

Risk-Based Methods for Insurance Premiums of Negatively Elevated Structures in the National Flood Insurance Program

Committee

David T. Ford

Chair

David T. Ford (chair) is president of David Ford Consulting Engineers in Sacramento, California. Dr. Ford is an internationally recognized expert in hydrologic, hydraulic, and water resources engineering, and flood and floodplain management. He has over 35 years of project management experience, including 23 as owner and president of David Ford Consulting Engineers, Inc., and 12 as a senior hydraulic engineer at the U.S. Army Corps of Engineers' Hydrologic Engineering Center. He has served as a consultant to the U.S. Army Corps of Engineers, the National Weather Service, USAID, state government agencies, the United Nations, the World Bank, and engineering firms worldwide. He has prior NRC committee experience, most recently with the Committee on Levees and the National Flood Insurance Program. He has served on the faculty of the University of California and California State University. Dr. Ford received his B.S., M.S., and Ph.D. degrees in civil engineering from the University of Texas. He is a registered professional engineer in 12 states.

Ross B. Corotis

Member

Ross B. Corotis, NAE, is the Denver Business Challenge Professor of Engineering at the University of Colorado. With a background in structural mechanics and stochastic vibrations, Dr. Corotis' primary research interests are in the application of probabilistic concepts to civil engineering problems, where he has expanded traditional studies of structural reliability into risk and decision modeling for the built environment. He is currently working on using a first-order reliability approach to estimate seismic risk loss and prioritize mitigation, and on using generalized methods of uncertainty to evaluate risk and reliability. He is conducting research on regional decision models based on disaster data, and on the development of reliable confined masonry design techniques for seismic regions. Recent completed projects include a comparison of the reasons behind differing damages in Haiti, Chile and New Zealand after similar earthquakes; risk communication for seismic retrofit; and the development of a risk-based decision methodology for transportation facility design. Dr. Corotis received his B.S., M.S., and Ph.D., all in civil engineering, from the Massachusetts Institute of Technology.

Wei Du

Member

Wei Du is principal scientist and chief hydrologist at CoreLogic Spatial Solutions, where he has led research on flood risk and hazards and development of methods and analytic tools. He has over 25 years of experience in hydrologic engineering, hazard risk assessment, and geospatial technology. During the past decade, he led a consulting team to work with FEMA on many flood hazard related projects (including FEMA Map Modernization and RiskMap) and on the production of Flood Insurance Rate Maps. He has developed analytical tools on classifying hazard risk and conducted research on flood risk associated with riverine flooding, coastal storm surge, flash flooding, and basement flooding. Under his leadership, CoreLogic has created the most detailed national hydrologic datasets, including the national catchment slope dataset and national 100-year flood elevation surface dataset. Working closely with Swiss Re, Dr. Du has provided catastrophic flood loss analyses for many insurance clients. He has a B.S. in hydrologic engineering, an M.S. in hydrologic and environmental science, and a Ph.D. in geography from Clark University.

Clive Q. Goodwin

Member

Clive Q. Goodwin is assistant vice president and manager for natural hazard peril underwriting at FM Global Insurance Company. In this position, he manages worldwide underwriting of wind, flood, and collapse perils. The work capitalizes on FM Global's engineering knowledge of these hazards to improve clients' knowledge of risk and their insurance terms and conditions. Recently, Mr. Goodwin represented FM Global in a collaboration with the U.S. Army Corps of Engineers, FEMA, and other agencies to highlight concerns about the aging inventory of levees and the importance of changing U.S. policy on levee risk. He is a chartered engineer, a member of the Institution of Mechanical Engineers, and a former member of the Industry Leaders Council of the American Society of Civil Engineers. Mr. Goodwin holds a B.S. in mechanical engineering and metallurgy from the University of Manchester, U.K., and a Certified Diploma in accounting and finance.

Larry Larson

Member

Larry Larson is director emeritus and senior policy advisor for the Association of State Floodplain Managers (ASFPM), where he coordinates national flood and water resources policy development with state and federal agencies, the Administration, and other policy groups and organizations. His 50+ year career has been devoted to flood hazard and water resources management. He is the co-developer of ASFPM's No Adverse Impact approach to community development and has authored numerous white papers and articles. For decades, Larson has been a leader in developing national policy on the wise and sustainable use of floodplains. Prior to joining ASFPM, he spent 30 years with the Wisconsin Department of Natural Resources managing flood loss reduction, dam safety, wetlands, and other programs, and 5 years with the California Department of Water Resources on the design and construction of large dams, aqueducts, and other water projects. Larson holds a B.S. in civil engineering from the University of Wisconsin and is a registered professional engineer in Wisconsin and California.

Howard Leikin

Member

Howard Leikin is retired after decades with the Federal Insurance Administration and FEMA. At FEMA he provided executive leadership and direction for the insurance and floodplain management aspects of the National Flood Insurance Program. He also coordinated insurance marketing, communication, and outreach strategies to reduce losses from flooding and other perils. In 2003, Mr. Leikin transferred to the Department of the Treasury, where he served as the deputy director for the newly enacted Terrorism Risk Insurance Program. His responsibilities included establishing a framework for the program, developing policies and procedures for administering claims and for sharing losses among the federal and private sectors, and developing program regulations. He was detailed back to FEMA for five months in 2005 to assist with policy and implementation of the NFIP in the aftermath of Hurricane Katrina. Mr. Leikin holds a B.S. in applied mathematics from SUNY Stony Brook, an M.S. in operations research from George Washington University, and was designated an Associate in Risk Management by the Insurance Institute of America.

Martin W. McCann

Member

Martin W. McCann is president of Jack R. Benjamin and Associates, Inc., and is also a consulting professor of civil and environmental engineering at Stanford University. At Stanford, he is a former chair of the National Performance of Dams Program, which created a national network to report dam safety incidents and to archive this information for use by the geotechnical and seismic engineering communities. Dr. McCann's professional background and research have focused on probabilistic hazards analysis, including hydrologic events, risk assessment, reliability and uncertainty analysis, and systems analysis. He has been a consultant to several government and private sector groups in the U.S. and abroad, and has served on three NRC committees, including the Committee on Integrating Dam and Levee Safety and Community Resilience. Dr. McCann received a B.S. from Villanova University and an M.S. and Ph.D. from Stanford University.

Laura A. McLay

Member

Laura A. McLay is an associate professor of Industrial and Systems Engineering at the University of Wisconsin, Madison. Her research interests are in the field of operations research, with a particular focus on discrete optimization with application to homeland security and emergency response problems. Dr. McLay is president of Women in Operations Research and the Management Sciences, a forum of the Institute for Operations Research and the Management Sciences (INFORMS), and president-elect of the INFORMS Section on Public Programs, Service and Needs. She is a department editor for IIE Transactions, and an associate editor for Risk Analysis and International Transactions on Operational Research. She received a B.S. and M.S. in general engineering, and a Ph.D. in industrial engineering, all from the University of Illinois at Urbana-Champaign.

Erwann Michel-Kerjan

Member

Erwann Michel-Kerjan teaches in the graduate program at the Wharton School of the University of Pennsylvania and is the managing director of the Wharton Risk Management and Decision Processes Center. His research focuses on how to better manage and finance extreme events (e.g., terrorism, natural disasters) and to strengthen resilience through business and policy innovation. Since 2008, he has chaired the OECD Secretary-General Board on Financial Management of Catastrophes, which advises the 34 member countries on these issues. He was a founding member of the World Economic Forum's Global Agenda Council on Leadership and Innovation for Reducing Risks from Natural Disasters and co-led the G20 Paris initiative under the patronage of then-President Sarkozy. Dr. Michel-Kerjan has coauthored several books, including *Seeds of Disaster, Roots of Response: How Private Action Can Reduce Public Vulnerability* (Cambridge University Press), *The Irrational Economist: Making Decisions in a Dangerous World* (PublicAffairs) and *At War with the Weather* (MIT Press). The latter, coauthored with , with Howard Kunreuther, received the prestigious Kulp-Wright award for the most influential book on risk management. He received his Ph.D. in economics and finance at the Ecole Polytechnique in Paris, France.

Lindene Patton

Member

Lindene Patton is chief climate product officer for Zurich Insurance Group, which provides both primary insurance and reinsurance. She is responsible for policy and risk management related to climate change. Her research focuses on how risk management systems are affected by natural catastrophes, and on alternative financing models that reflect actual exposure as well as future climate change. She is a member of the World Economic Forum's Global Advisory Council on Measuring Sustainability and Advisory Board on Sustainability and Competitiveness. Ms. Patton serves on numerous government and non-governmental advisory boards, including the Executive Secretariat of the U.S. National Climate Assessment Development and Advisory Committee. She recently coauthored the book *Climate Change and Insurance* (2012). She is an attorney licensed in California and the District of Columbia and an American Board of Industrial Hygiene Certified Industrial Hygienist. She holds a B.S. in biochemistry from the University of California, Davis, a Master's of Public Health from the University of California, Berkeley, and a J.D. from Santa Clara University School of Law.

Patricia Templeton-Jones

Member

Patricia Templeton-Jones is chief operating officer of Wright National Flood Insurance Company, the largest provider of flood insurance in Florida and the United States. She is the current president of the Flood Insurance Servicing Companies Association of America and a member of the Write Your Own Coalition. The Write Your Own Program of the National Flood Insurance Program allows participating property and casualty insurance companies to write and service the standard flood insurance policy in their own names. Ms. Templeton-Jones recently served as NFIP flood coordinator for Wright Flood, and chaired the Institute for Business and Home Safety and The WYO Marketing Committee. With over 25 years of experience in the insurance industry, she is an outspoken advocate of the flood insurance program and of education about flood insurance.

Susan E. Voss

Member

Susan E. Voss is Vice President/General Counsel for American Enterprise Group, Inc. an insurance company specializing in health care insurance products and services. Prior to beginning her work at American Enterprise Group in November 2013, she was a consultant in the areas of life insurance and annuity regulation. From 2005 to 2013, she was the Iowa Insurance Commissioner, where she led efforts to coordinate work with state and federal emergency management teams to assist Iowans with flood-related property issues, including mitigation of homeowner damage and flood insurance issues. An integral member of the Iowa Insurance Division, she assisted on an “after action plan” committee formed by Governor Branstad in 1993, which made recommendations on risk mitigation, insurance education and outreach, and state emergency management plans. She provided similar leadership services following the Iowa floods of 2008. She was a representative of the state of Iowa as well as president of the National Association of Insurance Commissioners. Ms. Voss has also represented the United States and Iowa in meetings with foreign regulators and officials regarding insurance operations in China, South Korea, Chile, Ecuador, and Germany. She received her B.A. from Simpson College and her J.D. from the Gonzaga University School of Law.