## BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Goodman, David C.

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

POSITION TITLE: Professor of The Dartmouth Institute for Health Policy & Clinical Practice, of Pediatrics, and of Community and Family Medicine, Geisel School of Medicine at Dartmouth

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 |
|---|---|---|---|
| University of Vermont, Burlington, VT (Magna Cum Laude) | B.A. | 05/1977 | Biochemistry |
| SUNY, Upstate Medical Center, Syracuse, NY | M.D. | 05/1981 | Medicine |
| The Johns Hopkins Hospital, Baltimore, MD | | 06/1984 | Pediatric Residency |
| Dartmouth College, Hanover, NH | M.S. | 06/1995 | Medical Care Epidemiology |

### A. Personal Statement

My role in this project is that of PI. My primary career research interest has been investigating the causes and consequences of geographic and hospital variation in health system performance using large administrative datasets, including Medicaid files. My descriptive and inferential studies have examined the epidemiology of medical care from the beginning to the end of life using diverse and challenging data sources (e.g., U.S. Vital Records, All Payer Claims Datasets, commercial claims, CMS curated and state-based Medicaid claims, Medicare claims, and PRAMs data). In addition to peer reviewed papers, I have disseminated selected findings in the *Dartmouth Atlas of Health Care* series to accelerate clinical improvement and policy development. My research has had direct impact through participation and leadership in government committees, testimony to public bodies including the Institute of Medicine and Congressional committees and through the lay media.I am a methodological expert and collaborator for an international portfolio of population-based studies of health care quality and efficiency. In my role as teacher and mentor, I have taught graduate level courses at Dartrmouth, Univ. TX Houston, and Univ of Bern in foundational and advanced epidemiology and biostatistics, medical care epidemiology, and U.S. maternal and child health care. In the past decade I have narrowed my research to perinatal related projects.

My initial studies of neonatal intensive care investigated the distribution of NICU capacity (e.g. neonatologists and NUCU beds) in relation to perinatal need, and then the association of capacity with neonatal and infant mortality.**(a)** We have also reported on secular trends in the gestational age of NICU admissions.**(b)** In 2015, I conceived and developed the initial study of medical care in Texas Medicaid-insured newborns in conjunction with the TX Health and Human Services Commission that was used in descriptive analyses **(c)** of TX Medicaid newborn care (AKA Texas NICU Project)(d) and then for the inferential studies **(d)** conducted under the current NICHD project. This dataset is the basis for the expanded data developed for this application. The project team and advisory committee remains stable. Dr. Ganduglia-Cazaban is the sub-contract PI investigator at the Univ. TX Health Science Center, Houston joined by two neoatalogists/health care researchers – Drs. Tyson and Rysavy and a physician health economist, Dr. Avritscher. Dr. Stukel, who I have collaborated with for over 25 years, serves as a statistical investigator. Dr. Leyenaar initially investigated one-year outcomes of opioid exposed TX newborns with internal funding and is an investigator on the current project. These investigators, along with the consultants and TX HHSC staff, have met by Zoom weekly and in person twice yearly for the past ten years.

Ongoing projects that I would like to highlight include:

R01 HD101523
Goodman (PI)
06/14/2021-05/31/2025
Determinants of Newborn Health and Health Care Trajectories in the First Year of Life (current NICHD project)

R01 DA062152
Leyenaar (PI), Role: Co-Investigator/Sub PI
10/01/2024 – 09/30/2029
Disparities in early childhood health outcomes following prenatal opioid exposure and protective health system factors: a population perspective

HQ0034-20-1-0001
Goodman (PI)
01/30/2020-10/31/2023
Using Geographic Variations to Improve Quality and Reduce Costs in the Military Health System

R01 MD014735
Leyenaar (PI), Role: Co-Investigator/Sub PI
01/28/2020-11/30/2024
Urban-Rural Disparities in Healthcare Quality for Children with Complex or Disabling Health Conditions

Citations:


a. **Goodman DC**, Fisher ES, Little GA, Stukel TA, Chang C, Schoendorf, KS. (2002). The Relation between the availability of neonatal intensive care and neonatal mortality. N Engl J Med, 346(20), 1538-1544. PMID: 12015393.
b. Harrison WN, **Goodman DC**. (2015) Epidemiologic trends in neonatal intensive care, 2007-2012. *JAMA Pediatr.* 169(9):855-862. PMCID 262143877.
c. **Goodman DC**, Ganduglia Cazaban C, Franzini L, Stukel TA, Wasserman JR, Murphy MA, Kim Y, Mowitz ME, Tyson JE, Doherty JR, Little GA. (2019) Neonatal intensive care variation in Medicaid-insured newborns: A population-based study. J Pediatr 2019;209:44-51. PMID 3095579.
d. **Goodman DC**, Stuchlik P, Ganduglia-Cazaban C, Tyson TE, Leyenaar J, Avritscher EB, Rysavy M, Gautham KS, Lynch D, Stukel TA for the Texas Neonatal Care Research Collaborative. Hospital-Level NICU capacity, utilization, and 30-Day outcomes in Texas. JAMA Netw Open. 2024;7(2):e2355982. doi:10.1001/jamanetworkopen.2023.55982. PMID: 38353952.


**B. Positions, Scientific Appointments, and Honors**

**Positions and Scientific Appointments**

| | |
|---|---|
| 2018-present | Adjunct Professor of Pediatrics, University of Texas, McGovern Medical School, Houston |
| 2013-2024 | Adjunct Professor of Health Services Research, Institute of Social and Preventive Medicine, University of Bern, Switzerland |
| 2010-present | Founder, The Wennberg International Collaborative |
| 2009-2013 | Director, Center for Health Policy Research, Dartmouth Institute, Geisel School of Medicine |
| 2007-2009 | Associate Director, Center for Health Policy Research, The Dartmouth Institute for Health Policy & Clinical Practice, Geisel School of Medicine at Dartmouth College |
| 2004-present | Professor of The Dartmouth Institute, Pediatrics, and Community & Family Medicine, Geisel School of Medicine at Dartmouth |
| 2002-2006 | Chief, Section of Allergy and Clinical Immunology, Dartmouth-Hitchcock Medical Center |
| 1995-2004 | Associate Prof. Pediatrics and Community & Family Medicine, Dartmouth Medical School |
| 1993-2022 | Investigator; Co-PI (2010-2022), The Dartmouth Atlas of Health Care Project |
| 1989-2007 | Associate, The Center for the Evaluative Clinical Sciences, Dartmouth Medical School |
| 1988-2002 | Section of Pediatric and Adolescent Medicine, Dartmouth-Hitchcock Clinic, Lebanon, NH |
| 1988-1995 | Asst. Prof. of Pediatrics and of Community & Family Medicine, Dartmouth Medical School |
| 1984-1988 | National Health Service Corp; Clinic director and pediatrician, Colebrook, NH |

**Honors**

| | |
|---|---|
| 2018 | John M. Eisenberg Article-of-the-Year Award, *Health Services Research*. Chang CH, O'Malley AJ, Goodman DC. Association between Temporal Changes in Primary Care Workforce and |

Patient Outcomes. *Health Serv Res*, 52: 634–655. doi:10.1111/1475-6773.1251 PMID: 27256769.

2017 Delta Omega Public Health Honor Society, Delta Iota Chapter
2006 American Pediatric Society
1981 Alpha Omega Alpha Medical Honor Society

**National and International Committees**

2020 Member, Health Services Organization and Delivery (HSOD) review panel 9/2020- NIH
2014-2023 Swiss National Science Foundation, National Research Programme on "Health Care in Switzerland" (Gesundheitsversorgung in der Schweiz), Steering committee member
2012-2014 Expert Advisor, Medical Practice Variation Project, Organisation for Economic Cooperation and Development (OECD), Paris
2012-2014 Member, Editorial Board, *Journal of Pediatrics*
2010-2014 Chair, U.S. Council on Graduate Medical Education
2010-2012 Member, Negotiated Rulemaking Committee for the Designation of Medically Underserved Areas and Health Profession Shortage Areas. HRSA/DHHS.
2009-2011 Member, Institute of Medicine, Committee on the Future of Nursing
2006-2014 Member, Editorial Board*, Health Services Research*
2004-2008 Member, Editorial Board, *Pediatrics*
2000-2006 Member, Committee on the Pediatric Workforce, American Academy of Pediatrics
1999-2002 Member, Health Systems Research Study Section – Agency for Health Research and Quality
1999 Member, Specialty Physician Workforce Advisory Committee, Council on Graduate Medical Education
1997-2010 US delegate and planning committee member, International Medical Workforce Conference
1995 Member, Special Emphasis Panel - National Cooperative Inner-City Asthma Study, NIAID

**C. Contribution to Science**

1. Identification of effective pediatric asthma medical care and its determinants. Asthma is a common chronic illness of childhood that requires longitudinal evidence-based care. In my early career, I received an NIH/NHLBI FIRST award (R29) to study the epidemiology of asthma hospitalization **(a,b,c)** and associated care through the use of hospital discharge abstract and a pre-prepaid group practice (Group Health Cooperative of Puget Sound) databases.**(d)** These studies revealed important deficiencies in the use of inpatient care and outpatient medication use and sharpened my methodologic skills in using the natural experiment of health care regional and provider variation to study the effectiveness and efficiency of care.

a. **Goodman DC**, Fisher ES, Gittelsohn A, Chang C, Fleming C. (1994). Why are children hospitalized? The role of non-clinical factors in pediatric hospitalizations. Pediatrics, 93(6 Pt.1), 896-902. PMID: 8190573.
b. **Goodman DC**, Littenberg B, O'Connor GT, Brooks JG. (1996). Theophylline in acute childhood asthma: A meta-analysis of its efficacy. Pediatric Pulmonary, 21(4), 211-218. PMID: 9121849.
c. **Goodman DC**, Stukel TA, Chang C. (1998). Trends in pediatric asthma hospitalization rates: Regional and socio-economic differences. Pediatrics*,* 101(2), 208-213. PMID: 9445493.
d. **Goodman DC**, Lozano P, Stukel TA, Chang C, Hecht J. (1999). Has asthma medication use in children become more frequent, more appropriate, or both? Pediatrics,104(Pt.1), 187-194. PMID:10428993

2. Advancing the understanding of women and children care through spatial and provider variation. Using population-based datasets, we developed a series of novel studies that expanded the use of population and health care variation to investigate health care experiences and outcomes in reproductive health,**(a)** early life, **(b,d)** and childhood **(b,c,d)**. The findings show the dependencies of mother and children's outcomes on complex individual characteristics interacting with health care contextual factors.

a. **Goodman DC**, Klerman LV, Johnson KA, Chang CH, Marth N. (2007) Geographic access to family planning facilities and the risk of unintended and teenage pregnancy. *Matern Child Health J.* 11(2):145-152. PMID 17131196.
b. Ralston SL, Harrison W, Wasserman J, **Goodman DC**. Hospital Variation in Health Care Utilization by Children With Medical Complexity. *Pediatrics.* 2015;136(5):860-867. PMID: 26438701.

c. Parker DM, Schang L, Wasserman JR, Viles WD, Bevan G, **Goodman DC**. Variation in Utilization and Need for Tympanostomy Tubes across England and New England. *J Pediatr*. 2016 Dec;179:178-184.e4. doi: 10.1016/j.jpeds.2016.08.093. PMID: 27697331
d. Moen A and **Goodman DC**. Unwarranted geographic variation in paediatric health care in the US and Norway. *Acta Pædiatrica*. 2022. DOI: 10.1111/apa.16249. PMID: 35007359.

3. Developing empirical evidence to support evidence-based physician workforce policy. During my tenure as a rural National Health Service Corp, I became interested in the relationship of physician supply to population utilization and outcome, leading to a 25 research paper portfolio of population-based studies that intersects with other contributions discussed in this biosketch. These studies challenged the assumptions that the U.S. physician workforce is rationally distributed, and that greater physician supply is a dominant determinant of better population outcomes. This required developing new epidemiologic methods **(a)** in measuring physician supply and in measuring the association of supply with needs and outcomes **(b,c,d)**. The research findings were published during a period of rising concerns with the adequacy of the U.S. physician workforce and influenced public policies regarding underserved populations and graduate medical education training levels. The research led to membership on several specialty and federal committees related to the health workforce including a term as Chair of the Council on Graduate Medical Education.

a. **Goodman DC**, Mick S, Bott D, Chang CH, Carretta H, Marth N. (2003). Primary care service areas: A new tool for the evaluation of primary care services. *Health Services Research*, 38(1 Pt 1), 187-309. PMID: 12650392; PMCID: PMC1360885.
b. Nyweide D, Anthony D, Chang C, **Goodman DC**. (2011). Seniors' perceptions of health care not closely associated with physician supply. *Health Affair*, 30:219-227. PMCID: PMC3070266.
c. Chang CH, Stukel TA, Flood AB, **Goodman DC**. (2011). Primary Care Physician Workforce and Medicare Beneficiaries' Health Outcomes. *JAMA*, 305(20), 2096-2105. PMID: 21610242; PMCID: PMC3108147.
d. Chang CH, O'Malley AJ, **Goodman DC**. (2017) Association between Temporal Changes in Primary Care Workforce and Patient Outcomes. *Health Serv Res*, 52: 634–655. doi:10.1111/1475-6773.12513. PMID: 27256769.

4. Mentoring and advancing studies in the quality and efficiency in the care of Medicare beneficiaries. In order to conduct workforce studies, I developed experience in using the extensive Medicare datasets available at The Dartmouth Institute. This expertise led to mentoring numerous trainees and faculty in the methodologies of measuring medical care with Medicare claims data. In 2007, I accepted the position as the Co-PI of the Dartmouth Atlas of Health Care where I focused on expanding the scope of peer reviewed research conducted under the Atlas auspices. These have included studies of cancer, end-of-life, surgical, and pediatric care, and again highlight the experience of this team in using claims data in conjunction with other data for research purposes.

a. **Goodman DC**, Stukel TA, Chiang-hua Chang, Wennberg JE. (2006). End-of-Life Care at Academic Medical Centers: Implications for Future Workforce Requirements. *Health Affairs,* 25(2): 521-531. PMID:16522606.
b. Wennberg JE, Skinner J, Fisher E, Bronner K, **Goodman DC**. (2009). Inpatient Care Intensity and Patients' Ratings Of Their Hospital Experiences. *Health Affairs*, 28(1),103-112. PMID: 19124860; PMCID: PMC2729566.
c. Onega T, Duell EJ, Shi X, Demidenko E, **Goodman D**. (2010). Race versus place of service in mortality among Medicare beneficiaries with cancer. *Cancer*, 116:2698-706. PMCID: PMC3277834.
d. Teno JM, Gozalo PL, Bynum JPW, Leland NE, Miller SC, Morden NE, Scupp T, **Goodman DC**, Mor V. (2013). Change in End-of-Life Care for Medicare Beneficiaries: Site of Death, Place of Care, and Health Transitions in 2000, 2005, and 2009. *JAMA*, 309(5), 470-477. PMID: 23385273; PMCID:PMC3674823.

**Complete bibliography:** https://www.ncbi.nlm.nih.gov/myncbi/167MidNg7yrQb/bibliography/public/