

THERESA A SCOTT, MS

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EDUCATION

University of Michigan, Department of Biostatistics, Ann Arbor, MI
Master of Science in Biostatistics,
Interdepartmental Concentration in Public Health Genetics, April 2003

Carnegie Mellon University, Pittsburgh, PA
Bachelor of Science in Mathematics,
Operations Research Concentration, May 2001

PRESENT POSITION

Department of Biostatistics, Vanderbilt University Medical Center, Nashville, TN

Biostatistician III, June 2006 - present

Biostatistician II, April 2004 - May 2006

- Key function performed: collaborated as a member of numerous research teams on the design, implementation, analysis, and publication of various research projects.
 - Provided statistical expertise in the design of research projects, focusing on fundamental issues including the determination and clarification of the research problem, hypothesis/hypotheses, specific aim(s), and basic study design.
 - Participated in the writing and revisions of grants and IRB proposals, including providing sample size/power calculations and justifications, and statistical analysis plans.
 - Assisted in the design and development of methods, operations and procedures to collect, edit, verify, and manage data, including the design of questionnaires and other data collection instruments.
 - Implemented the planned analysis of research projects, including data verification and data correction as necessary, using statistical analysis software (primarily the statistical programming language R) and ensuring reproducible research.
 - Implemented analysis included univariate and group-wise summary statistics, graphical exploratory data analysis, parametric and non-parametric tests of association, analysis of missing data, multiple imputation, linear regression analysis, generalized linear models (logistic and proportional odds), survival analysis, use of restricted cubic splines in various regression analysis, model validation using bootstrapping, and analysis of survey data (specifically NAMCS/NHAMCS data sets both with and without Census data, the National Survey of Children's Health data set, and the Nationwide Inpatient Sample data sets).
 - Prepared formal written reports summarizing and interpreting the data analysis results, including detailed explanations of the statistical methods and the synthesis of conclusions.
 - Presented written reports to collaborators, explaining all statistical methods and results in lay terms, and answering any of their questions.
 - Based on feedback from the collaborators, modified the planned analysis and implemented any new or revised analysis.
 - Participated in the writing and revision of abstracts, posters, slide presentations, and manuscripts for publication, including providing statistical methods and results sections, figures and tables.

- Assisted in the revision of submitted and reviewed manuscripts based on reviewers' comments, including performing any additional or modified analysis.
- Formal allocation of percent effort:
 - Collaboration plans between the Department of Biostatistics and Departments/Divisions in the School of Medicine, providing statistical support to physicians, clinicians, post-docs, fellows, residents, and medical students. Specific collaborations included
 - Department of Obstetrics and Gynecology, August 2004 - present.
 - Additionally participated in monthly journal clubs, providing critiques of the statistical methods of the presented article(s), and attended monthly departmental grand rounds.
 - Division of General Pediatrics, January 2007 - present.
 - Additionally attended a monthly "Research Works in Progress" meeting, providing feedback to division members presenting their research studies.
 - Vanderbilt Institute for Clinical and Translational Research (VICTR; funded by an NIH Clinical and Translational Science Award, CTSA).
 - * Provided statistical support to individual researchers via a Voucher system.
 - * Additionally attended bi-weekly VICTR Scientific Review Committee (SRC) meetings, monthly Biostatistics and Biostatistics/Ethics meetings, and weekly Biostatistics Clinics.
 - * Additionally scheduled topics and presenters for the Clinical Research Center's (CRC) weekly Research Skills Workshop.
 - Other projects with non-Vanderbilt entities, which included
 - Data Safety Monitoring Committee (DSMC) for a large pharmaceutical company clinical trial (75% effort), January 2004 - December 2006.
 - Generated the open (blinded) and closed (un-blinded) reports for each meeting of the DSMC (every three months) using the statistical programming language R and L^AT_EX.
 - Modified the reports as needed based on DSMC members comments at each meeting.
 - Contributed to the development of `rreport`, an R package that produces statistical reports in L^AT_EX for clinical trials.
 - Maintained data, code files, and correspondence with Amgen.
- Additional functions performed:
 - Attended various continuing education opportunities including daily Biostatistics clinics, a weekly Biostatistics seminar, and a weekly meeting of the Department's MS level biostatisticians.
 - Served as a source for other department members and other clinicians/researchers to learn the statistical programming language R, L^AT_EX, and Sweave, including addressing their questions outside of the R Clinic (included multiple 'Continuing Education' sessions of the weekly meeting of Department's MS level biostatisticians and other instances described in the Teaching Experience section).
 - Assisted other Vanderbilt clinicians/researchers outside of the mentioned allocations of percent effort, including medical students involved in the Emphasis Program (a research experience which culminates in the submission of an abstract and poster).
 - Participated in the recruiting of MS level biostatisticians, including rewriting the current job ad, going on recruiting trips, interviewing prospective candidates, and attending monthly MS Search Committee meetings.

PREVIOUS WORK EXPERIENCE

University of Pittsburgh, Department of Human Genetics, Pittsburgh, PA

Research Assistant for Candice Kammerer, PhD, and Michael Barnada, PhD, May 2003 - April 2004

- Managed data and pedigree information for various projects relating to osteoporosis, arteriosclerosis, hypertension, and thyroid hormones in humans, as well as melanoma in inbred lines of *Xiphophorus* (a genus of freshwater fish).

- Conducted appropriate statistical analysis, including traditional exploratory data analysis, linear regression analysis, and outlier analysis, as well as parametric linkage analysis (two-point and multi-point), quantitative trait linkage analysis, association analysis, and other analyses including testing for Hardy-Weinberg equilibrium.
- Generated scripts to aid analysis process and representation of results.
- Assisted in writing the statistical methods section of specific projects for publication.

COMPUTER SKILLS

Operating systems: Linux, Windows, Macintosh, and UNIX

Statistical software: R (primary language since summer 2000), STATA, SAS, SPSS, S-Plus, and Minitab

Reporting software/tools: L^AT_EX and Sweave (mixes text and R/S-Plus code for automatic document generation)

Other software: Microsoft Word, Excel, and Powerpoint

Statistical genetics analysis packages: SOLAR, EH, EH Plus, PedSys, Merlin, QTDT, Mapmaker, and MapManager

Other programming languages: C-Shell and Perl

PUBLICATIONS

- In press:
 - Gallion H, Dupree L, Scott TA, Arnold DH. *Diagnosis of Trichomonas vaginalis in Female Children and Adolescents Evaluated for Possible Sexual Abuse: A Comparison of the InPouch TV[®] Culture Method and Wet Mount Microscopy.* Journal of Pediatric and Adolescent Gynecology.
- Published:
 - Patel RP, Gambrell M, Speroff T, Scott TA, Pun BT, Okahashi J, Strength C, Pandharipande P, Girard TD, Burgess H, Dittus RS, Bernard GR, Ely EW. *Delirium and Sedation in the Intensive Care Unit (ICU): survey of behaviors and attitudes of 1,384 healthcare professionals.* Crit Care Med. 2009 Mar;37(3):825-32.
 - Hebert PR, Byrne DW, Coffey CS, Scott TA, Fagard RH, Meade TW, Rottman JN, Murray KT, Oates JA. *Treatment of Hypertension with Epithelial Sodium Channel Inhibitors Combined with a Thiazide Diuretic Reduces Coronary Mortality and Sudden Coronary Death.* J Am Soc Hypertens. 2008;2(5):355-65.
 - Cole ME, Milam MR, Scott TA, Jones HW 3rd. *Inadequate screening in patients evaluated by nongynecologists for cervical cancer: a case control analysis.* Am J Obstet Gynecol. 2008 May;198(5):e48-50. Epub 2008 Mar 14.
 - Lemly D, Mandelbrot L, Meier F, Firtion G, Matheron S, Jeantils V, Scott TA. *Factors related to medical appointment attendance after childbirth among HIV-infected women in the Paris region.* AIDS Care. 2007 Mar; 19(3): 346-54.
 - Nick AM, Bruner JP, Moses R, Yang EY, Scott TA. *Second-trimester intra-abdominal bowel dilation in fetuses with gastroschisis predicts neonatal bowel atresia..* Ultrasound Obstet Gynecol. 2006 Nov;28(6):821-5.
 - Milam MR, Pollock JW, Nick AM, Scott T, Jones HW 3rd. *The effect of hormonal contraception on the adequacy of colposcopic examination of the cervix.* Am J Obstet Gynecol. 2005 May;192(5):1368-9.
 - Lawson WE, Grant SW, Ambrosini V, Womble KE, Dawson EP, Lane KB, Markin C, Renzoni E, Lympany P, Thomas AQ, Roldan J, Scott TA, Blackwell TS, Phillips. *Genetic mutations in surfactant protein C are a rare cause of sporadic cases of IPF..* Thorax. 2004 Nov;59(11):977-80.
- Conference related (among others; abstracts, posters, and/or oral presentations):

- Gesell S, Scott TA, Barkin S. *Accuracy of self-perception of body size among overweight Latino preadolescents after a 6-month physical activity skills building intervention*. Annual Scientific Meeting of The Obesity Society, October 2008.
- Barkin S, Gesell S, Pont SJ, Richardson I, Guzman M, Scott TA. *Pediatric Obesity in Latino Preadolescents – Results from a Pilot Study Examining the Uses of a Recreation Center as an Extension of the Doctor’s Office*. Pediatric Academic Societies and Asian Society for Pediatric Research Joint Meeting, May 2008.
- Pont SJ, Gesell S, Scott TA, Barkin S. *Goal Setting in Overweight Latino Pre-adolescents*. Pediatric Academic Societies and Asian Society for Pediatric Research Joint Meeting, May 2008.
- Gunn GL, Scott TA, Cooper WO. *Pediatricians’ Level of Suspicion of Maltreatment Predicts Decision to Report*. Pediatric Academic Societies’ Annual Meeting, May 2007.
- Pont SJ, Grijalva C, Griffin MR, Scott TA, Dudley JA, Cooper WO. *National Rates of Diarrhea-Related Ambulatory Visits in Children*. Pediatric Academic Societies’ Annual Meeting, May 2007.
- Banani ND, Scott TA, Cooper WO. *Trends in Prescribing of Antidepressants to Pregnant Women in the US*. Student National Medical Association Annual Medical Education Conference, April 2007.
- Lutembacher M, Boero J, Cooper B, Karp S, Scott T, Temple P. *Lessons from a Community-Academic Partnership: A Nurse Home Visitor Program Serving High Risk Mothers and Newborns*. 7th International Family Nursing Conference, June 2005.
- Martin JB, Prudhomme JB, Scott TA, Loyd JE. *Features Associated with Mortality in Fibrosing Mediastinitis*. 2005 American Thoracic Society International Conference, May 2005.
- Azari A, Bruner J, Walters K, Scott T. *Second Trimester Head Measurements in Fetuses with Spina Bifida Are Not Different From Other Biometry*. 25th Annual SMFM Scientific Meeting, February 2005.

TEACHING EXPERIENCE

R, the free software environment for statistical computing and graphics

- ***The R Clinic***, Department of Biostatistics, Vanderbilt University (March 2005 - present)
 - Provided a weekly one-hour clinic to assist those members of the department and any researcher learning/using R.
 - Covered both predetermined topics and any problems/questions presented by clinic attendees.
 - Posted helpful R code and “solutions” to presented problems and questions to created website (<http://biostat.mc.vanderbilt.edu/Rclinic>).
- ***An Introduction to the Fundamentals & Functionality of the R Programming Language*** two-day short course
 - First day’s material covered “An Overview”, which included reading in a data set, making modifications to it, summarizing it with descriptive statistics, and generating various graphical depictions of it.
 - Second day’s material covered “The Nuts & Bolts”, which included the creation, attributes, and manipulation of data structures; the conditional and repetitive evaluation of expressions; and functions, including their vectorization, the implicit and explicit looping of them, and writing your own.
 - Provided extensive lecture notes (included a catalog of various R functions, a graphics reference, and numerous practice exercises and solutions), the extracted R code from the lecture notes, and sample files.
 - Presented upon several occasions:
 - LearnSTAT Course, American Statistical Association, Alexandria, VA (October 2007 & April 2009).

- 2007 useR! Conference, Iowa State University, Ames, Iowa (one-day only).
- *Everything You Ever Wanted to Know About Graphics But Were Afraid to Ask: A Graphics Short-Course* two-day short course (June 2007), Kennedy Center Statistics and Methodology Training Seminar Series, Vanderbilt University (co-presented with Frank E Harrell, PhD; responsible for full-day hands-on lab session).
- Clinical Research Center (CRC) Research Skills Workshop, Vanderbilt University (2004 - 2006; weekly seminar; presented four one-hour lectures).
- Introduction to Biostatistics course of the Masters of Science in Clinical Investigation program (September 2004 & 2006) and Biostatistics I course of the Masters of Public Health program (September 2004), Vanderbilt University (presented three-hour lecture).

Reproducible Research with R, L^AT_EX, & Sweave

- One-hour lecture covering how to generate reproducible statistical reports.
- Provided extensive lecture notes, additional extended example, and links to resources/references.
- Presented upon several occasions:
 - CRC Research Skills Workshop (July 2008; covered an introduction to only L^AT_EX).
 - Department of Biostatistics Seminar/Workshop Series, Vanderbilt University (June 2008).
 - Kennedy Center Statistics and Methodology Training Seminar Series (May 2008)
 - CRC Research Skills Workshop (March 2008).
 - Introduction to Biostatistics course of the Masters of Science in Clinical Investigation program, Vanderbilt University (September 2007).

Guidelines to Data Collection & Data Entry

- One-hour lectures on how to create a data dictionary and how to create your data file(s) to achieve (1) a smooth transfer between a spreadsheet and a statistical program package, and (2) optimal statistical analysis.
- Provided extensive lecture notes.
- Presented upon several occasions:
 - Institutional Review Board (IRB) Office Workshop, Vanderbilt University (February 2009 & August 2008).
 - CRC Research Skills Workshop, Vanderbilt University (June 2008).

Questionnaire Design

- One-hour lectures on the components of good questionnaires and the procedures for developing them.
- Provided extensive lecture notes.
- Presented upon several occasions:
 - IRB Office Workshop, Vanderbilt University (January 2008).
 - CRC Research Skills Workshop, Vanderbilt University (August 2008).

An Overview of Some Important Statistical Concepts

- One-hour lectures covering various important statistical concepts, including the role of statistics in clinical research, population and sample, variables (types and roles), descriptive statistics, inferential statistics (confidence intervals, hypothesis testing, determining associations, and determining relationships and making predictions), analytical pitfalls to avoid, and sample size planning.
- Provided extensive lecture notes.
- Presented upon several occasions:
 - Dietetic Interns, Vanderbilt University (February 2009).
 - CRC Research Skills Workshop, Vanderbilt University (September 2008).

- Department of Obstetrics and Gynecology Resident Didactics, Vanderbilt University (January 2007 & February 2006).

An Introduction to Microsoft Excel

- Four one-hour lectures covering *The Basics of Microsoft Excel*, *Formulas and Functions in Microsoft Excel*, *Graphing Charts in Microsoft Excel*, and *PivotTable and PivotChart Reports, and Macros in Microsoft Excel*.
- Provided extensive lecture notes, sample files, and exercises.
- Presented upon several occasions:
 - CRC Research Skills Workshop, Vanderbilt University (yearly since 2004).

CONFERENCES

Attended:

- 7th International Conference on Health Policy Statistics, Philadelphia, PA, January 17-18, 2008.
- 33rd Annual High-Risk Obstetrics Seminar, Nashville, TN, November 30 - December 1, 2007.
- 2007 useR! Conference, Iowa State University, Ames, IA, August 8 - 10, 2007.
- 2006 Joint Statistical Meeting, Seattle, WA, August 7 - 10, 2006.
 - Continuing Education Courses:
 - Analysis of Clinical Trials: Theory and Applications (full day).
 - Effective Scientific Writing (full day).
 - Meta-analysis: Concepts and Applications (half day).
- 31st Annual High-Risk Obstetrics Seminar, Nashville, TN, December 2 - 3, 2005.
- 2005 Joint Statistical Meeting, Minneapolis, MN, August 7 - 11, 2005.
 - Continuing Education Courses:
 - Statistical Analysis and Data Display (full day).
 - Introduction to CART: Data Mining with Decision Trees (half day).
 - Roundtable luncheons:
 - Integrating Statistical Software into Health Sciences Graduate Courses.
 - Just Because You Can, Doesn't Mean You Should: Better Charts with Excel.
- 30th Annual High-Risk Obstetrics Seminar, Nashville, TN, December 3 - 4, 2005.

Attended and presented:

- 2007 useR! Conference, Iowa State University, Ames, Iowa, August 8 - 10, 2007.
 - Presented a one-day tutorial titled *An Introduction to the Fundamentals & Functionality of the R Programming Language* (explained further in previous 'Teaching Experience' section).
- 2006 Joint Statistical Meeting, Seattle, WA, August 6 - 10, 2006.
 - Svetlana K Eden, MS, Angel Q An, MS, Jeffrey Horner, BS, Cathy A Jenkins, MS, and Theresa A Scott, MS. *A Two-Step Process for Graphically Summarizing Spatial Temporal Multivariate Data in Two Dimensions*.
 - "Data Exposition" poster competition sponsored by the American Statistical Association Sections of Statistical Graphics and Statistical Computing and organized by Paul Murrell, PhD.
 - Competition provided a data set of geographic and atmospheric data from NASA and entrants were asked to provide a graphical summary of the important features of the data set.
 - Received third place in competition (out of 14 entries).
 - Manuscript submitted for publication (Computational Statistics) and under revision.

MEMBERSHIPS

American Statistical Association, July 2005 - present

GRADUATE RESEARCH EXPERIENCE

University of Michigan Department of Biostatistics, Ann Arbor, MI

Research Assistant, Advisor: Goncalo Abecasis, PhD, 2002

Genotyping Errors and Variance Components Linkage Analysis on the X chromosome

- Generated scripts to (1) automate the process of detection and treatment of genotyping errors on the X chromosome and the evaluation of their utility in variance components linkage analysis of X linked traits, and to (2) compare real and simulated data.
- Simulated data with and without errors in various nuclear family configurations, with and without parental information.
- Checked for genotyping errors by finding Mendelian inconsistencies, and conducting a sensitivity analysis of the likelihood.
- Mapped the log of the odds (LOD) score from the original pedigree, before and after error detection, calculated the percentage of LOD score lost, and the percentage of lost LOD recovered.

University of Michigan Department of Biostatistics, Ann Arbor, MI

Research Assistant, Advisor: Goncalo Abecasis, PhD, Julia Richards, PhD, Summer 2002

LMX1B Candidate Gene for Glaucoma

- Attempted to determine if the LMX1B gene was associated with age of onset or affection status, and to determine if the association varied with race.
- Conducted Hardy-Weinberg analyses, single marker association analysis, regression analysis, and non-parametric tests on race, age of onset, and genotype data collected for 157 black and white individuals.
- Generated scripts to automate the processes of haplotype estimation, haplotype Association Analyses, and cross-validation analyses.

GRADUATE EDUCATION HIGHLIGHTS

University of Michigan Genome Science Training Program Trainee, 2001-2003

- Two year fellowship.

52nd Annual American Society of Human Genetics Meeting, Baltimore, Maryland, Fall 2002

Poster presentation, Advisor: Goncalo Abecasis, PhD, Fall 2002

Genotyping Errors and Variance Components Linkage Analysis on the X chromosome.

RELEVANT GRADUATE COURSEWORK

Probability and Distribution Theory

Biostatistical Inference

Applied Biostatistics I: Linear Regression

Applied Biostatistics II: Extensions of Linear Regression

Survival Time Analysis

Analysis of Categorical Data

Clinical Trials

Analysis of Variance
Biostatistics in Cancer Seminar
Analysis of Biostatistical Investigations
Statistical Models and Numerical Methods in Human Genetics
Introduction to Genetics in Public Health
Molecular Genetics
Human Genetics
A Survey of Bioinformatics (Audit)
Issues in Public Health Genetics
Applications in Public Health Genetics
Genetics in Epidemiology

UNDERGRADUATE RESEARCH EXPERIENCE

Carnegie Mellon University Department of Statistics, Pittsburgh, PA

Summer Research Intern, Advisor: Howard Seltman, PhD, Summer 2000

- Attempted to determine the effects of life events on bipolar disorder by seeking the best way to represent the life events as a time-varying covariate so as to best predict remission and/or recurrence.
- Conducted survival analysis and other statistical analyses on data collected from a randomized controlled trial comparing the effectiveness of Interpersonal and Social Rhythm Therapy (IPSRT) to Clinical Status and Symptom Review Treatment (CSSRT) as adjuncts to standard pharmacotherapy.
- Attempted to answer: 1. Is one treatment inferior to the other; or is the switching from one to the other that is detrimental? 2. What are the effects of the life events on remission and recurrence of a “typical” subject?