

BIOGRAPHICAL SKETCH

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NAME: Dawson, Jeffrey

eRA COMMONS USER NAME (credential, e.g., agency login): DAWSONJD

POSITION TITLE: Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
Brigham Young University, Provo, UT	B.S.	1987	Statistics (Mathematics)
Harvard University, Boston, MA	Sc.D.	1991	Biostatistics (Human Biology)

A. Personal Statement**B. Positions and Honors****Positions and Employment**

1985-87	Research Assistant, Brigham Young University, Provo, UT
1987-91	Teaching Assistant, Harvard University, Boston, MA
1988-89	Research Assistant, Dana-Farber Cancer Institute and Harvard University, Boston, MA
1991-97	Assistant Professor, Department of Preventive Medicine & Environmental Health, University of Iowa, Iowa City, IA
1997-99	Associate Professor, Department of Preventive Medicine & Environmental Health, University of Iowa, Iowa City, IA
1999-09	Associate Professor, Department of Biostatistics, College of Public Health (established 1999), University of Iowa, Iowa City, IA
2003-12	Director of Graduate Studies, Department of Biostatistics, College of Public Health, University of Iowa, Iowa City, IA
2009-	Professor, Department of Biostatistics, College of Public Health, University of Iowa, Iowa City, IA
2011-	Associate Dean for Faculty Affairs, College of Public Health, University of Iowa, Iowa City, IA

Honors

1987	Phi Kappa Phi Honor Society
1993	University of Iowa College of Medicine Research Committee Award
1994	Elected to Faculty Senate
1999-01	Faculty Mentor for Medical Science Training Program
2004	College of Public Health Faculty Service Award
2008-09	Chair of Faculty Council, College of Public Health, Univ. of Iowa
2013	Inducted into Delta Omega Honorary Society in Public Health
2012-15	American Statistical Association Council of Chapters Governing Board
2013-14	Academic Leadership Program Fellow, Committee on Institutional Cooperation
2016	Fellow, American Statistical Association

Professional Memberships

American Statistical Association
International Biometric Society (ENAR)
International Association for Statistical Education (IASE)

C. Contributions to Science

Driving Research in Neurologically-Impaired Populations:

I have been part of a research team for 18 years that has been using driving simulators, instrumented vehicles, and “black box” technology to study the safety and performance of drivers with Alzheimer’s disease, Parkinson’s disease, strokes, and obstructive sleep apnea, as well as healthy elderly drivers. We have been able to quantify differences between the disease groups and healthy drivers, and have found off-road cognitive tests that correlate with driving measures and with driving cessation. We have published over 40 papers in this area. Selected references are:

Dawson JD, Anderson SW, Uc EY, Dastrup E, Rizzo M. (2009) Predictors of driving safety in early Alzheimer’s disease. *Neurology*, 72(6), 521-527. PMID: 19204261

Dawson JD, Uc EY, Anderson SW, Johnson AM, Rizzo M. (2010) Neuropsychological predictors of driving errors in older adults. *Journal of the American Geriatrics Society*, 58(6), 1090-1096. PMC: PMC3204878, PMID: 20487082

Uc EY, Rizzo M, Johnson AM, Emerson JL, Liu D, Mills ED, Anderson SW, Dawson JD. (2011) Real-life driving outcomes in Parkinson disease *Neurology*, 76(22), 1894-1902. PMC: PMC3115811, PMID: 21624988

Aksan N, Dawson JD, Emerson J, Yu L, Uc EY, Anderson S, Rizzo M. (2013) Naturalistic distraction and driving safety in older drivers *Human Factors*, 55(4), 841-855. PMC: PMC3880225, PMID: 23964422

Cardiovascular Health:

I worked for several years in the adult phases of the Muscatine heart study, primarily in projects where we measured the intima medial thickness of carotid arteries and the abdominal aorta (cIMT and aIMT, respectively), which are surrogates for stroke and heart attack risk. We found that childhood cholesterol levels correlated with higher cIMT when measured decades later. We also found several cardiovascular risk factors that correlated with cIMT and aIMT in adolescents and young adults. I also work with collaborators in Pharmacy and Family Medicine to study issues related to the control of hypertension. We have demonstrated that certain types of collaboration between physicians and pharmacists can improve the management of high blood pressure. Overall, I have published 20 articles in the area of cardiovascular health. Examples include:

Davis PH, Dawson JD, Riley WA, Lauer RM. (2001) Carotid intimal-medial thickness is related to cardiovascular risk factors measured from childhood through middle-age: the Muscatine study. *Circulation*, 104, 2814-2819. PMID: 11733400

Dawson JD, Sonka M, Blecha MB, Lin W, Davis PH. (2009) Risk factors associated with aortic and carotid intimal-media thickness in adolescents and young adults: the Muscatine offspring study. *Journal of the American College of Cardiology*, 53(24), 2273-2279. PMID: 19520251

Davis PH, Dawson JD, Blecha MB, Mastbergen R, Sonka M. (2010) Measurement of aortic intimal-medial thickness in adolescents and young adults. *Ultrasound in Medicine and Biology*, 36(4), 560-565. PMID: 20350682

Carter BL, Ardery G, Dawson JD, James PA, Bergus GR, Doucette WR, Chrischilles EA, Franciscus CL, Xu Y. (2009) Physician and pharmacist collaboration to improve blood pressure control. *Archives of Internal Medicine*, 169(21), 1996-2002. PMID: 9933962

Longitudinal and Time Series Methodologies:

Throughout my career, I have investigated ways of reducing the dimensionality of repeated measures longitudinal data in ways that are simple enough to understand, yet complex enough to capture the intricacies of the data. I have 11 publications in this area. In recent years, this interest has been focused on the high-frequency repeated measures (i.e., time series data) that are obtained in my driving research. We have developed a new model that quantifies the diligence with which drivers return the car back towards the middle of the lane as the car approaches the lane boundaries. Examples of my methodological papers are:

Dawson JD, Han SH. (2000) Stratified tests, stratified slopes, and random effects models for clinical trials with missing data. *Journal of Biopharmaceutical Statistics*, 10, 447-55. PMID: 11104386

Arndt S, Turvey C, Coryell WH, Dawson JD, Leon AC, Akiskal HS. (2000) Charting patients’ course: a comparison of statistics used to summarize patient course in longitudinal and repeated measures studies. *Journal of Psychiatric Research*, 34, 105-113. PMID: 10758251

West CP, Dawson JD. (2002) Complete imputation of missing repeated categorical data: one-sample applications. *Statistics in Medicine*, 21(2), 203-217. PMID: 11782060

Dawson JD, Cavanaugh JE, Zamba KD, Rizzo M. (2010) Modeling lateral control in driving studies. *Accident Analysis & Prevention*, 42(3), 891-897. PMID: 20380917

D. Additional Information: Research Support and/or Scholastic Performance

Ongoing Research

Contract #34-5250-2000-011 (Dawson, Jeffrey, contact PI) 07/01/13-05/31/19
University of Nebraska Medical Center (Aksan, Nazan, Rizzo, Matthew)
Predictions of Driver Safety in Advancing Age
Role: Contact PI

The specific aims of this project are: 1) To obtain a comprehensive picture of age-related changes in older drivers' abilities by following longitudinally a cohort of drivers over age 65, most of whom are currently enrolled in our research on predictions of driver safety, using (a) analysis of state records of crashes and moving violations, (b) detailed assessment of cognitive abilities, and (c) measurements of driving performance from a high-fidelity driving simulator and an instrumented vehicle; 2) To study a particularly high-risk group of older drivers (ages 65 and over) who, because of non-alcohol-related, at-fault crashes or moving violations, had their licenses suspended and reinstated or revoked in the past year, and evaluate their cognitive abilities (using neuropsychological tools) and driving performance (using the simulator); and 3) To determine which cognitive impairments contribute the most to driving errors and crashes, and to develop predictive models of driving.

R01 HD084645 (Shields, Richard) 05/15/15-01/31/20
NIH
Musculoskeletal Plasticity after Spinal Cord Injury
Role: Co-Investigator

R01 HD082109 (Shields, Richard) 08/01/15-04/30/20
NIH
Long Duration Activity and Metabolic Control after Spinal Cord Injury
Role: Co-Investigator

The long-term goal of this research is to develop a rehabilitation strategy to protect the musculoskeletal health, metabolic function, and health-related quality of life of people living with complete SCI.

R01 CA215034 (Levy, Barcey) 08/01/17-07/31/22
NIH
Comparative Effectiveness of Fecal Immunochemical Tests with Optical Colonoscopy
Role: Co-Investigator

Colorectal cancer (CRC) is the third most common cancer and the third leading cause of cancer death in both men and women in the U.S., with nearly 50,000 deaths each year. Fecal immunochemical tests (FITs) are a type of FOBT that can be a sensitive, specific, and low-cost alternative to colonoscopy for CRC screening. We propose to compare the test characteristics of three CLIA-waived FITs and two automated FITs, using colonoscopy as the gold standard. Our aims are: Aim 1: To assess the diagnostic accuracy for advanced colorectal neoplasms of three of the most commonly used CLIA-waived FITs and two automated FITs, using colonoscopy as the gold standard. Aim 2: To evaluate the diagnostic accuracy of two quantitative FITs using receiver operating characteristic (ROC) analysis. Aim 3: To assess factors associated with false positive and false negative FIT results for each device. These findings will provide essential information about FITs with the best test characteristics for future expanded use of FIT, critically important to achieving our long-term goal of reducing morbidity and mortality from CRC. FITs are more acceptable to patients, will allow higher screening rates, and will reduce costs as compared with a screening strategy based on colonoscopy as the primary initial screening method.

R01 HL139918 (Kennelty, Korey) 02/01/18-01/31/23
NIH
Dissemination of the Cardiovascular Risk Service (CVRS Live)
Role: Co-Investigator

We developed an innovative team-based intervention, the Cardiovascular Risk Service (CVRS), which includes a centralized, pharmacist-led cardiovascular risk service and prevention services (e.g., vaccinations, cancer screenings) model to support primary care providers with CVD management and achievement of key performance measures. Specific aims: Aim 1: Identify, understand, and develop strategies for overcoming barriers to the adoption,

implementation, and maintenance of the CVRS in diverse primary care offices. Aim 2: Determine the real-world reach and effectiveness of the CVRS in diverse primary care offices. Aim 3: Determine CVRS sustainability and adaptation in diverse primary care offices.

R25 HL147231 (Zamba, Gideon)

03/01/19-02/28/22

NIH

Iowa Summer Institute in Biostatistics (ISIREB)

Role: Co-Investigator

This is a proposal to the National Institutes of Health (NIH), National Heart, Lung and Blood Institute (NHLBI), from the University of Iowa, in response to RFA-HL-19-019 for an Iowa Summer Institute for Research Education in Biostatistics (ISIREB), Summer Programs 2019, 2020, & 2021.

Completed Research

R01 HD062507 (Shields, Richard)

07/24/10-05/31/15

NIH

Mechanical Stress and Skeletal Plasticity after Spinal Cord Injury in Humans

Role: Co-Investigator

The long-term goal is to prevent the deleterious skeletal secondary complications that follow complete spinal cord injury (SCI). As many as twenty thousand Americans sustain an SCI each year, making it a public health concern of primary importance. Secondary complications from osteoporosis lead to bone fractures and renal complications that cost society between 4 and 7 billion dollars annually. A method to prevent bone loss after SCI would not only provide substantial savings, but could also profoundly improve the quality of life of people with SCI and keep them as viable candidates for the future cure.

No Contract # (Rizzo, Matthew)

01/01/13-6/30/15

Toyota Motor Engineering & Manufacturing

Measuring Unintended Consequences of In-Vehicle Technologies on Older Driver Safety

Role: Co-Investigator

A team of experts in neurology, neuropsychology, computer science, cognitive science, human factors engineering, and biostatistics will conduct a three-year program of multidisciplinary research to comprehensively assess functional abilities and driving performance in the older and younger drivers with a range of cognitive and attentional abilities.

T 15 HL097622 (Zamba, Gideon)

08/20/09-02/28/16

NIH

Iowa Summer Institute in Biostatistics (ISIB)

Role: Co-Investigator

There is a nationwide shortage of biostatisticians and the shortage is having a negative impact on medical and public health research. The goal of this proposed program is to increase the number of minority undergraduates who enter graduate programs in Biostatistics or related areas. Instruction will be through case-based instruction of real biomedical research; computer laboratory training; projects; and clinical and translational research enrichment activities.

R25 HL131467 (Zamba, Gideon)

02/15/16-01/31/19

NIH

Iowa Summer Institute for Research Education in Biostatistics

Role: Co-Investigator

This is a proposal to the National Institutes of Health (NIH), National Heart, Lung and Blood Institute (NHLBI), from the University of Iowa, in response to RFA-HL-16-017 for a Summer Institute for Research Education in Biostatistics. The ultimate vision of our proposed research education program is to increase the number of undergraduates who enter graduate programs in Biostatistics and to maintain a solid underrepresented minority pipeline into biostatistics graduate programs. The proposal is for the University of Iowa (UI) Department of Biostatistics to recruit a diverse group of 18 trainees each year, from 2016 to 2018, with focus on minority, underrepresented and disadvantaged students who wouldn't have otherwise been exposed to the field of biostatistics.