

DISASTER RESEARCH CENTER

DEPARTMENT OF SOCIOLOGY & CRIMINAL JUSTICE

UNIVERSITY OF DELAWARE

2005 Annual Report

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From the Director

Following one of the most devastating disasters in recent history, the 2004 Indian Ocean tsunami, the year 2005 was characterized by a number of disasters (some would argue catastrophes) that brought to the forefront of national and international communities important issues related to disaster mitigation, preparedness, response, and recovery. The aftermath of Hurricane Katrina (in one of the most active hurricane seasons in recorded history in the U.S.) in the Gulf Coast, but particularly in New Orleans, highlighted major issues and concerns regarding the response and recovery process following this devastating event. This disaster also highlighted issues related to inequality, stratification, poverty, and how some groups are disproportionately impacted by these types of events. Also, and contrary to most disasters, the dislocation of tens of thousands of individuals impacted by Katrina may well result in a migratory process (without return) to many parts of the U.S. The Kashmir or Northern Pakistan earthquake of October 2005, resulting in over 90,000 deaths and an estimated three million dislocated individuals, once again manifested the interaction between disasters, development and vulnerability. Indeed, for those of us who study the social and economic impact of disasters, unfortunately, 2005 was a very active year.

The Disaster Research Center (DRC) at the University of Delaware continued its long-term tradition of sending quick response teams to carry out field research and collect valuable and perishable data following major disasters. Our field research team, in conjunction with the University of North Texas (funded by the Earthquake Engineering Research Institute - EERI – and the University of Puerto Rico-Sea Grant Program), returned to the U.S. in early 2005 from Sri Lanka and India following the Indian Ocean Tsunami. About one month after the impact of Hurricane Katrina, field teams were also sent to Louisiana, Mississippi, and Texas to engage in extensive data collection including interviews, participant observation, and systematic document gathering. DRC faculty members were also part of the American Sociological Association's (ASA) Task Force designed to generate a social science research agenda following the aftermath of Hurricane Katrina. We are now in the process of analyzing the data that we collected and writing a number of reports and articles that will be made available via several sources.

Throughout 2005, a variety of important initiatives and accomplishments were also taking place at DRC, some of which are summarized below:

- Nine (9) graduate and 15 undergraduate students worked at DRC throughout 2005 as research assistants. These students have been instrumental in the growth and development of our Center. Funding for these students has been possible through an increasing number of externally funded research projects which are presented towards the end of this Annual Report.
- Lauren Barsky and Daniel Marks completed their Master's theses. Lauren's thesis was titled "Hands Off My Property!" An Assessment of the Local, National, and International Print Media's Portrayal of Looting in Disasters." Dan's thesis focused

on “Policing and Terrorism: The Impact of 9/11 on the Organizational Structure of State and Local Police Departments in the United States.”

- The Research Experience for Undergraduates (REU) Program, funded by the National Science Foundation and the University of Delaware, was initiated in the summer of 2005. This three-year program brings together a talented group of social science students, selected competitively throughout the U.S., to engage in an intensive and hands-on training program at DRC. Lauren Barsky and Carla Russell summarize the goals and success of the 2005 REU in an article included in this Report.
- DRC continues to work with the Hugh M. Morris Library at the University of Delaware to digitize parts of our collection, such as the long-standing Preliminary Reports, Annual Reports, Project Reports, presentations, and research notes, among others. To examine the documents that have already been digitized, please refer to: <http://dspace.udel.edu>.
- As this report will show, DRC had an extensive number of visitors in 2005. One of these visitors was Dr. Masaki Urano. Dr. Urano is a Visiting Scholar at DRC (for a one year period). He is a Professor of Sociology in the School of Letters, Arts and Sciences at Waseda University in Tokyo, Japan. Dr. Urano’s specialty areas include urban sociology, community studies, and the sociology of disasters. It has been a great pleasure to have Dr. Urano visit DRC and participate in our activities and research agenda.
- Rodriguez, Quarantelli and Dynes joined efforts to put together an edited volume, the *Handbook of Disaster Research* (Forthcoming, 2006 by Springer), which we view as a comprehensive collection focusing on a variety of topics related to disaster research, education, and technology. Multi-disciplinary in nature and international in perspective, we hope that this *Handbook* will have an important impact on the field and beyond.

We welcome you to closely examine our 2005 annual report and take note of the productivity, accomplishments, and contributions of our faculty and graduate and undergraduate students to the field of disaster research.

Havidán Rodríguez, Ph.D.
Director

2/6/2006

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Disaster Research Center Personnel

Director

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Core Faculty

*Benigno Aguirre
Joanne M. Nigg
Tricia Wachtendorf*

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E. L. Quarantelli, Professor Emeritus*

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*Jennifer Larson – Undergraduate Assistant
Matthew Nichols – Undergraduate Assistant
Jessica Rothrock – Undergraduate Assistant*

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* * * *

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Lauren Barsky

William Donner

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Jennifer Santos-Hernández

Manuel Torres

Gabriela Wasileski

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Jennifer Larson

Matthew Nichols

Jessica Rothrock

Jen Westfall

John Bloxom

Megan Denver

Desiree Shivery

Leticia Jarmon

Becky Napp

Jaime Perez

Carla Russell

***The 2005 Research Experience for Undergraduates (REU) Program:
Training the New Generation of Disaster Researchers***

Lauren Barsky and Carla N. Russell¹, Disaster Research Center (DRC), University of Delaware

(This article originally appeared in Unscheduled Events, September, 2005 issue, pages 4-6.)

Introduction

For nine intensive weeks, during the summer of 2005, ten talented undergraduate students, from academic institutions across the country, participated in the Disaster Research Center's (DRC) Research Experience for Undergraduates (REU) Program. The REU is a three-year program funded by the National Science Foundation and the University of Delaware. These students participated in a number of course modules focusing on the disaster and hazard's research fields and research methodology in the Social Sciences. They had the opportunity to meet with leading scholars, researchers, practitioners, and representatives from a number of organizations. Students also participated in several meetings/workshops, including the National Research Council's Disasters Roundtable and the Hazards Workshop at the University of Colorado-Boulder. Further, throughout the nine weeks, students worked very hard to develop and present their research proposals primarily using data from past and current DRC projects. During the 2005-06 academic year, they will continue to work on their research projects and will submit a research paper to DRC program staff.

It is noteworthy that the first cohort of DRC-REU students was a multidisciplinary one representing a number of fields, including anthropology, communications, criminal justice, geography, operations management, political sciences, psychology, and sociology. Further, students came from a number of institutions throughout the US,

¹ Barsky and Russell were the student co-coordinators for the DRC-REU Program. Drs. Havidán Rodríguez and Joanne Nigg are the Principal and Co-Principal Investigators, respectively, of the NSF-funded Program. DRC faculty mentors included Drs. Tricia Wachtendorf, Benigno E. Aguirre, Russell Dynes and Enrico L. Quarantelli, as well as Rodríguez and Nigg. Dr. Henry W. Fischer was also an instrumental partner in the development of the NSF proposal and in providing his technical expertise and assistance in the implementation of the Program. We want to thank all the faculty, staff, and students at the University of Delaware, the visiting faculty and practitioners, and the funding agencies who made this program possible.

including Ithaca College (New York), University of Central Florida, Oklahoma State University-Stillwater, Humboldt State University (California), Herbert H. Lehman College at the City University of New York, Lincoln University (Pennsylvania), Millersville University (Pennsylvania), and the University of Delaware.

Modules and Speakers

During the first five weeks of the REU Summer Institute, DRC faculty taught several modules focusing on key concepts, theories and research in the social science aspects of disasters, social science methodology in disaster research, and ethical issues and constraints in disaster research. As new researchers in disasters, students became familiar with cutting-edge issues and innovations in the field. Moreover, the research modules gave them a basic understanding of some of the commonly used methodologies in disaster research. Students also received training in conducting research with human subjects and gained an understanding of the policies and practices of Institutional Review Boards (IRBs).

The Invited Speaker Series served to introduce the REU trainees to leading experts, researchers, and practitioners in the disaster field. Speakers came from a diverse number of institutions and organizations, including the Nassau County Office of Emergency Management, the New Castle County Office of Emergency Management, the Federal Emergency Management Agency (FEMA), and the American Red Cross. Researchers from Carlton University in Canada, the University of North Texas, and the University of Delaware, as well as a private consultant met with the REU students to present their research projects and experiences in the disaster field. Since one of the primary goals of the REU program is to motivate students to apply and get admitted into graduate programs across the nation, some of the invited speakers also discussed the process of applying to graduate schools, how to select potential schools, preparing for the GREs, and funding opportunities.

Professional Activities and Conferences

In order to foster students' professional development and immersion into the disaster research field, REU participants spent three days with some of the leading researchers and practitioners in the hazards and disaster research fields while participating in the Natural Hazards Center's Annual Hazards Research and Application Workshop at the University of Colorado. The students also traveled to Washington, D.C. to attend the National Research Council's (of the National Academies of Science) Disasters Roundtable session on the "Indian Ocean Tsunami: Implications for U.S. and Global Disaster Reduction and Preparedness." In a collaborative effort with the REU Civil Engineering Bridges Program, also located at the University of Delaware, the REU trainees from both programs spent a day in New York City visiting the World Trade Center site and the Brooklyn Bridge and were exposed to the multidisciplinary nature of the disaster field. We should also note that students participated in a number of social and cultural activities.

Research

Throughout the course of the nine-week program, students were introduced to a number of DRC's past and current research projects. Faculty researchers and graduate students provided extensive presentations on these projects to allow the REU students to become familiarized with the research work that is conducted at DRC. Based on their research interests and the aforementioned presentations, students developed ideas for their own research proposals. During the last week of the Program, REU students presented their proposals and some preliminary findings. During the coming academic year (2005-06), they will continue their research under the guidance of faculty mentors, both at DRC and their home universities. Their final papers will be published in an edited volume which will be made available to the general public through the DRC Resource Collection and its website. Some funding will also be made available to the REU students, during the 2005-2006 academic year, to attend professional meetings to present the results of their research.

Conclusions... and the Future

The implementation of the DRC-REU Summer Institute was based on the premise that exposure to research training and mentoring is essential for the professional development and growth of undergraduate students and to encourage them to enter the disaster, hazard, and emergency management fields. The program was successful in providing the students with hands-on research training and mentoring in order to enhance their understanding of the social science aspects of disasters. Through the program, the students were able to learn from a variety of professionals within the disaster field and to develop projects based on their own research interests.

Within the next few months, general information, selection criteria, and application materials will be made available on the DRC website (www.udel.edu/DRC) for the 2006 Summer Institute. Please encourage your students to submit applications to become part of the next (second) cohort of REU students during the summer of 2006! [Editor's Note: The deadline for submitting applications for the 2006 REU Program was February 1, 2006].

2005 Publications

Articles and Book Chapters

Aguirre, Ben

“Emergency Evacuations, Panic, and Social Psychology: Commentary on ‘Understanding Mass Panic and Other Collective Responses to Threat and Disaster.’” *Psychiatry*, Vol. 68, No. 2, Pp. 121-129.

Aguirre, Ben, Russell R. Dynes, James Kendra and Rory Connell

“Institutional Resilience and Disaster Planning for New Hazards: Insights from Hospitals.” *Journal of Homeland Security and Emergency Management*, Vol. 2, No. 2, Pp. 1-17.

Barnshaw, John

“The Continuing Significance of Race and Class among Houston Hurricane Katrina Evacuees.” *Natural Hazards Observer*, Vol. 30, No. 2, (November, 2005) Pp. 11 – 13.

Barsky, Lauren and Carla Russell

“The 2005 Research Experience for Undergraduates (REU) Program: Training the New Generation of Disaster Researchers.” *Unscheduled Events*, Vol. 24, No. 3, (September, 2005) Pp. 4-6.

Dynes, Russell R.

“The Lisbon Earthquake of 1755: The First Modern Disaster.” Pp. 34-49 in Theodore E. D. Braun and John B. Radner (eds.) *The Lisbon Earthquake of 1755: Representations and Reactions*. Oxford: Voltaire Foundation, 2005.

Dynes, Russell R. and Havidán Rodríguez

“Finding and Framing Katrina: The Social Construction of Disaster.” In “*Understanding Katrina: Perspectives from the Social Sciences*” (<http://understandingkatrina.ssrc.org>), Social Science Research Council, 2005.

Peckham, Joan, Benigno E. Aguirre, et al.

"A Pattern for the Integration of Conceptual Models in Support of Multidisciplinary Efforts to Develop Software." *Computing in Civil Engineering: Proceedings of the 2005 International Conference, American Society of Civil Engineers*, edited by Lucio Soibelman and Peña-Mora Feniosky, 2005.

Perry, Ronald W. and E. L. Quarantelli

Editors. *What is a Disaster? New Answers to Old Questions*. Philadelphia: Xlibris Corporation, 2005.

Quarantelli, E. L.

"Catastrophes are Different From Disasters: Some Implications for Crisis Planning and Managing Drawn From Katrina." In *Understanding Katrina: Perspectives from the Social Sciences*" (<http://understandingkatrina.ssrc.org>), Social Science Research Council, 2005.

"A Social Science Research Agenda for the Disasters of the 21st Century: Theoretical, Methodological and Empirical Issues and Their Professional Implementations." Pp. 325-396 in Ronald W. Perry and E. L. Quarantelli's (eds.) *What is a Disaster? New Answers to Old Questions*. Philadelphia: Xlibris Corporation, 2005.

Rodríguez, Havidán

"Reflections on the United Nations World Conference on Disaster Reduction: How Can We Develop Disaster Resilient Communities?" *International Journal of Mass Emergencies and Disasters*, Vol. 23, No. 1, Pp. 148-150.

Rodríguez, Havidán, Tricia Wachtendorf, James Kendra and Joseph Trainor

"The Great Sumatra Earthquake and Indian Ocean Tsunami of December 26, 2004." *EERI Special Earthquake Report* (www.eeri.org/lfe/pdf/india_srilanka_tsunami_eeri_socsci_report.pdf), May 2005, Pp. 1-7.

Trainor, Joseph

"Searching for a System: Multi-organizational Coordination in the September 11th World Trade Center Search and Rescue Response." Public Entity Risk Institute (PERI), 2005, available online at www.riskinstitute.org.

Trainor, Joseph, Havidán Rodríguez, Tricia Wachtendorf, and James Kendra

“More Than a Wave: Exploring the Social Impacts of the Indian Ocean Tsunami.” *Natural Hazards Observer*, Vol. 29, No. 5, Pp. 1-2.

Wachtendorf, Tricia

“Suggestions for Canadian Inter-Organizational Collaboration in Disaster Mitigation.” *Emergency Management Canada*, Vol. 1, No. 2, Pp. 18, 20-22, 24-25.

Wachtendorf, Tricia and James M. Kendra

“Improvising Disaster in the City of Jazz: Organizational Response to Hurricane Katrina.” In “*Understanding Katrina: Perspectives From the Social Sciences*” (<http://understandingkatrina.ssrc.org>), Social Science Research Council, 2005.

Other Publications

Aguirre, Benigno

P. Hondagneu-Sotelo, ed. *Gender and U.S. Immigration: Contemporary Trends* – Book Review. Berkeley, University of California Press, 2003. In *Ethnic and Racial Studies*, Vol. 28, No. 1, Pp. 183-184.

Rodríguez, Havidán, Joanne Nigg and Tricia Wachtendorf

“Social Science Research: Priority Areas for the National Plan for Research and Development.” Paper prepared for the CIP Research and Development Workshop for Academic and Federal Lab Research and Development Providers. Sponsored by the Department of Homeland Security (DHS), the Office of Science and Technology Policy (OSTP) and the National Science Foundation (NSF). Miscellaneous Report #52.

Rodríguez, Havidán, Tricia Wachtendorf, James Kendra, Joseph Trainor, and A. Subramanian

“The Indian Ocean Tsunami: Preliminary Field Report on India. Earthquake Engineering Research Center. <http://www.udeledu/DRC/tsunami/>

Rodríguez, Havidán, Tricia Wachtendorf, James Kendra, Joseph Trainor, and Ram Alagan

The Indian Ocean Tsunami: Preliminary Field Report on Sri Lanka. Earthquake Engineering Research Center. <http://www.udel.edu/DRC/tsunami/>

New Preliminary Papers

Aguirre, B. E. and E. L. Quarantelli

“The Invisible Dead in the World Trade Center Attack: Another Case Study of How Social Factors Affect and Distort Disaster Statistics.” Preliminary Paper No. 347.

Donner, William R.

“Decision-Making as Community Adaptation: The Human Ecology of Emergency Management.” Preliminary Paper No. 348.

Donner, William R., Desiree Grainger, Havidán Rodríguez, Walter Díaz, Jenniffer Santos-Hernández, and Daniel Marks

“Rainfall Estimates or Tornado Detection?: An Assessment Based on the Needs of Emergency Managers.” Preliminary Paper No. 346.

Dynes, Russell R.

“Community Social Capital as the Primary Basis for Resilience.” (An updated version of Preliminary Paper #327) Preliminary Paper No. 344.

Quarantelli, E. L.

“The Earliest Interest in Disasters and the Earliest Social Science Studies of Disasters: A Sociology of Knowledge Approach.” Preliminary Paper No. 349.

Rodríguez, Havidán

“Practical Tips and Guidelines: Conducting Face-to-Face Interviews (and Even Focus Groups).” Preliminary Paper No. 343.

Rodríguez, Havidán and Benigno Aguirre

“Education, Sustainable Development, and Disasters: An Interactive and Collaborative Approach.” Preliminary Paper No. 350.

Rodríguez, Havidán, Walter Díaz, William Donner, Jenniffer Santos-Hernández, and Daniel Marks

“Allocation of Radar Resources and Policy Implications: The End-User Community in Oklahoma.” Preliminary Paper No. 345.

M.A. Theses

Barsky, Lauren

"Hands Off My Property!" An Assessment of the Local, National, and International Print Media's Portrayal of Looting in Disasters." Department of Sociology and Criminal Justice, University of Delaware, Newark, Delaware.

Marks, Daniel

"Policing and Terrorism: The Impact of 9/11 on the Organizational Structure of State and Local Police Departments in The United States." Department of Sociology and Criminal Justice and Disaster Research Center, University of Delaware, Newark, Delaware.

Presentations at Professional/ Scientific Conferences

Aguirre, Benigno

“El Sistema de Alerta Integrado.” Invited presentation, Seminario de Vulnerabilidad Social a Desastres, Xalapa, Veracruz, August 25-26, 2005.

“Disasters in Cuba.” 55th Annual Meeting, Society for the Study of Social Problems, Philadelphia, Pennsylvania, August 12-14, 2005.

“El Sistema de Proteccion Civil en Cuba: Logros y Problemas.” Invited presentation, Conferencia Internacional “Involucrando a la Comunidad en Programas de Reduccion del Riesgo de Desasters,” Centro de Investigación de Desastres (CIR), Universidad de Falcón (UDEFA), Punto Fijo, Estado de Falcon, Venezuela, October 18-21, 2005.

Barnshaw, John

“Toward Predicting Movement Emergence in Resource Mobilization Theory.” The 68th Annual Meeting of the Southern Sociological Society, Charlotte, North Carolina, April 15, 2005.

“The Low Down on the Down Low: Critical Intersections in Risk among the Men who have Sex with Men (MSM) Community.” The 68th Annual Meeting of the Southern Sociological Society, Charlotte, North Carolina, April 16, 2005.

“No Child Left Behind: Choice, Segregation and Equity in American Public Education.” The 55th Annual Meeting of the Society for the Study of Social Problems, Philadelphia, Pennsylvania, August 12, 2005.

“Submerged Networks and Predicting Movement Emergence in Resource Mobilization Theory.” The 100th Annual Meeting of the American Sociological Association, Philadelphia, Pennsylvania, August 13, 2005.

“The Down Low: Critical Intersections in Risk among the Men who have Sex with Men (MSM) Community.” The 100th Annual Meeting of the American Sociological Association, Philadelphia, Pennsylvania, August 15, 2005.

“Structural Foundations of the Enduring Race Gap: The Effects of Race, Gender, and High School Racial Composition on Grade 12 English Track Placement.” The 100th Annual Meeting of the American Sociological Association, Philadelphia, Pennsylvania, August 15, 2005.

Barsky, Lauren

“Hands Off My Property!?: An Assessment of the Media’s Portrayal of Looting in Disasters.” Presented at the Annual Meeting of the American Sociological Association (ASA), Philadelphia, Pennsylvania, August 14, 2005.

Dynes, Russell R.

“Community Social Capital as the Primary Basis for Resilience.” NATO International Workshop on Resilience, University of Kent, Canterbury, United Kingdom, February 24, 2005.

“On the 30th Anniversary of the Natural Hazards Workshop.” Natural Hazards Workshop, University of Colorado, Boulder, Colorado, July 10, 2005.

“Dealing With Disaster in the 21st Century.” Emergency Management Series, North Dakota State University, Fargo, North Dakota, October 11, 2005.

Kendra, James M. and Tricia Wachtendorf

“Storming the Barricades: Post-Disaster Convergence as Locational Conflict.” Paper presented at the Annual Meeting of the American Association of Geographers, Denver, Colorado, April, 2005.

Kendra, James M., Havidán Rodríguez, Tricia Wachtendorf and Joseph Trainor

“Social Science Implications of the Indian Ocean Tsunami.” Invited presentation at the Earthquake Engineering Research Institute, Seattle, Washington, March 21, 2005.

Kendra, James M., Tricia Wachtendorf, Joseph Trainor, and Havidán Rodríguez

“Boats, Nets, and Motors: Recovery Issues after the 2004 Indian Ocean Tsunami.” Invited presentation at the Annual Hazards Research and Applications Workshop, Boulder, Colorado, July 12, 2005.

Marks, Daniel

“Digital Inequality and the Implementation of New Technologies: Problems with Technological Diffusion among Oklahoma Emergency Managers.” Presented at the Natural Hazards Conference, University of Colorado, Boulder, Colorado, July 10-13, 2005 and The American Sociological Association Annual Meeting, Philadelphia, Pennsylvania, August 13-16th 2005.

Nigg, Joanne M.

“Public Reactions and Political Responses to Earthquake Predictions.” Presented at the AAAS annual meeting, Washington, D.C., February, 2005.

“Warning System Components.” Presented to the NAS Committee on Citizens’ Information Needs in Responding to Disaster, Washington, D.C., July 19, 2005.

“The Meaning of Recovery: What Needs to be Rebuilt?” Presented at the National Symposium on Risk and Disasters, Washington, D.C., December 1, 2005.

“Recovering from Catastrophes: What Does It Mean and What Do We Know?” Presented at the American Meteorological Society’s Environmental Seminar on “Disaster Recovery: A Post-Disaster Reaction or an Anticipated Activity?” Washington, D.C., December 13, 2005.

Brenda Phillips and Havidán Rodríguez

“Incorporating Users into System Design.” Presented at the Weather and Society Integrated Studies Workshop, NCAR, Boulder, Colorado, November 9, 2005.

Quarantelli, E. L.

“The New Disasters of the 21st Century.” Presented at the Center for Catastrophe Preparedness and Response, New York University, New York, New York, March 15, 2005.

“A Heuristic Approach to Future Disasters and Crises: Different Types.” Presented at the European Science Foundation Exploratory Workshop, Ste Maxime, France, June 24-27, 2005.

Rodríguez, Havidán

“Addressing the Quantitative Literacy Gap: The Integrating Data Analysis (IDA) Project, What is it all About?” Presented at the Lehman College IDA Conference, Lehman College, April 1, 2005.

“Disaster Research Boot Camp 101: A Brief Introduction to Social Science Research.” Presented at the 2005 NDMS Disaster Response Conference, Orlando, Florida, May 2, 2005.

“Disasters and Social Science Research: Contributions and Implications for Emergency Management.” Presented at the FEMA Emergency Management Higher Education Conference, Emmitsburg, Maryland, June 7-9, 2005.

“Building Sustainable Recovery and Development Initiatives: A Critical Overview of India and the Indian Ocean Tsunami.” Presented at the Natural Hazards Workshop

in the Plenary Session, "Asian Tsunami: Impacts and Sustainable Recovery," Boulder, Colorado, July 11-13, 2005.

"From the Others' Perspective: Pluralism across Borders: A Critical Analysis of American Sociology." Presented in the Thematic Session on "Others' Perspectives: Pluralism across Borders," American Sociological Association Annual Meeting, Philadelphia, Pennsylvania, August 14, 2005.

Rodríguez, Havidán and Benigno Aguirre

"Education, Sustainable Development and Disasters: An Interactive and Collaborative Approach." Presented at the International Conference on Energy, Environment, and Disasters (INCEED 2005), Charlotte, North Carolina, July 24-30, 2005.

Rodríguez, Havidán, Walter Diaz, Jenniffer Santos-Hernández, William Donner, and Daniel Marks

"Technological Innovations, Disaster Management, and End-User Needs: Challenges and Opportunities for Emergency Managers and Practitioners." Presented at the 2005 NDMS Disaster Response Conference, Orlando, Florida, May 4, 2005.

Rodríguez, Havidán, Walter Diaz, Jenniffer Santos-Hernández, and Aurelio Mercado

"Population Composition, Geographic Distribution, and Natural Hazards: Vulnerability in the Coastal Regions of Puerto Rico." Presented at the 1st Annual Symposium for Coastal and Marine Applied Research, University of Puerto Rico Sea Grant College Program, Mayagüez, Puerto Rico, September 2, 2005.

Rodríguez, Havidán and William Donner

"Population and Vulnerability to Disasters: A Demographic Perspective." Presented at the Disasters Roundtable, National Research Council of The National Academies, Washington, D.C., March 8, 2005.

"Science, Technology, and Hazards: Societal Vulnerability to Disasters." Presented at the Academy of Lifelong Learning, Spring Lecture Series, University of Delaware, March 10, 2005.

Rodríguez, Havidán, Tricia Wachtendorf, James Kendra, and Joseph Trainor

"Socio-economic Impact and Consequences of the Indian Ocean Tsunami: Preliminary Findings from India and Sri Lanka." Presented at the 2005 NDMS Disaster Response Conference, Orlando, Florida, May 4, 2005.

“Societal Impacts of the Indian Ocean Tsunami: Preliminary Findings from India and Sri Lanka.” Presented at the Earthquake Engineering Research Institute Technical Briefing: “The Great Sumatra Earthquake and Tsunami of December 26, 2004,” Marvin Center, George Washington University, May 23, 2005.

“The Indian Ocean Tsunami: A Preliminary Assessment of Societal Impacts and Consequences.” Presented at the FEMA Emergency Management Higher Education Conference, Emmitsburg, Maryland, June 7-9, 2005.

“The 2004 Indian Ocean Tsunami: The Social Science Implications of Response and Recovery Initiatives.” Presented at the International Conference on Energy, Environment and Disasters (INCEED 2005), Charlotte, North Carolina, July 24-30, 2005.

“A Snapshot of the 2004 Indian Ocean Tsunami: Societal Implications and Consequences.” Presented at the 1st Annual Symposium for Coastal and Marine Applied Research, University of Puerto Rico Sea Grant College Program, Mayagüez, Puerto Rico, September 2, 2005.

Santos-Hernández, Jenniffer

"Preparing for and Facing the 'Unthinkable': The Mass Media as an Emergency Management Tool." Presented at The Natural Hazards Annual Conference, University of Colorado-Boulder, July 13, 2005 and at The American Sociological Association Annual Meeting, Theory and Methods Graduate Student Roundtable, Philadelphia, Pennsylvania, August 15, 2005.

Invited Speaker, “Environmental Rights” Panel Session, “Where Sociology Meet Solidarities” Session. Sociologists Without Borders (SSF), Association of Black Sociologists, American Sociological Association Latino/a Sociology Section. Philadelphia, Pennsylvania, August 12, 2005.

Trainor, Joseph, Havidán Rodríguez, Tricia Wachtendorf, and James Kendra

“More Than a Wave: Selected Social Science Insights from the December 26th Indian Ocean Tsunami.” Invited Panelists at the Symposium on Emergency Management and Disaster Abatement 2005, Arnhem, The Netherlands, May 25, 2005.

“After the Wave: Preliminary Social Science Insights from India and Sri Lanka.” Presented at the Annual Meeting of the American Sociological Association (ASA), Philadelphia, Pennsylvania, August 13, 2005.

Wachtendorf, Tricia

“Cross-Border Disaster Response and Planning: A Look at Canada and the U.S.”
Invited presentation at the “Crossings” Workshop on Cross-Border Security
Cooperation, Wayne State University, Detroit, Michigan, March 14, 2005.

“Partnering to Foster Disaster Resistant Communities.” Invited presentation at the
Disaster Resistant California Conference, Sacramento, California, May 17, 2005.

Wachtendorf, Tricia and James M. Kendra

“Fostering Resilience by Bolstering Improvisation Capacity: Findings from the
World Trade Center Disaster.” Invited presentation at the International Workshop
on Resilience, University of Kent, Canterbury, United Kingdom, February 25, 2005.

Invited panelists for “Improvised Thought, Action and Structure” in “Emergency
Response, Improvised Structure, Role and Process” at the Annual Hazards Research
and Applications Workshop, Boulder, Colorado, July 13, 2005.

“A Typology of Organizational Improvisation in Disasters.” Presented at the
Annual Meeting of the American Sociological Association, Philadelphia,
Pennsylvania, August 14, 2005.

Wachtendorf, Tricia, James Kendra, Havidán Rodríguez, and Joseph Trainor

Invited Panelists for “Gender Issues in Disasters” at the Annual Hazards Research
and Applications Workshop, Boulder, Colorado, July 12, 2005.

Wachtendorf, Tricia, Havidán Rodríguez, James Kendra, and Joseph Trainor

“Social Impacts and Consequences of the Indian Ocean Tsunami: Preliminary
Observations from India and Sri Lanka.” Invited presentation at the National
Disaster Medical Systems Conference, Orlando, Florida, May 3, 2005.

“Societal Impacts of the Indian Ocean Tsunami: Preliminary Findings from India
and Sri Lanka.” Invited presentation at the “Understanding Tsunamis 2005 – Online
Teacher Workshop,” College of Exploration and the National Science Foundation,
May 6-11, 2005 and at the “Disasters Roundtable on the Indian Ocean Tsunami
Disaster: Implications for U.S. and Global Disaster Reduction and Preparedness,”
National Research Council, The National Academies, Washington, D.C., June 21,
2005.

***Wachtendorf, Tricia, Havidán Rodríguez, Joseph Trainor, and
James Kendra***

“Social Impacts of the Indian Ocean Tsunami: Preliminary Findings from India and Sri Lanka.” Invited presentation to the Mid America Earthquake Center, University of Illinois, Urbana-Champaign, Illinois, April 21, 2005

Disaster-Related Academic & Professional Activities

Aguirre, Benigno

Co-Principal Investigator, NSF Grant 0331984 (2003-2006). "Behavioral Model of Pedestrian Dynamics."

Principal Investigator, NSF Grant 0324305 (2003-2006). "FEMA's USAR Task Force Deployments."

Principal Investigator, Public Entity Risk Institute Grant (2003-2005). "Anticipating Emergency Management Needs in Large Scale Community Crises: Lessons from the World Trade Center and Other Major Disasters."

Book Review Editor. *Natural Hazards Review*.

Reviewer. "The Nation's Fire Safety and Security." A Report of the National Research Council, Washington, D.C.

Barsky, Lauren

"Disaster Realities in the Aftermath of Hurricane Katrina: Revisiting the Looting Myth." Hurricane Katrina Quick Response Grant funded by the Natural Hazards Center at the University of Colorado.

Dynes, Russell R.

Reviewer, *American Sociological Review*, *Journal of Contingencies and Crises Management*, *American Ethnologist*, *Disasters*, Danish National Science Foundation.

Marks, Daniel

"ATLAS-ti: An Introduction." Presentation at the Disaster Research Center, University of Delaware, Newark, Delaware, June 23, 2005.

"The Social Impacts of Hurricane Katrina." Guest lecture at Goldey-Beacom College, Wilmington, Delaware, October 3-4, 2005.

Nigg, Joanne

Participant, National Academy of Sciences Committee on Citizens Information Needs in Responding to Disaster, Washington, D.C., July 19, 2005.

Invited Participant, Hurricane Katrina Research Summit, Mississippi State University, Starksville, Mississippi, November 17-19, 2005.

Panelist, Session on “Building for the Future: Strategies for the Gulf Coast” at the National Symposium on Risk and Disasters, Washington, D.C., December 1, 2005.

Nigg, Joanne and Joseph Trainor

Presenters, Disaster Research Poster Session at the American Sociological Association’s Centennial Research Reception on Capitol Hill, Washington, D.C., October 25, 2005.

Quarantelli, E. L.

Reviewer of disaster research proposal for the Swiss National Science Foundation.

Reviewer of “American Unplugged” British television documentary script.

Reviewer of workshop paper on a disaster topic for the National Academy of Sciences.

Participant in “Institutionalizing Preparedness: A Symposium,” Memorial Institute for the Prevention of Terrorism (MIPT) and DFI Government Services, Washington, D.C., April 2, 2005.

Reviewer of disaster related manuscripts for *Natural Hazard Journal*, *Journal of Crisis and Contingency Management*, and *Taiwan Management*.

Member of advisory committee, Columbia University School of Nursing Project on Emergency Preparedness and Local Public Health Drills and Exercises.

Review coordinator for National Academy of Sciences.

Rodríguez, Havidán

Researcher, Social Science Research Team, Mid-America Earthquake Center, funded by the National Science Foundation (Lead Researchers: Steve French and Ann Bostrom, 2004-Current).

Lead Social Science Researcher with Walter Díaz (Social/End-User Component), “Center for Collaborative Adaptive Sensing of the Atmosphere (CASA).” Funded by the National Science Foundation. ERC collaborative project between the University of Massachusetts-Amherst (David J. McLaughlin, PI), Colorado State University, the University of Oklahoma, and the University of Puerto Rico-Mayagüez.

Principal Investigator, “Population Composition, Geographic Distribution, and Natural Hazards: Vulnerability in the Coastal Regions of Puerto Rico.” Funded by

the University of Puerto Rico, Sea Grant College Program (with Walter Díaz and Aurelio Mercado; 2003-Current).

Federal Emergency Management Agency (FEMA), National Disaster Medical System (NDMS) Outstanding Achievement Award for 2004. Awarded on May 1, 2005 at the 2005 NDMS Conference, Orlando, Florida.

Member, Committee on Using Demographic Data and Tools More Effectively to Assist Populations at Risk of Facing Disasters, National Research Council, The National Academies.

Member, Committee on Assessing Vulnerabilities Related to the Nation's Chemical Infrastructure, Division on Earth and Life Studies Transportation Research Board, Board on Chemical Sciences and Technology, The National Academies.

Member, Disasters Roundtable Steering Committee, National Research Council, The National Academies.

Member, 2005 National Disaster Medical Systems (NDMS) Conference Planning Committee.

Reviewer, *Environment, Development and Sustainability*

Reviewer, *Disasters: The Journal of Disaster Studies, Policy and Management*

Reviewer, *Public Health Risks of Disasters: Communication, Infrastructure, and Preparedness*. Workshop Summary. The National Academies, Institute of Medicine and National Research Council, Washington, D.C.: The National Academies Press.

Organizer and Presider, "The 2004 Indian Ocean Tsunami: Social and Economic Impacts and Consequences." American Sociological Association Annual Meeting, Philadelphia, August 13, 2005. Sponsored by the International Sociological Association Research Committee 39 on Disasters.

Organizer, "Crises, Disasters and Other Threats." American Sociological Association Annual Meeting, Philadelphia, August 14, 2005. Sponsored by the International Sociological Association Research Committee 39 on Disasters.

Rodríguez, Havidán and Joanne Nigg

Co-Principal Investigators, "Hazards, Disasters, and Society: Training the Future Generations of Social Science Researchers." Funded by the National Science Foundation, Research Experience for Undergraduates (REU) Program and the University of Delaware.

Rodríguez, Havidán, Tricia Wachtendorf and Benigno Aguirre

Co-Principal Investigators, NSF Grant 0418227. “NSF Conference Proposal on Disaster Research and the Social Sciences: Lessons Learned, Challenges, and Future Trajectories.”

Santos-Hernández, Jennifer

Presider, “Disasters from ‘Below’: A Victims’ Centered Approach to Sociology of Disasters.” American Sociological Association Disaster Session, 100th American Sociological Association Annual Meeting, Philadelphia, Pennsylvania, August 14, 2005.

Presider, “Crisis, Creativity and Social Reality: Sociology and Disaster Research.” International Sociology Association Research Committee on Disasters, Philadelphia, Pennsylvania, August 14, 2005.

Invited Lecturer, “Hurricane Katrina: Race, Class and Vulnerability to Natural Disasters.” Facilitated in Professor Tricia Wachtendorf’s *Social Vulnerability in Disasters* Undergraduate Class.

Trainor, Joseph

Team Leader, DRC Quick Response Field Reconnaissance team to Louisiana in the wake of Hurricane Katrina, September 21-30, 2005.

Reviewer, *International Journal of Mass Emergencies and Disasters*.

Reviewer, *Disasters: The Journal of Disaster Studies, Policy, and Management*.

Member, Social impacts Post-Earthquake Field Reconnaissance Team to South Asia in the Wake of the December 2004 Tsunami, January 20-February 5, 2005. Sponsored by the Disaster Research Center, The University of North Texas, and the Earthquake Engineering Research Institute.

“South Asia Tsunami and Appropriate Aid for Disasters.” West Chester/Goshen Chapter of the International Rotary Club, February 24, 2005.

“Social Science, Culture, and Differential Impacts of the South Asia Tsunami.” Showtime Networks Mid-Atlantic Regional Meeting, March 17, 2005.

Wachtendorf, Tricia

Advisory Board Member, Learning from Earthquakes, Earthquake Engineering Research Institute.

Faculty Sponsor for Undergraduate Social Science Scholar Scott Golden. Topic: “The Role of Key Players on Organizational Improvisation during Sudden Crisis: A Study of the September 11th, 2001, Waterborne Evacuation of Lower Manhattan.”

Manuscript Reviewer for McGill University Press.

Moderator of the Congressional Briefing for Representative Patrick Kennedy's
"Ready, Willing and Able Act," July, 2005.

Panel Reviewer for the National Science Foundation.

"Social Impacts of Hurricane Katrina," presentation to the University of Delaware's
Residents Life.

Recipient of award from the Global Citizenship Faculty Fellows Program, The
Center for International Studies, University of Delaware.

Other Professional Activities

Aguirre, Benigno

Editorial Board member, *Journal of Marriage and the Family*, *Contemporary Sociology*, and *Social Science Quarterly*.

Contributing Editor, *Handbook of Latin American Studies*, Sociology of the Caribbean and the Guianas Section (Vol. 55 and subsequent volumes).

Member, National Science Foundation Dissertation Improvement Award Committee, NSF Sociology Program.

Chair, Committee on Diversity and Affirmative Action, Faculty Senate, University of Delaware.

Chair, Latino Caucus, Office of Vice President J. Gibson, University of Delaware.

Member, Academic Program Review and Planning Committee, Department of Languages and Literatures, University of Delaware.

Barnshaw, John

Instructor, Helping Ourselves Mold Education Program, Math/Science Equity Program, The University of North Carolina at Charlotte.

Speaker, Speaker's Bureau, Metrolina AIDS Project.

Secretary-General, Graduate Sociological Association.

Member, *Sociologos Sin Fronteras* (Sociologists Without Borders).

Rodríguez, Havidán

Organizer and Presider, Special Session, "Rethinking Sociological Paradigms: Latina/o Sociology in the 22nd Century" (with Denise Segura). American Sociological Association Annual Meeting, Philadelphia, August 14, 2005.

Member, Nominations Committee, Southern Sociological Society.

Member, Graduate Recruitment and Success Coordinating Committee, University of Delaware.

Member, Promotion and Tenure Committee, Department of Sociology and Criminal Justice, University of Delaware.

Member, Search Committee, Department of Sociology and Criminal Justice, University of Delaware.

Member, Advisory Board, The University of Michigan Population Fellows Program.

Member, Council, Latino/a Sociology Section, American Sociological Association.

Member, Advisory Board, The University of Michigan Population Fellows Program, Professional Exchange for Applied Knowledge (PEAK) Fellowship.

Member, Search Committee, Dean for the College of Arts and Sciences, University of Delaware.

Member, Graduate Recruitment and Success Coordinating Committee, University of Delaware.

Member, Council on Student Diversity, University of Delaware.

Santos-Hernández, Jennifer

Invited Lecturer, "SPSS: An Introduction to Statistical Analysis." Workshop given at the DRC Research Experience for Undergraduates Program, July, 2005.

Recipient, Travel Fund Award, Department of Sociology and Criminal Justice, University of Delaware.

Recipient, Graduate Travel Award, Office of Graduate Studies, University of Delaware.

Research Assistantship, University of Delaware, 2004-present.

Graduate Student Representative, Department Policy Committee, Department of Sociology and Criminal Justice, University of Delaware.

Co-webmaster for the Disaster Research Center, Department of Sociology and Criminal Justice, University of Delaware.

Graduate Student Representative, Graduate Policy Committee, Department of Sociology and Criminal Justice, University of Delaware.

Torres, Manuel

"Culture and the Medical Marijuana Movement." Presented at the Annual American Sociological Association Meeting, Philadelphia, Pennsylvania, August 13, 2005.

Trainor, Joseph

Member, Departmental Policy Committee, University of Delaware.

Wachtendorf, Tricia

Fellow, CONNECT Seminar Fellowship Program. Awarded by the Government of Canada, the University of Vermont, and Plattsburgh State University.

Member, Assistant Professor Search Committee, Department of Sociology and Criminal Justice, University of Delaware.

Member, Undergraduate Policy Committee, Department of Sociology and Criminal Justice, University of Delaware.

Undergraduate Students' Achievements

Bloxom, John

University of Delaware Dean's List

Clark, Michael

University of Delaware Dean's List

Denver, Megan

University of Delaware Dean's List
Alpha Lambda Delta Honor society
National Society of Collegiate Scholars

Golden, Scott

University of Delaware Dean's List
National Society of Collegiate Scholars
Member of Blue Hen Ambassadors

Gunyuzlu, Meghan

University of Delaware Dean's List
Inducted into the Political Science Honor Society

Jarmon, Letitia

University of Delaware Dean's List

Moses, Michelle

University of Delaware Dean's List

Napp, Rebecca

University of Delaware Dean's List
President Roselle's Women of Promise Award
Member of Alpha Kappa Delta, National Sociology Honor Society

Perez, Jaime

University of Delaware Dean's List
Inducted into Phi Beta Kappa
J. Bayard Eliason Scholar Award
Len Perfetti Award Nominee

Ross, Lauren

University of Delaware Dean's List
Inducted to the Order of Omega Honor Society

Wurcel, Julie

University of Delaware Dean's List

Research Projects, 2005

Behavioral and Model of Pedestrian Dynamics.

DRC Principal Investigator: Benigno E. Aguirre (with Natacha E. Thomas, University of Rhode Island)

Project Leader: Gabriel Santos

Funding Agency: National Science Foundation

The project develops a Cellular Automata (CA) model and associated prototype software for the simulation of environmentally-constrained and managed pedestrian motion during normal times and during emergency situations that result in evacuations. The model captures naturally occurring interactions involving the environment, the pedestrians, physical constraints, emergency constraints, and the evacuation policies and controls that a management authority would attempt to implement. From a social science perspective, it is useful to think of evacuation behavior during emergencies as having three distinct analytical dimensions: the physical environment being evacuated, the managerial policies and controls deployed at evacuation, and the psychological and social organizational factors impacting the people present during the emergency. It is much more common in the physics and engineering literature to find consideration of the first two dimensions than of the third. The proposed study addresses the essence, and the interactions, of all three dimensions of the pedestrian evacuation problem to predict the course of events following the enactment of specified evacuation policies and controls. The project results will be interpreted in light of accumulated knowledge on the sociology of disasters, allowing for the provision, to local and federal government agencies as well as private organizations, of a useful blueprint to follow during crisis evacuations. This provision of guidance is an important benefit to society, as it improves disaster response programs at the local, state and federal levels. The need for a social science study of crisis evacuation is particularly keen nowadays as terrorist threats have increased. The project also entails the training of graduate and undergraduate students in the mastery of analysis approaches and the participation of female and minority faculty in science. Project results further facilitate consideration of evacuation in the design phase of architectural, engineering, and urban design studies. (T. F. Greene Airport in Providence, Rhode Island, is the proposed simulation test-bed. The Rhode Island Airport Corporation vouches for its strong support of the proposed effort and anticipates using the derived simulation software.)

Characterization of the Supply Chains in the Aftermath of an Extreme Event: The Gulf Coast Experience.

DRC Co-Principal Investigator: Tricia Wachtendorf (with Jose Holguin-Veras and Satish Ukkusuri, Rensselaer Polytechnic Institute)

Project Leader: Bethany Brown

Funding agency: National Science Foundation

This project is concerned with gathering perishable information and data about the basic features of the formal and the informal logistic systems supporting the recovery and the flows of critical and non-critical supplies to areas impacted by Hurricane Katrina. Prior research points to the challenges associated with setting up supply chains to an impacted site that fully account for immediate resource requirements, the range of supply sources and source mechanisms, as well as the management and

prioritization of critical versus non-essential donations. This Small Grant for Exploratory Research (SGER) project will (1) identify the basic features of the supply chains delivering resources to the Gulf Coast; (2) Gather data about the actual flows of critical and non-critical supplies; and (3) Document lessons learned, both positive and negative. This research will provide future researchers with a clear picture of the supply chains in place at the site of an extreme event, which will enable the development of much needed decision support systems. This research involves multi-university collaborations between RPI and the University of Delaware. It makes use of quick response data collected by the University of Delaware's Disaster Research Center (DRC) in the weeks following the hurricane and leverages resources of Rensselaer's Center for Intermodal Freight Mobility and Security.

Collaborative Research Proposal on Improvisation and Sensemaking in Sudden Crisis.

DRC Principal Investigator: Tricia Wachtendorf (with James M. Kendra, University of North Texas and Jasmin Ruback, Ruback & Associates)

Project Leader: John Barnshaw

Graduate Research Assistant: Gabriela Wasileski

Undergraduate Research Assistant: Scott Golden

Funding agency: National Science Foundation, University of Delaware Research Foundation

This project examines organizational improvisation and sensemaking under conditions of rapid change and urgent needs for decision and action. The project studies the unplanned waterborne evacuation of hundreds of thousands of commuters from Lower Manhattan after the September 11, 2001 attack on the World Trade Center, and the subsequent improvised boat-lift of supplies and equipment into the city. Focus is on sensemaking and improvisation across multiple organizations that are geographically dispersed yet nevertheless able to "make sense" with each other regarding swiftly-developing emergency needs and to coordinate their actions responsively and productively. Analytical methods include an inductive qualitative approach to interview and documentary data as well as a social network analysis of pre- and post-attack relationships among participants and geographically referenced to points in the New York-New Jersey-Staten Island area. This is a collaborative project with James Kendra (PI) at the University of North Texas.

FEMA's USAR Taskforce Deployments: Implications for the Management of Emergency Response.

DRC Principal Investigator: Benigno E. Aguirre

Project Leader: Joseph Trainor

Research Assistants: Lauren Barsky, Rita Poteyeva, Manuel Torres

Undergraduate Research Assistants: John Bloxom, Megan Denver, Becky Napp, Jaime Perez

Funding Agency: National Science Foundation

The Urban Search and Rescue taskforces (USAR) sponsored by the National Science Foundation, a key component of the federal emergency response system, are examined to determine: A) the extent to which these taskforces are impacted by known problems at search and rescue (SAR) operations, as well as the solutions they have developed to these problems; and B) their interaction with other agencies, EMS personnel, volunteers, and law enforcement organizations, in what has become a critical factor in the conduct of present day SAR operations. Information comes from documents, focus groups with ten USAR taskforces, and in-depth interviews with 117 key informants representing other agencies and groups that participated in nine major USAR deployment sites. To

check on the validity of the findings, results of the content analysis of textual material are compared to the findings from statistical analyses of this same information. This project supports the training of one minority doctoral student and one minority undergraduate student. Results will be made part of graduate and undergraduate courses in risk analysis and emergency planning, and of programs and training at FEMA. The primary outcome of the study will be a useful blueprint for local, state, and federal agencies and private organizations to follow during participation in SAR operations that will help improve the effectiveness of disaster responses and USAR activities. It also contributes to the social science understanding of the emergent multi-organizational SAR system as a form of organized, adaptive crisis response social organization.

Improving USAR Preparedness Using Simulation Technology.

DRC Principal Investigator: Benigno E. Aguirre (with Sherif El-Tawil, University of Michigan)

Research Assistants: Lauren Barsky, Rita Poteyeva, Manuel Torres

Funding Agency: National Science Foundation

The primary goal of this proposal is to contribute to the state-of-the-art in urban search and rescue (USAR) preparedness by 1) developing a better understanding of how buildings partially or completely collapse to form rubble piles; 2) creating effective training tools that describe the collapse process and the formation of stable voids where survivors may be present in the rubble piles; and 3) developing knowledge that could form the basis of public education and awareness programs to help untrained, impromptu rescuers as well as urban search and rescue taskforces operate more effectively and safely at a collapsed building site. The proposal is motivated by the well-established fact that the survival chances of victims trapped in a collapsed building decline rapidly and become very low after six or seven hours of entrapment, so that their rescue is very often a function of the presence among the searchers of a person or persons who know the victim's possible location.

Organizational and Community Resilience in the World Trade Center Disaster.

DRC Principal Investigators: Kathleen Tierney and Benigno E. Aguirre

Other Lead Personnel: Tricia Wachtendorf

Research Assistant: Joseph Trainor

Funding Agencies: Public Risk Entity Institute (PERI); National Science Foundation through the Multidisciplinary Center for Earthquake Engineering Research (MCEER).

This project focuses on the manner in which emergency management and crisis-relevant organizations in the City of New York coordinated with other responding organizations and jurisdictions to develop multi-organizational strategies for managing the World Trade Center Disaster. The project uses the World Trade Center attack and its aftermath as a case study to address longstanding issues in the disaster research literature, such as the relationship between planning, emergence, and improvisation in disaster response activities; how multi-organizational response networks develop and function, and how resilience is achieved in complex response networks. Research activities for this study consist of field work and direct observation in settings in which response and recovery activities are coordinated; interviewing; and document collection and analysis.

Population Composition, Geographic Distribution, and Natural Hazards: Vulnerability in the Coastal Regions of Puerto Rico.

DRC Principal Investigator: Havidán Rodríguez (with Walter Díaz and Aurelio Mercado, University of Puerto Rico-Mayagüez - UPRM)

Project Leader: Jenniffer Santos-Hernández

Research Assistants: Meghan Gunyuzlu, Carla Russell, Jen Westfall, Julie Wurcel

Funding Agency: University of Puerto Rico Sea Grant College Program

Given its geographic location and climatological conditions, Puerto Rico is highly susceptible to natural hazards (e.g., hurricanes, floods, tsunamis, and earthquakes). Coastal or riverine flood areas and steep mountains characterize much of Puerto Rico. Hurricanes San Ciriaco (1899), San Felipe (1928), San Ciprián (1932), Santa Clara (1956), Hugo (1989), and Georges (1998) have had a significant social and economic impact on the Island's population and economy. As a result of changing social and demographic patterns in Puerto Rico, there has been a significant increase in population density, in the proportion of the elderly and physically disabled population, and an increasing concentration of residents in flood and/or landslide prone areas and especially along the coastline. According to the Insurance Commissioner's Office, as of June, 2003, 160,000 families were living in flood prone areas in Puerto Rico, of which 43,568 (27.2%) did not have flood insurance. These factors have contributed to the increasing vulnerability to natural hazards on the Island. The primary goal of this project is to understand how these and other factors contribute to the vulnerability of the Puerto Rican population living in coastal regions, how they have changed from 1990 to 2000, and how risk and vulnerability vary according to different social, economic, and demographic variables. To accomplish the aforementioned goals, we propose to: 1) develop geographical maps of the coastal areas of Puerto Rico that will include detailed demographic and socioeconomic data of the resident population. GIS technology and existing storm surge and tsunami flood maps will be used as a starting point; 2) conduct a census of emergency response agencies and other organizations and structures located in areas subject to coastal flooding; 3) examine the determinants of vulnerability in the coastal regions of Puerto Rico and, using 1990 and 2000 Census data, determine how vulnerability in these regions has changed during a ten year period. This research project is a collaborative and interdisciplinary effort between the Disaster Research Center at the University of Delaware, the Center for Applied Social Research (CISA) and the Physical Oceanography Laboratory in the Department of Marine Sciences, both at the University of Puerto Rico-Mayagüez.

Quantitative Models of Social and Economic Consequences.

DRC Principal Investigator: Havidán Rodríguez (Project Principal Investigator: Steve French, with Walter Peacock (TAMU), Ed Feser (UIUC), and Ricardo López (UPRM))

Project Leader: Daniel Marks

Funding Agency: National Science Foundation through the Mid-America Earthquake Center (MAE)

“While a significant literature exists on the social and economic impacts of natural disasters, this knowledge has not been translated into quantitative models that can be used to predict the level of consequences that are likely to result from events of different magnitudes. To model the social and economic consequences of earthquakes will require the development of models that are driven by the physical damage estimates produced by engineering models. MAE Center research has produced robust models to predict physical damage to buildings, transportation networks and infrastructure systems. This project will extend those models to predict the social and economic consequences that are often the most salient concerns of decision makers. Major social impacts that have been

identified include short and long-term shelter needs, short and long term job loss, business failures, number of casualties, direct dollar losses and business interruption losses. The project team will compile an exhaustive list and identify those that can be effectively modeled. The project goals and objectives include: 1) to advance the state-of-the-art of social science research on earthquake hazards to be better aligned and integrated with the quantitative modeling approach that characterizes current research in the geophysical and engineering areas; 2) the development of a set of quantitative models to estimate the social and economic consequences that result from the physical damage produced by earthquake of various sizes; and 3) the development of a cross-hazard metric to characterize the damage states produced by a hazard event (earthquake, flood or hurricane). This metric will be the exogenous variable that drives the social and economic models.” (Quoted from the MAE Social Science Quad-Chart, Project Number: DS-7b).

Research Experience for Undergraduates (REU) Program: Training the New Generation of Disaster Researchers.

DRC Principal Investigators: Havidán Rodríguez and Joanne Nigg

Project Coordinator: Lauren Barsky

Undergraduate Research Assistants: Carla Russell

Funding Agency: National Science Foundation

The National Science Foundation recently funded (2005-2007) the University of Delaware’s Disaster Research Center (DRC) to establish a Research Experience for Undergraduates’ (REU) site to engage ten (10) undergraduate students in hands-on research training to enhance their understanding of the social science aspects of disasters. Each summer, a nine (9) week research training institute will be held at DRC to provide students with the necessary academic background, training, and relevant research experiences to prepare them to function as relatively independent research scholars. Course modules will focus on research methodology; social science approaches to understanding the causes and consequences of disasters; and ethical implications of the research process. Students will work with leading scholars and researchers on state-of-the-art research projects that focus on issues, such as: disaster mitigation, preparedness, response, recovery, vulnerability and resilience. A multi-disciplinary group of leading disaster researchers and practitioners will participate in the *Invited Speaker Series* in order to emphasize the contributions that other disciplines bring to this field. A series of professional development and social-cultural activities will complement the trainees’ overall education and training. For additional details on the 2005 REU Program, see the article by Barsky and Russell in this annual report.

Technology, Weather Forecasts, and Warnings: Integrating the End-User Community.

DRC Principal Investigator: Havidán Rodríguez (with Walter Díaz, University of Puerto Rico-Mayagüez - UPRM)

Project Leader: William Donner

Research Assistants: Daniel Marks, Jenniffer Santos-Hernández

Undergraduate Research Assistants: Meghan Gunyuzlu, Jen Westfall, Letitia Jarmon

Funding Agencies: National Science Foundation through the Engineering Research Center’s (ERC) Center for Collaborative Adaptive Sensing of the Atmosphere (CASA)

Scientists at DRC and the Center for Applied Social Research (CISA) at the UPRM are contributing to the research efforts of Center for Collaborative Adaptive Sensing of the Atmosphere (CASA) by exploring the social and human dimensions of severe weather forecasts and warnings. CASA is a recently established Engineering Research Center (ERC) within NSF’s Directorate for Engineering

that focuses on the development of revolutionary sensing technology that will enable earlier and more accurate forecasts of severe weather events. CASA's technology is expected to increase the warning time for tornadoes, flash floods, and other severe weather events and provide greater accuracy than existing systems. The aim of the recently funded ERC is to establish the necessary infrastructure to sense, analyze, and predict lower atmospheric events and to respond to potentially hazardous phenomena in order to significantly reduce their impact on society. More accurate and reliable weather forecasts and warning systems (based on the technology proposed by CASA researchers) may lead to improved disaster mitigation, preparedness, and response initiatives. However, improving weather forecasts and increasing lead times is only part of the equation in determining the ultimate effectiveness of organizational and individual preparedness and response to natural hazards. Social Scientists in the CASA project are focusing their research efforts on examining how improved forecasting can reduce the exposure and vulnerability of individuals and property to every-day and extreme weather events. Specifically, through the use of survey methodology, focus groups, and in-depth interviews, we are examining how the end-user community, particularly emergency managers, access, utilize, and respond to weather forecasts. We also seek to explore their knowledge and interests concerning weather forecasting issues, attitudes towards climatological information, and their needs and interests in relation to the use of meteorological information. We aim to answer a variety of questions, including: Who has access to climatological information and weather forecasts?; What are the primary sources of weather information used by emergency management agencies?; How much confidence do these end-users have in this type of information?; According to the end-users, how reliable are weather forecasts and warnings?; How does climatological information affect the decision-making processes of this community of end-users? The lead institution for CASA is the University of Massachusetts-Amherst under the leadership of the Principal Investigator, David McLaughlin.

*Disaster Research Center
Field Studies*

January and February

Havidan Rodriguez, Joseph Trainor, Tricia Wachtendorf, and James Kendra (University of North Texas). Coastal Regions in India and Sri Lanka impacted by the Indian Ocean Tsunami, Funded by EERI and the UPRM Sea Grant College Program.

September

*John Barnshaw.
Houston, Texas to interview those affected by Hurricane Katrina.*

*Havidán Rodríguez, Lauren Barsky, William Donner, Daniel Marks, Jenniffer Santos, Manuel Torres and Joseph Trainor.
Various locations in coastal Mississippi and Louisiana to interview those affected by Hurricane Katrina.*

October

Havidán Rodríguez in Alabama and Mississippi as part of the ASA Task Force on Hurricane Katrina

October (continued)

William Donner and Walter Diaz (University of Puerto Rico Mayagüez). Northwest Oklahoma to interview emergency managers for CASA quick-response project.

December

Tricia Wachtendorf, areas in Louisiana impacted by Hurricane Katrina for Supply Chain study.

Visitors to DRC

February

Hank Fischer, Millersville University, Millersville, Pennsylvania, USA (also visited in March)

Joseph Scanlon, Emergency Communications Research Unit, Carleton University, Ottawa, Ontario, Canada

March

Christine Bevc, Natural Hazards Research and Applications Information Center, University of Colorado, Boulder, Colorado, USA

Greg Evans, Saint Louis University, Saint Louis, Missouri, USA

James Kendra, University of North Texas, Texas, USA

David Neal, Oklahoma State University, Stillwater, Oklahoma, USA

Walter Peacock, Texas A & M University, College Station, Texas, USA

Amelia Rouse, University of New Mexico, Albuquerque, New Mexico, USA

Jasmin Ruback, Ruback Associates, State College, Pennsylvania, USA

Yaron Schwartz, ICT, New York, New York, USA

David Simpson, University of Louisville, Louisville, Kentucky, USA

Bill Stanhope, Saint Louis University, Saint Louis, Missouri, USA

Jeannette Sutton, Natural Hazards Research and Applications Information Center, University of Colorado, Boulder, Colorado, USA

May

Mark Claveloux, Delaware Emergency Management Agency, Smyrna, Delaware, USA

Walter Diaz, University of Puerto Rico-Mayagüez, Mayagüez, Puerto Rico

Go Ito, Meiji University, Tokyo, Japan

June

Derek Bopping, Defense Science and Technology Organization, Australia

George Bugliarello, Polytechnic University, Brooklyn, New York, USA

Captain Mary Chaffee, Uniformed Services, University of the Health Sciences, Bethesda, Maryland, USA (also visited in July and August)

Barbara J. Feldman, Seaton Hall University, South Orange, New Jersey, USA

Stuart A. Klein, Polytechnic University, Brooklyn, New York, USA

Lieutenant Colonel Margaret McNeil, Uniformed Services, University of the Health Sciences, Bethesda, Maryland, USA (also visited in July and August)

Vedant Pandya, Bhavnagar University, Bhavnagar Gujarat, India

August

Kelly Fitzgerald, Gerontology Institute, University of Massachusetts, Boston, Massachusetts, USA

Luisa Guillemard, University of Puerto Rico-Mayagüez, Mayagüez, Puerto Rico

Colonel John Murray, Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA

Chris Webb, Ministry of Civil Defence & Emergency Management, Wellington, New Zealand

August-December

Masaki Urano, Visiting Scholar, Waseda University, Tokyo, Japan

September

Stuart Nichenko, Pacific Gas and Electric Company, San Francisco, California, USA

James D. Weldin, Homeland Security Division, Delaware League of Local Governments, Dover, Delaware, USA

Visiting Guest Speakers at DRC's REU

June

Marcia C. Nickle, New Castle County Office of Emergency Preparedness, New Castle, Delaware, USA

Richard Buck, Department of Sociology and Criminal Justice, University of Delaware, Newark, Delaware, USA

Richard A. Rotanz, Nassau County Office of Emergency Management, Long Island, New York, USA

Mary Jane Wilkins, Human Subjects Review Board, University of Delaware Newark, Delaware, USA

July

Anne Bowler, Graduate Program Director, Department of Sociology and Criminal Justice, University of Delaware, Newark, Delaware, USA

James Kendra, University of North Texas, Denton, Texas, USA

Mary Martin, Director Graduate Studies, University of Delaware, Newark, Delaware, USA

Margi Prueitt, American Red Cross of the Delmarva Peninsula, Wilmington, Delaware, USA

Jasmin Ruback, Ruback Associates, State College, Pennsylvania, USA

Joseph Scanlon, Emergency Communications Research Unit, Carleton University, Ottawa, Ontario, Canada

Rick Sylves, Political Sciences & International Relations, University of Delaware, Newark, Delaware

Maria Vorel, FEMA, Washington, DC

August

Margi Prueitt, American Red Cross of the Delmarva Peninsula, Wilmington, Delaware, USA

Mark Tinsman, American Red Cross of the Delmarva Peninsula, Wilmington, Delaware, USA

Daniel Valle, American Red Cross of the Delmarva Peninsula, Wilmington, Delaware, USA

REU Students and Research Topics

RaEsa Benjamin-Wardle, Ithaca College, Ithaca, New York, USA.

“Mental Health, the Media and 9/11.”

Megan Denver, University of Delaware, Newark, Delaware, USA.

“Local Search and Rescue Teams: Who They Are, Where They Come From, and What They Can Do.”

Morgan Franklin, University of Central Florida, Orlando, Florida, USA.

“Public Education in Preparation and Mitigation.”

Scott Golden, University of Delaware, Newark, Delaware, USA.

“The Role of Key Players on Organizational Improvisation during Sudden Crisis: A Study of the September 11, 2001, Waterborne Evacuation of Lower Manhattan.”

Angela Head, Oklahoma State University, Stillwater, Oklahoma, USA.

“Access to OK-FIRST: Race, Ethnicity and Population Distribution in Oklahoma.”

Lynn Letukas, Millersville University, Millersville, Pennsylvania, USA.

“A Comparative Analysis of the Media Portrayal of the Indian Ocean Tsunami.”

Adrienne McCord, Humboldt State University, Arcata, California, USA.

“Integrating Development and Disaster Relief: Sumatra Earthquake 2004.”

Joseph Mellon, Millersville University, Millersville, Pennsylvania, USA.

“Risky Business: Risk Perception in Alameda County.”

Wandaly Rentas, Lehman College, The Bronx, New York, USA.

“Household Vulnerability: How Do Female-headed Households Measure Up?”

Verneé Ross, Lincoln University of Pennsylvania, Lincoln University, Pennsylvania, USA.

“A Quantitative Analysis of Socioeconomic and Demographic Characteristics: How is Risk Perception Affected?”