy, University of California, Berkeley, 1993-2000.

Board of Advice, Institute of Transport and Logistics Studies, University of Sydney, 2005-present.

Associate Editor, Journal of Choice Modelling, 2007-present.

Editorial Board, Foundations and Trends in Econometrics, 2004-present.

Editorial Board, Quantitative Marketing and Economics, 2003-2010.

Editorial Board, Journal of Regulatory Economics, 1988-2001.

Associate Editor, Energy: The International Journal, 1988-2000.

Editorial Board, Information Economics and Policy, 1990-1996.

Editorial Board, Transportation Research, 1983-1997.

Research Advisory Committee, National Regulatory Research Institute, 1997-1999.

Board of Directors, International Telecommunications Society, 1988-1993.

Journal Committee, International Telecommunications Society, 1988-1996.

Affiliated Faculty, Energy and Resources Group, University of California, Berkeley, 1984-present.

Planning Committee, Bi-Annual National Conference on Energy Conservation Program Evaluation, 1985-1988.

Guest Editor, special issue on automobile demand and energy use, Transportation Research, 1985.

Testimony in Federal Trade Commission vs. Swedish Match North America et al., on product market definition, 2000.

Testimony in Isuzu vs. Consumers Union on whether Isuzu lost sales due to CU's statements about the Trooper, 1999.

Testimony in Suzuki vs. Consumers Union, on whether Suzuki lost sales due to CU's statements about the Samurai, 1999.

Testimony in Montana vs. ARCO, on damages to anglers from reduced fish stocks, 1997.

Testimony before California Public Utilities Commission, Hearings on Universal Service Funding, 1997.

Testimony before California Public Utilities Commission, Hearings on IntraLATA Toll Competition, 1992.

Testimony before U.S. Senate, Subcommittee on Energy Regulation and Conservation, Committee on Energy and National Resources, 1985.

Testimony before California Energy Commission, Hearings on Transportation Demand and Fuel Consumption, 1980.

Testimony before State Legislature of Hawaii, Hearings on Urban Mass Transit, 1978.

Co-chair, Workshop on Endogeneity in Choice Models, Invitational Choice Symposium, Estes Park, Colorado, June 2004.

Chair, Session on Empirical Methods in Industrial Organization, International Industrial Organization

Conference, Boston, April, 2003.

Co-chair, Methodology Group, Invitational Choice Symposium, Asilomar CA, June 2001.

Chair, Session on Transforming from a Regulated to a Competitive Market, 12<sup>th</sup> Forecasting Symposium of the Electric Power Research Institute, Denver, 1999.

Chair, Session on Numerical Estimation Methods for Dynamic Choice Processes, NSF Symposium on Simulation and Estimation, Berkeley, 1994.

Chair, Session on Commercial Buildings: Segments and Trends, Conference on Energy Conservation Program Evaluation, Chicago, 1989.

Chair, Session on Demand Analysis: Innovative Methods and Applications for Telecommunications, Seventh International Conference of the International Telecommunication Society, MIT, 1988.

Chair, Session on Class-of-Service Models, Telecommunications Demand Analysis Forum, Key Biscayne, 1988.

Chair, expert panel to evaluate U.S. Department of Energy work on transportation source emissions related to acid precipitation, Washington, D.C., 1988.

Chair, Session on Commercial Sector Methodology, Conference on Energy Conservation Program Evaluation, Chicago, 1987.

Chair, Session on Transportation Demand Forecasting, Transportation Research Forum, Atlanta, 1982.

Working Group, Markets for Energy Efficiency, Energy Modeling Forum, Stanford University, 1994-96.

Committee to Review Federal Estimates of the Relationship of Vehicle Weight to Fatality and Injury Risk, National Research Council, 1996.

Committee on Energy Conservation and Transportation Demand, Transportation Research Board, National Academy of Science, 1984-1993.

Committee on Passenger Travel Demand Forecasting, Transportation Research Board, National Academy of Science, 1985-1992.

## **Refereed Publications**

### **BOOKS**

McFadden, D., and K. Train, eds., *Contingent Valuation of Environmental Goods: A Comprehensive Critique*, Edward Elgar Publishing, 2017.

Train, K., *Discrete Choice Methods with Simulation*, Cambridge University Press, 2003. Second edition 2009. Spanish translation by Dr. Carlos Ochoa, Netquest, 2014.

Train, K., *Optimal Regulation: The Economic Theory of Natural Monopoly*, MIT Press, 1991. Japanese translation by Professor Tetsuzo Yamamoto, Waseda University, and Professor Tesuo Kaneawa, Risho

University, published by Bunshido of Tokyo.

Train, K., *Qualitative Choice Analysis: Theory, Econometrics, and an Application to Automobile Demand*, MIT Press, 1986.

#### ARTICLES

Ben-Akiva, M., D. McFadden, and K. Train, "Foundations of Stated Preference Elicitation: Consumer Behavior and Choice-based Conjoint Analysis," Foundations and Trends in Econometrics, Vol. 10, Nos. 1-2, pp. 1-144, 2019.

Glasgow, G., and K. Train, "Lost Use-Value from Environmental Injury when Visitation Drops at Undamaged Sites," Land Economics, Vol. 94, No. 1, pp. 87-96, 2018.

Glasgow, G., and K. Train, "Reply" to Comment on "Lost Use-Value from Environmental Injury when Visitation Drops at Undamaged Sites," Land Economics, Vol. 95, No. 1, pp. 152-156, 2019.

Myers, K., G. Parsons, and K. Train, "Inadequate Response to Frequency of Payments in Contingent Valuation of Environmental Goods," in D. McFadden and K. Train, eds., Contingent Valuation of Environmental Goods: A Comprehensive Critique, Chapter 3, Edward Elgar Publishing, 2017.

Hess, S. and K. Train, "Correlation and Scale in Mixed Logit Models," Journal of Choice Modelling, Vol. 23, pp. 1-8, 2017.

Falk, N., and K. Train, "Patent Valuation with Forecasts of Forward Citations," Journal of Business Valuation and Economic Loss Analysis, Vol. 12, No. 1, pp. 101-122, 2017.

Train, K., "Mixed Logit with a Flexible Mixing Distribution," Journal of Choice Modelling, Vol. 19, pp. 40-53, 2016.

Hang, D., D. McFadden, K. Train, and K. Wise, "Is Depreciation a Component of Marginal Travel Cost? A Literature Review and Empirical Analysis," Journal of Transport Economics and Policy, Vol. 50, part 2, pp. 132-150, April 2016.

Train, K., "Welfare Calculations in Discrete Choice Models when Anticipated and Experienced Attributes Differ," Journal of Choice Modelling, Vol. 16, pp. 15-22, 2015.

Desvousges, W., K. Mathews and K. Train, "An Adding-Up Test for Contingent Valuations of Lake and River Quality" Land Economics, Vol. 91, pp. 556-571, 2015.

Hensher, D.A., Shore, N. and Train, K. "Willingness-to-Pay for Residential Electricity Supply Quality and Reliability," Applied Energy, Vol. 115, pp. 280-292, 2014.

Desvousges, W., K. Mathews, and K. Train, "Adequate Responsiveness to Scope in Contingent Valuation," Ecological Economics, Vol. 84, pp. 121-128, 2012.

Desvousges, W., K. Mathews, and K. Train, "Reply to 'On the Adequacy of Scope Results: Comment on Desvousges, Mathews, and Train,'" Ecological Economics, Vol. 130, pp. 361-2, 2016.

Metcalf, P., W. Baker, K. Andrews, G. Atkinson, I. J. Bateman, S. Butler, R. T. Carson, J. East, Y. Guéron,

R. Sheldon, and K. Train, "An Assessment of the Non-Market Benefits of the Water Framework Directive for Households in England and Wales," Water Resources Research, Volume 48, Issue 3, March 2012. Recipient of Editor's Choice Award for 2012.

Daly, A., S. Hess, and K. Train, "Assuring Finite Moments for Willingness to Pay in Random Coefficient Models," Transportation, Vol. 39, No. 1, pp. 19-31, 2011.

Hess, S., and K. Train, "Recovery of Inter- and Intra-Personal Heterogeneity using Mixed Logit Models," Transportation Research Part B, Vol. 45, No. 7, pp. 973-990, 2011.

Petrin, A., and K. Train, "A Control Function Approach to Endogeneity in Consumer Choice Models," Journal of Marketing Research, Volume 47, No. 1, pp. 3-13, 2010.

Train, K., and W. Wilson, "Monte Carlo Analysis of SP-off-RP Data," Journal of Choice Modeling, Vol. 2, No. 1, pp. 101-117, 2009, at <http://www.jocm.org.uk>

Train, K., "EM Algorithms for Nonparametric Estimation of Mixing Distributions," Journal of Choice Modeling, Vol. 1, No. 1, pp. 40-69, 2008, at <http://www.jocm.org.uk>

Train, K., and W. Wilson, "Transportation Demand and Volume Sensitivity: A Study of Grain Shippers in the Upper Mississippi River Valley," Transportation Research Record: Journal of the Transportation Research Board, Vol. 2062, pp. 66-73, 2008.

Scarpa, R., M. Thiene, and K. Train, "Utility in Willingness to Pay Space: A Tool to Address Confounding Random Scale Effects in Destination Choice to the Alps," American Journal of Agricultural Economics, Volume 90, No. 4, pp. 994-1010, 2008.

Train, K., and W. Wilson, "Estimation on Stated-Preference Experiments Constructed from Revealed-Preference Choices," Transportation Research, Part B: Methodology, Vol. 42, pp. 191-203, 2008.

Train, K., and W. Wilson, "Spatially Generated Transportation Demands," in S. Dennis and W. Taley, eds., Research in Transportation Economics, Vol. 20: Railroad Economics, pp. 97-118, Elsevier, 2007.

Train, K., and C. Winston, "Vehicle Choice Behavior and the Declining Market Share of U.S. Automakers," International Economic Review, Vol. 48, No. 4, pp. 1469-1496, 2007.

Train, K., and W. Wilson, "Spatial Demand Decisions in the Pacific Northwest: Mode Choices and Market Areas," Transportation Research Record: Journal of the Transportation Research Board, Vol. 1963, pp. 9-14, 2006.

Hensher, D. N. Shore, and K. Train, "Water Supply Security and Willingness to Pay to Avoid Drought Restrictions," Economic Record, Vol. 82, pp. 56-66, 2006.

Hess, S., K. Train, and J. Polak, "Use of a Modified Latin Hypercube Sampling (MLHS) Method in the Estimation of a Mixed Logit Model for Vehicle Choice," Transportation Research Part B: Methodology, Vol. 40, No. 2, pp. 147-167, 2006.

Hensher, D., N. Shore, and K. Train, "Households' Willingness to Pay for Water Service Attributes," Environmental and Resource Economics, Vol. 32, pp. 509-531, 2005.

Louviere, J., K. Train, et al., "Recent Progress on Endogeneity in Choice Modeling," Marketing Letters, Vol. 16, Nos. 3-4, pp. 255-265, 2005.

Train, K., and G. Sonnier, "Mixed Logit with Bounded Distributions of Correlated Partworths," Chapter 7, pages 117-134, in Applications of Simulation Methods in Environmental and Resource Economics, A. Alberini and R. Scarpa, (eds.), Springer Publisher: Dordrecht, The Netherlands, 2005.

Train, K., and M. Weeks, "Discrete Choice Models in Preference Space and Willingness-to-Pay Space," Chapter 1, pages 1-16, in Applications of Simulation Methods in Environmental and Resource Economics, A. Alberini and R. Scarpa, (eds.), Springer Publisher: Dordrecht, The Netherlands, 2005. Reprinted in Choice Modeling: Foundational Contributions, David A. Hensher and John M. Rose, eds., Edward Elgar Publishing, 2011.

Sandor, Z, and K. Train, "Quasi-Random Simulation of Discrete Choice Models," Transportation Research Part B: Methodology, Vol. 38, No. 4, pp. 313-327, 2004.

Karaca-Mandic, P., and K. Train, "Standard Error Correction in Two-Stage Estimation with Nested Samples," Econometrics Journal, Vol. 6, No. 2, pp. 401-407, 2003.

Huber, J., and K. Train, "On the Similarity of Classical and Bayesian Estimates of Individual Mean Partworths," Marketing Letters, Vol. 12, No. 3, pp. 257-267, 2001.

Goett, A., K. Hudson, and K. Train, "Customers' Choice Among Retail Energy Suppliers: The Willingness-to-Pay for Service Attributes," The Energy Journal, Vol. 21, No. 4, pp. 1- 28, 2000.

McFadden, D., and K. Train, "Mixed MNL Models for Discrete Response," Journal of Applied Econometrics, Vol. 15, No. 5, pp. 447-470, 2000. Reprinted in Choice Modeling: Foundational Contributions, David A. Hensher and John M. Rose, eds., Edward Elgar Publishing, 2011.

Brownstone, D., D. Bunch, and K. Train, "Joint Mixed Logit Models of Stated and Revealed Preferences for Alternative-fuel Vehicles," Transportation Research Part B: Methodology, Vol. 34B, pp. 315-338, 2000. Reprinted in Richard Carson, ed., The Stated Preference Approach to Environmental Valuation, Vol. III: Applications: Benefit-Cost Analysis and Natural Resource Damage Assessment, Ashgate Publishing Ltd, 2007.

C. Dippon and K. Train, "The Cost of the Local Telecommunication Network: A Comparison of Minimum Spanning Trees and the HAI Model," Telecommunications Policy, Vol. 24, No. 3, pp. 253-262, 2000.

Brownstone, D., and K. Train, "Forecasting New Product Penetration with Flexible Substitution Patterns," Journal of Econometrics, Vol. 89, No. 1, pp. 109-129, 1999. Reprinted in Choice Modeling: Foundational Contributions, David A. Hensher and John M. Rose, eds., Edward Elgar Publishing, 2011.

Cai, Y., I. Deilami, and K. Train, "Customer Retention in a Competitive Power Market: Analysis of a Double-Bounded Plus Follow-ups Questionnaire," The Energy Journal, Vol. 19, No. 2, pp. 191-215, 1998.

Revelt, D., and K. Train, "Mixed Logit with Repeated Choices: Households' Choices of Appliance Efficiency Level," The Review of Economics and Statistics, Vol. LXXX, No. 4, pp. 647-657, Nov. 1998. Reprinted in Choice Modeling: Foundational Contributions, David A. Hensher and John M. Rose, eds., Edward Elgar Publishing, 2011.

Rufo, M., and K. Train, "Using Choice Modeling to Understand Customer Preferences: A Tale of Four Studies," in A. Faruqui and J.R. Malko, eds., Profiting from the Challenge of Customer Choice, Public Utility Reports, Inc., 1999.

Train, K., "Mixed Logit Models of Recreation Demand," in C. Kling and J. Herriges, eds., Valuing the Environment Using Recreation Demand Models, Elgar Press, 1999.

Train, K., "Recreation Demand Models with Taste Differences over People," Land Economics, Vol. 74, No. 2, pp. 230-239, May 1998. Reprinted in Revealed Preference Approaches to Environmental Valuation, Volume 1, J. Herriges and C. Kling, eds., Ashgate Publishing Company, 2008, and in Valuing Environment and Natural Resources, K. Willis and G. Garrod, eds., Edward Elgar Publishing Limited, 2012.

Train, K., W. Davis, and M. Levine, "Fees and Rebates on New Vehicles: Impacts on Fuel Efficiency, Carbon Dioxide Emissions, and Consumer Surplus," Transportation Research, Vol. 33E, No. 1, pp. 1-13, 1997. Reprinted in Environmental Instruments and Institutions, edited by T. Tietenberg, K. Button, and P. Nijkamp, Edward Elgar Publishing Limited, 2000.

McFadden, D., and K. Train, "Consumers' Evaluation of New Products: Learning from Self and Others," Journal of Political Economy, 1996, Vol. 104, No. 4, pp. 683-703.

Train, K. and E. Paquette, "A Discrete Choice Method to Estimate Free-Ridership, Net-to-Gross Ratios, and the Effect of Program Advertising," Energy Services Journal, Vol. 1, No. 1, 1995.

Train, K. and T. Atherton, "Rebates, Loans, and Customers' Choice of Appliance Efficiency Level: Combining Stated- and Revealed-Preference Data," Energy Journal, Vol. 16, No. 1, 1995, pp. 55-69.

Train, K. and G. Mehrez, "Optional Time-of-Use Prices for Electricity: Econometric Analysis of Surplus and Pareto Impacts," RAND Journal of Economics, Vol. 25, No. 2, 1994, pp. 263-283.

Train, K., "Self-Selecting Tariffs under Pure Preferences Among Tariffs," Journal of Regulatory Economics, Vol. 6, No. 3, 1994, pp. 247-262.

Train, K. and G. Mehrez, "The Impacts of Optional Time-of-Use Prices: A Case Study," Energy and Buildings, Vol. 22, No. 2, 1995, pp. 267-278.

Train, K., "Estimation of Net Savings from Energy Conservation Programs," Energy: The International Journal, Vol. 19, No. 4, 1994, pp. 423-441.

Train, K., "Intra-LATA Toll Elasticities," Telecommunications Policy, Vol. 17, No. 9, 1993, pp. 707-714.

Train, K., "An Assessment of the Accuracy of Statistically Adjusted Engineering (SAE) Models of End-Use Load Curves," Energy: The International Journal, Vol. 17, No. 7, 1992, pp. 713-725.

Miles-McLean, R., M. Shelby, C. Lula, M. Sagan, and K. Train, "Comparison of Forecasts from Aggregate and Disaggregate Models for Personal Vehicle Energy Consumption and CO<sub>2</sub> Emissions," Energy: The International Journal, Vol. 17, No. 4, 1992, pp. 321-330.

Train, K., M. Ben-Akiva, and T. Atherton, "Consumption Patterns and Self-Selecting Tariffs," Review of Economics and Statistics, Vol. 71, No. 1, 1989, pp. 62-73.

- Train, K. and N. Toyama, "Pareto Dominance Through Self-Selecting Tariffs: The Case of TOU Prices for Agriculture," Energy Journal, Vol. 10, No. 1, 1989, pp. 103-116.
- Train, K., D. McFadden, and A. Goett, "Consumer Attitudes and Voluntary Rate Schedules for Public Utilities," Review of Economics and Statistics, Vol. LXIX, No. 3, 1987, pp. 383-391.
- Train, K., "Incentives for Energy Conservation in the Commercial and Industrial Sectors," Energy Journal, Vol. 9, No.3, 1988, pp. 113-132.
- Woo, C.-K. and K. Train, "The Cost of Electric Power Interruptions to Commercial Firms," Energy Journal, Vol. 9, special issue on electricity reliability, 1988, pp. 161-172.
- Train, K., D. McFadden, and M. Ben-Akiva, "The Demand for Local Telephone Service: A Fully Discrete Model of Residential Calling Patterns and Service Choices," Rand Journal of Economics, Vol. 18, No. 1, 1987, pp. 109-123.
- Train, K. and P. Ignelzi, "The Economic Value of Energy-Saving Investments by Commercial and Industrial Firms," Energy: The International Journal, Vol. 12, No. 7, 1987, pp. 543-553.
- Train, K. and J. Strebel, "Energy Conservation and Rebates in Commercial Food Enterprises," American Journal of Agricultural Economics, Vol. 69, No. 1, 1987, pp. 106-114.
- Caves, D., J. Herriges, K. Train, and R. Windle, "A Bayesian Approach to Combining Conditional Demand and Engineering Models of Electricity Usage," Review of Economics and Statistics, Vol. LXIX, No. 3, 1987, pp. 438-448.
- Atherton, T., M. Ben-Akiva, D. McFadden, and K. Train, "Micro-Simulation of Local Residential Telephone Demand Under Alternative Service Options and Rate Structures," in Telecommunications Demand Modeling, ed. by A. de Fontenay, M. Shugard, and D. Sibley, North-Holland Press, 1989.
- Train, K., "A Structured Logit Model of Auto Ownership and Mode Choice," Review of Economic Studies, Vol. XLVII, pp. 357-370. Reprinted in Transportation Economics: Theory and Practice, edited by Patrick McCarthy, Blackwell Publishers, Ltd., 2000.
- Train, K., P. Ignelzi, and M. Kumm, "Evaluation of a Conservation Program for Commercial and Industrial Customers," Energy: The International Journal, Vol. 10, No. 10, 1985, pp. 1079-1088.
- Train, K., et al., "The Billing Cycle and Weather Variables in Models of Electricity Sales," Energy: The International Journal, Vol 9, No. 11-12, 1984, pp. 1041-1047.
- Train, K., "Optimal Transit Prices under Increasing Returns to Scale and a Loss Constraint," Journal of Transport Economics and Policy, Vol. XI, No. 2, pp. 185-194.
- Train, K., "Discount Rates in Consumers' Energy-Related Decisions," Energy: The International Journal, Vol. 10, No. 12, 1985, pp. 1243-1253. Reprinted in The Economics of Energy, edited by Paul Stevens, Edward Elgar Publishing, Ltd., 2000.
- Train, K., J. Herriges, and R. Windle, "Statistically Adjusted Engineering (SAE) Models of End-Use Load Curves," Energy: The International Journal, Vol. 10, No. 10, 1985, pp. 1103-1111.



Mannering, F. and K. Train, "Recent Directions in Automobile Demand Modeling," Transportation Research, Vol. 19B, No. 4, 1985, pp. 265-274.

Mason, C. and K. Train, "A Route Forecasting Model for the Portland Area," in T. Keeler (ed.), Research in Transportation Economics, Vol. II, Pergamon Press, 1985.

Train, K., "The Salt Lake City Experiment with Short-Term Elimination of Transit Fares," Transportation, Vol. 10, 1981, pp. 185-199.

Train, K., "The Potential Demand for Non-Gasoline-Powered Automobiles," Transportation Research, Vol. 14A, 1980, pp. 405-414.

Lave, C. and K. Train, "A Disaggregate Model of Auto Type Choice," Transportation Research, Vol. 13A, 1979, pp. 1-9.

Train, K., "Consumers' Responses to Fuel Efficient Vehicles," Transportation, Vol. 8, 1979, pp. 237-258.

Train, K., "A Comparison of the Predictive Ability of Mode Choice Models with Various Levels of Complexity," Transportation Research, Vol. 13A, 1979, pp. 11-16.

McFadden, D., K. Train, and W. Tye, "An Application of Diagnostic Tests for the Independence from Irrelevant Alternatives Property of the Multinomial Logit Model," Transportation Research Record, No. 637, 1978, pp. 39-46.

Train, K., "A Validation Test of a Disaggregate Mode Choice Model," Transportation Research, Vol. 12, 1978, pp. 167-174.

Train, K. and D. McFadden, "The Goods/Leisure Tradeoff and Disaggregate Work Trip Mode Choice Models," Transportation Research, Vol. 12, 1978, pp. 349-353.

Train, K., "The Sensitivity of Parameter Estimates to Data Specification in Mode Choice Models," Transportation, Vol. 7, 1978, pp. 301-309.

#### REVIEWS, COMMENTS, AND NOTES

"Reply to 'On the adequacy of scope test results: Comments on Desvousges, Mathews, and Train,'" Ecological Economics, Volume 30, October 2016, pp. 361-362, with W. Desvousges and K. Mathews.

"Comment on 'A revealed preference approach to valuing non-market recreational fishing losses from the Deepwater Horizon Oil Spill' and its 'Corrigendum' by Alvarez et al.," Journal of Environmental Management, Volume 167, 1 February 2016, pp. 259-261.

"From Curious to Pragmatically Curious: Comment on 'From Hopeless to Curious? Thoughts on Hausman's 'Dubious to Hopeless' Critique of Contingent Valuation'," Applied Economic Perspectives and Policy, 2016, Vol. 38, No. 1, pp. 174-182, with W. Desvousges and K. Mathews.

"Discussion of Morey and Waldman's 'Measurement Error in Recreation Demand Models'," Journal of Environmental Economics and Management, Vol. 40, No. 1, pp. 76-81, 2000, with D. McFadden and R. Johnson.

"Review of Dimensions of Automobile Demand, by Hensher, Smith, Milthorpe, and Bernard," Transportation Research, Vol, 28A, No. 4, 1994, pp.365-368.

"Using Discrete Choice Models to Determine Free Ridership," Evaluation Exchange, Vol. 3, No. 1, Jan./Feb. 1993, pp. 12-14.

"The Seven Deadly Sins of DSM Program Evaluations," with G. Weisbrod, Strategies, Vol. 4(1) 1993, p. 9.

"Review of J. Daniel Khazzoom, 'An Econometric Model Integrating Conservation Measures in the Residential Demand for Energy'," Energy Journal, Vol. 8, No. 3, 1987, pp. 159-60

"Review of Clifford Winston and Associates, 'Blind Intersection? Policy and the Automobile'," Transportation Science, Vol. 22, No. 3, 1988, pp. 227-228.

"Comment on David Greene, 'A Note on Implicit Consumer Discounting of Automobile Fuel Economy: Reviewing the Available Evidence'," Transportation Research, Vol. 17B, No. 6, 1983, pp. 498.

### **Working papers**

Train, K., "A Recursive Estimator for Random Coefficient Models."

Train, K., and W. Wilson, "An Empirical Model of Freight Transportation Demand using a New Form of Preference Revelation."

Train, K., "A Comparison of Hierarchical Bayes and Maximum Simulated Likelihood for Mixed Logit."

Revelt, D., and K. Train, "Customer-Specific Taste Parameters and Mixed Logit."

Train, K., "Halton Sequences for Mixed Logit."

Train, K., "Simulation Methods for Probit and Related Models Based on Convenient Error Partitioning."

Train, K., "Pareto Superior Voluntary Time-of-Use Prices."

### **Selected Reports**

Train, K., and W. Wilson, Coal Demand and Transportation in the Ohio River Basin, report to the Institute for Water Resources, Navigation Economics Technologies Program, U.S. Army Corps of Engineers, 2010.

Metcalfe, P., K. Train, H. Webb, and R. Brejnholt, An Econometric Model of Household Vehicle Choice, report to MEEDDAT, the French Department of Ecology, Energy, Sustainable Development and Spatial Planning, 2009.

Train, K., and W. Wilson, Transportation Demands in the Columbia-Snake River Basin, report to the Institute for Water Resources, Navigation Economics Technologies Program, U.S. Army Corps of Engineers, 2006.

Train, K., and W. Wilson, Shippers' Responses to Changes in Transportation Rates and Times, report to the Institute for Water Resources, Navigation Economics Technologies Program, U.S. Army Corps of Engineers, 2004.

Train, K., and colleagues, Customers' Willingness to Pay for Attributes of Electricity, Gas and Water Service, report to ACTEW Corporation and ACTEWAGL, 2003.

Train, K., and K. Hudson, The Impact of Information on Vehicle Choices and the Demand for Electric Vehicles in California, report to Toyota and General Motors, September 2000.

Train, K., and A. Selting, The Effect of Price on Residential Customer Choice in Competitive Retail Energy Markets: Evidence from Specific Markets to Date, Edison Electric Institute report, March 2000.

Selting, A., and K. Train, Projecting Market Share for Energy-Related Offerings, Electric Power Research Report TR-111856, November 1998.

Train, K., "Net Savings Estimation," chapter 5 of Performance Impacts: Evaluation Methods for the Non-residential Sector, Electric Power Research Institute Report TR-105845, December 1995.

Davis, W., M. Levine, and K. Train, Effects of Feebates on Vehicle Fuel Economy, Carbon Dioxide Emissions, and Consumer Surplus, U.S. Department of Energy, Office of Policy, report DOE/PO-0031, February 1995.

Train, K. et al., End-Use Load Shape Estimation: Methods and Validation, Electric Power Research Institute Report No. CU-7127, 1990.

Train, K. and D. Dagang, Evaluation of the Commercial Incentives Pilot Program, report to Bonneville Power Administration, 1990.

Train, K. and D. Dagang, Evaluation of the Commercial Audit Program, report to Bonneville Power Administration, 1988.

Train, K., and J. Strelbel, Net Savings from Audit and Hardware Rebate Programs in the Commercial and Industrial Sectors, report to Southern California Edison, 1986.

Train, K., et al., Weather Normalization of Electricity Sales, Electric Power Research Institute Report No. EA-3134, 1983.

Train, K., J. Herriges, and R. Windle, Combined Engineering/Statistical Approaches to Estimating End-Use Load Shapes, Electric Power Research Institute Report EA-4310, 1985.

Train, K., California Personal Vehicle Energy Demand Model, report to the California Energy Commission, 1983.

McFadden, D., and K. Train, Determinants of the Residential Demand for Long Distance Telephone Service, report to AT&T, 1980.

## **Project Experience**

Statistical Consultant. Modeling outcomes of multi-competitor events. For consortium of investors (2008-present).

Statistical Consultant. Natural resource damage assessment. For various clients. (2009-present.)

Statistical Consultant. Advice on estimation of customers' value of service reliability. For the Australian Energy Regulator through the Melbourne Energy Institute (2018-present).

Statistical Consultant. Estimation of impact of demand and market price of undisclosed defect in specified all-terrain vehicles. For Cohen Milstein Sellers & Toll PLLC. (2019).

Statistical Consultant. Estimation of impact of groundwater contamination on house prices in upstate New York. For Hollingsworth LLP (2018-2019).

Statistical Consultant. Self-selection in energy efficiency program evaluation. For Pacific Gas and Electric Company (2016-2017.)

Statistical Consultant. Modeling of consumer welfare from ingredient labels. For Coke (2016).

Statistical Consultant. Damages from lost recreation opportunities that resulted from the Deepwater Horizon oil spill. On behalf of defendant BP, in re: Oil Spill by the Oil Rig "Deepwater Horizon" in the Gulf of Mexico, on April 20, 2010, United States District Court for the Eastern District of Louisiana, Case No. 2:10-md-02179. (2011-2016).

Statistical Consultant. Evaluation of the Smart Pricing Options. For Sacramento Municipal Utilities District (2013-2014.)

Statistical Consultant. Estimating the potential uptake of electric vehicles in the UK. For the Energy Technologies Institute. (2010-2011.)

Statistical Consultant. Estimating the demand for vehicles and the impact of alternative policies on households' vehicle holdings by CO<sub>2</sub> level. For MEEDDAT, the French Department of Ecology, Energy, Sustainable Development and Spatial Planning (2008-2009.)

Statistical Consultant. Analysis of consumer choice among cigarette brands. For the Office of the Attorney General, New York State (2007-2010.)

Principal Investigator. Assessing shipper behavior and benefits from improved waterway systems. For the Institute for Water Resources, U.S. Army Corp of Engineers (2003-2010).

Statistical Consultant. Estimation of Non-energy impacts of energy efficiency measures. For New York State Energy Research and Development Authority (2006-7.)

Statistical Consultant. Impact evaluation of non-residential energy audit programs. For Pacific Gas and Electric Company (2006-7.)

Statistical Consultant. Estimation of households' willingness to pay for water quality improvements. For U.K. Department for Environment, Food and Rural Affairs (2006-7.)

Statistical Consultant. Estimation of vehicle demand models for policies promoting fuel-efficiency. For U.K. Department for Transport (2006-8.)

Statistical Consultant. Comparison of stated-preference and revealed-preference methods for measurement of user evaluation of recreational site attributes. For Barbara J. Goldsmith and Company (2006.)

Statistical Consultant. Customers' willingness to pay for water service reliability. For Thames Water (2005-6.)

Statistical Consultant. Demand for new pharmaceutical products and consumers' valuation of product attributes. For Pfizer (2005-6).

Principal Investigator. Forecasting demand for new vehicles. For Nissan (2004-5).

Principal Investigator. Statistical analysis of mortgage application and pricing data for fair lending compliance. For WMC Direct (2004-5).

Statistical Consultant. Measuring substitution among wireline, wireless, VoIP, and cable telephony services. For Sprint (2004).

Principal Investigator. Assessing customers' willingness to pay for attributes of electricity, gas, and water service. For ACTEW Corporation and ACTEWAGL, Australia (2002-3).

Statistical Consultant. Demand for cable and satellite TV services. For Echostar (2002).

Statistical Consultant. Analysis of HiltonHonors point system. For Hilton (2001-2).

Statistical Consultant. Willingness to pay for attributes of water quality. For Yorkshire Water Service (2002-3).

Principal Investigator. Measuring changes in quality of service. For Verizon (2002).

Expert Witness. Defining the product market for smokeless tobacco products. For Swedish Match (2000).

Principal Investigator. Procedures for valuing intellectual property for insurance purposes. For Marsh & McLennan Companies (2000).

Expert Witness. Defining the product market for bread for the proposed merger of Metz and Earthgrains. For the U.S. Department of Justice, Antitrust Division (2000).

Principal Investigator. Assessing the market demand for electric and hybrid vehicles. For Toyota and General Motors (2000).

Expert Witness. Measurement of sales lost by Isuzu due to Consumers Union's statements about the

Trooper. For Consumers Union (1999-2000).

Expert Witness. Measurement of sales lost by Suzuki due to Consumers Union's statements about the Samurai. For Consumers Union (1999-2000).

Statistical Consultant. Market definition for health insurance products in antitrust analysis of proposed merger of Aetna and Prudential Health. For Aetna (1999).

Principal Investigator. Forecasting market shares in a competitive energy market. For the Electric Power Research Institute (1998-9).

Expert Witness. Measuring the efficiency of transmission and distribution operations. For Pacific Gas and Electric Company (1998).

Principal Investigator. Demand for alternative fueled vehicles and impacts on travel patterns. For the University of California Office of the President (1998-9).

Statistical Consultant. Weather adjustment of electricity sales. For the Electric Power Research Institute and the Tennessee Valley Authority (1998-9).

Statistical Consultant. Customer choice of supplier in a competitive energy environment. For a consortium of energy utilities (1996-8.)

Expert Witness. Universal service funding in a competitive telecommunications environment. For GTE (1997).

Principal Investigator. Development and application of improved models of customer choice. For California Advisory Committee on Demand-Side Management (1996-7).

Expert Witness. Assessment of damage to anglers of reduced fish stocks in river segments. For ARCO (1995-8).

Principal Investigator. Simulation study of net savings estimation methods. For California Advisory Committee on Demand-Side Management (1994-5).

Expert Witness. Price elasticities for intraLATA telecommunication services. For GTE (1991-3).

Advisor. Feebate policies to improve average fuel efficiency of new cars and trucks. For the U.S. Department of Energy (1991-4).

Advisor. Impact evaluation of demand side management programs. For Boston Edison, Niagara Mohawk Power Company, Pacific Gas and Electric Company, Puget Power, Northeast Utilities, and Southern California Edison (1991-5).

Principal Investigator. Empirical analysis of self-selecting tariffs. For the University-wide Energy Research Group (1991-4).

Principal Investigator. Econometric analysis of customers' choice between time-of-use and standard rates for electricity. For the California Institute for Energy Efficiency (1990-1).

Principal Investigator. Policies to mitigate greenhouse gas emissions in personal vehicle transportation. For the U.S. Environmental Protection Agency (1990-1).

Principal Investigator. Evaluation of an incentives program for energy conservation by firms. For Bonneville Power Administration (1989-1).

Principal Investigator. Highway electrification: options and impacts. For the Southern California Association of Governments (1989-0).

Principal Investigator. The value of service reliability. For the Electric Power Research Institute (1987-9).

Principal Investigator. Savings from a weatherization program for low-income households. For Pacific Gas and Electric (1988).

Principal Investigator. Evaluation of "Bright Ideas for Business" program for energy conservation. For Wisconsin Power and Light (1987-8).

Principal Investigator. Evaluation of an energy conservation program for agricultural firms. For Wisconsin Utility Association (1987-8).

Principal Investigator. Acid precipitation and transportation policies. For Argonne National Laboratory (1987-8).

Principal Investigator. Evaluation of an energy audit program for commercial buildings. For Bonneville Power Administration (1986-8).

Principal Investigator. Analysis of service choice and local calling patterns under alternative rates. For Pennsylvania Bell (1986-197).

Principal Investigator. Estimation of electricity outage costs for commercial and industrial customers. For Pacific Gas and Electric Company (1986-7).

Principal Investigator. Design of regulatory mechanisms to handle excess capacity and by-pass. For Pacific Gas and Electric Co. (1986-7).

Principal Investigator. Impact of time-of-use rates for agricultural customers. For Pacific Gas and Electric Co. (1986-7).

Principal Investigator. Net savings from audit and rebate programs for commercial and industrial firms. For Southern California Edison (1984-6).

Principal Investigator. Analysis of the persistence of audit-induced energy savings. For Southern California Edison (1983-4).

Principal Investigator. Estimation of energy utilization indices for commercial buildings. For Southern California Edison (1983-4).

Principal Investigator. Identification of end-use load shapes using a joint engineering/econometric approach. For the Electric Power Research Institute (1983-4).

Principal Investigator. Impact assessment of a rebate program for energy conservation in the commercial and industrial sectors. For Southern California Edison (1983).

Principal Investigator. Development of methods for weather normalization of energy data. For the Electric Power Research Institute (1980-4).

Principal Investigator. Estimation and implementation of auto purchase and use model for California. For the California Energy Commission (1981-3).

Principal Investigator. Identification of the factors affecting telecommunication customers' choices among long-distance services, including WATS, SPRINT, EXECUNET, and so on. For GTE (1981).

Project Manager. Development of a simplified method for transit route forecasting. For Tri-Met, Portland (1980-1).

Project Manager. Analysis of the impact of a one month period of off-peak fare elimination for transit in Salt Lake City. For the Utah Transit Authority (1979-80).

Project Manager. Econometric analysis of the effect of uncertainty on the rate at which electric utilities adopt cost-saving innovations. For the Electric Power Research Institute (1979-80).

Project Manager. Analysis of consumers' responses to safety features on automobiles. For the National Highway Traffic Safety Administration (1980).

Project Manager. Econometric demand analysis of telecommunications services, including long-distance service, WATS, and private lines. For American Telephone and Telegraph Company (1977-9).

Project Manager. Evaluation of demand models for electricity and natural gas. For Pacific Gas and Electric Company (1978).

Project Manager. Forecasting demand for electric and other non-gasoline-powered vehicles. For Lawrence Livermore Laboratory (1978).

Advice on the development of a model system for travel behavior in the Portland region. For Columbia Region Association of Governments (1977-8).

Examination of the patronage forecasts for Honolulu's proposed rapid rail transit system. For State Legislature of Hawaii (1977-8).

Examination of Metropolitan Transportation Commission's forecasting system to determine sources of error. For the Metropolitan Transportation Commission of the San Francisco Bay Area (1977).

Econometric analysis of the demand for travel by auto, bus, and rail in urban areas. For the National Science Foundation (1974-7).

Development of a methodology for specifying and estimating a model of the markets for new and used automobiles. For Cambridge Systematics, Inc. (1976).

Econometric analysis of households' choices of which make of auto to buy. For Energy Research and Development Administration (1976).



Estimation of supply and demand models of the energy sector of the U.S. economy. For Data Resources, Inc. (1974).

Econometric analysis of the demand for hospital care in British National Health Service Hospitals. Sponsored by the Committee on Western European Studies, Harvard University (1973).

Data collection and analysis for a study of the relation between accounting methods and security prices. For Harvard Business School (1971-4).

Collection of data on foreign corporations for a study of the relation between financial power and security prices. For Department of Economics, Harvard University (1971).

### **Professional Positions**

University of California, Berkeley

Adjunct Professor Emeritus of Economics and Public Policy, 2014–present.

Adjunct Professor of Economics and Public Policy, 1992-2014.

Associate Adjunct Professor of Economics and Public Policy, 1988-92.

Visiting Associate Professor, Department of Economics, 1984-8.

Senior Lecturer, Graduate School of Public Policy, 1987.

Visiting Lecturer, Department of Economics, 1979-84.

Research Economist, Urban Travel Demand Forecasting Project, 1974-7.

The Brattle Group, Academic Advisor, 2019-present

NERA Economic Consulting, Inc.

Associate Director, 2016-2019.

Vice President, 1998-2016.

Xenergy, Inc., Senior Principal, 1994-8.

Cambridge Systematics, Inc.

Principal and Vice President, 1989-1992.

Director of Economic Research, 1985-9.

Senior Associate, 1977-85.

### **Courses Taught at UC Berkeley**

Economics 1: Introduction to Economics

Economics 100A: Microeconomics (without calculus)

Economics 101A: Microeconomics (with calculus)

Economics 121: Industrial Organization

Economics 122: Industrial Organization seminar

Economics 123: Regulation of Industry

Economics 141: Econometrics

Economics 220B: Regulation

Economics 244: Applied Econometrics  
Economics 301: Supervision of Graduate Student Instructors  
Public Policy 210A: Microeconomic Policy Analysis

Workshops for business and government personnel on:  
Discrete Choice Methods with Simulation  
Qualitative Choice Analysis  
Regression Analysis  
Time Series Analysis

Date: July 17, 2023