

JON DOWNS, MPH

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DATA SCIENTIST

USES CAUSAL INFERENCE AND AUTOMATION TO DELIVER VALUE

Process Automation | Regression Analysis | Data Wrangling | Web Scraping | Record Linkage | Machine Learning

EXPERIENCE

WASHINGTON STATE DEPARTMENT OF HEALTH, Remote

8/2020 – PRESENT

Data Science Epidemiologist III, *Center for Health Statistics Data Science Team*

Automated business processes, modeled mortality trends during COVID-19, and utilized neural network models to streamline business processes.

- Analyzed COVID-19 deaths and found 10,000+ more deaths than would be expected from historical trends. Those in the least vaccinated areas of the state had three times the excess deaths of the most-vaccinated areas.
- Delivered findings of COVID-19 death analyses to technical and non-technical audiences via conference presentations, participation in webinars, and a written report.
- Created a large language transformer model that correctly predicts 90% of cause of death ICD-10 codes.
- Developed procedures to securely geocode the address provided for over 11.8 million COVID-19 vaccine doses.
- Utilized geocoding API to correct 29% of address data entry errors without human intervention.
- Automated the delivery of 90+ vital records reports and data extracts for federal, local, and private partners.
- Reduced file read errors by >80% when editing and importing XML data to a SQL database.

KING COUNTY DEPARTMENT OF COMMUNITY HEALTH SERVICES, Seattle, WA

7/2019 – 8/2020

Behavioral Health Innovations Evaluator, *Behavioral Health & Recovery Division*

Provided database design and coding support to an experimental risk stratified payment model for mental health services. Evaluated behavioral health and substance use programs funded by Medicaid and King County tax programs.

- Developed dashboards and other visualizations to clearly show progress on key performance indicators such as timeliness of data, hospitalization trends, and incarcerations trends among mental health clients.
- Worked with large datasets of mental healthcare service hours, diagnosis codes, and other medical information
- Cleaned, analyzed, and mined data from many sources for a mental health risk stratified payment model.
- Wrote clear technical documentation describing the new client risk stratification process to provider network.
- Predicted which clients would use 5+ crisis services over the next 3 months using random forest models.

WASHINGTON STATE DEPARTMENT OF HEALTH, Tumwater, WA

7/2017 – 7/2019

Epidemiologist I & II, *Infectious Disease Office - Assessment Unit*

Streamlined and expanded the analysis tools for state programs to provide payment assistance for drugs to prevent and treat HIV/AIDS. Maintained SAS data and reporting pipelines for a database of Sexually Transmitted Infection (STIs).

- Analyzed large health care datasets related to the administration of state HIV/AIDS and HIV prevention programs that included diagnosis codes, CPT codes, and records of prescription utilization.
- Determined the number of additional staffing hours required to eliminate backlogs in medical claims processing
- Analyzed claims data to identify the reasons behind unexpected growth in dental claims costs.
- Performed probabilistic matching of client data using Link Plus, SAS, and R.
- Mapped county-level incidence of sexually transmitted infections using ArcGIS.

ORISE Fellow, CDC NCIPC Transportation Safety Team

I identified ways to improve analytical pipelines by replacing manual steps with SAS code. I also performed literature reviews, scientific writing, and peer reviews to advance behavioral health science in traffic safety.

- Improved efficiency of analysis data pipelines by introducing SQL-like SAS procedures to the team
- Contributed to three published papers on behavioral health issues in traffic safety by writing sections of scientific articles, performing multiple regression analyses (logistic and Poisson regression), and using multiple imputation to handle missing data using SAS.
- Performed qualitative analysis on open-ended prompts to evaluate an educational pamphlet on 'Aging in Place'.

EDUCATION

- **Master of Public Health (MPH)**, Epidemiology; Emory Rollins School of Public Health; Atlanta, GA; 2015
- **Bachelor of Science (BS)**, Biology; Oklahoma State University; Stillwater, OK; 2012

AWARDS AND HONORS

- **Rising Star Award (2022)**. National Association for Public Health Statistics and Information Systems (NAPHSIS)

PRESENTATIONS

- Large Language Models: Applications and Hardware Requirements (2/27/2024)
- Mortality Time Series Models for Rapid Assessment of Emerging Events (6/26/2023). Council for State and Territorial Epidemiologists 2023.
- Excess Mortality and COVID-19 Vaccination Status (10/15/2023). Washington State Vaccine Advisory Board.
- Excess Mortality During the COVID-19 Pandemic in Washington State, 2020-2021 (10/11/2022). Washington State Public Health Association.
- Real-time Correction & Monitoring of Death Registration Data (1/12/2021). Vital Statistics Cooperative Program Project Director's Meeting.
- An R User's Guide to Python (12/13/2022). Washington DOH R/Python User Group.
- Joins, Binds, and Pivots: Oh My! (1/7/2022). Washington DOH R/Python User Group.
- APIs (9/7/2021). Washington DOH R/Python User Group.
- R and SQL (8/13/2021). Washington DOH R/Python User Group.
- Job Automation (6/7/2021). Washington DOH R/Python User Group.
- An Introduction to Git (5/20/2021). Washington DOH R/Python User Group.

PUBLICATIONS

Downs J, Painter I, Hutchinson K, Coffinger S. Excess Deaths During the COVID-19 Pandemic and 2021 Heat Dome- Washington State 2020 and 2021. Washington State Department of Health 2023. Publication 422-243. Accessible at: <https://doh.wa.gov/sites/default/files/2023-09/422243-ExcessDeathsCOVID19HeatDome.pdf>.

Beck LF, **Downs J**, Stevens MR, Sauber-Schatz EK. Rural and Urban Differences in Passenger-Vehicle–Occupant Deaths and Seat Belt Use Among Adults — United States, 2014. MMWR Surveillance Summary 2017; 66 (No. SS-17) 1–13.

Downs, J., Shults, R., West, B. Attitudes toward mandatory ignition interlocks for all offenders convicted of driving while intoxicated. Journal of Safety Research. Published online 2017 Aug 24.

Eiffert S., Noibi, Y., Vesper S., **Downs J.**, Fulk F., Wallace J., Pearson M, Winqvist A. Impact of water leaks and flooding on mold-contamination and asthma prevalence in low-income communities. Journal of Environmental and Public Health. Published online 2016 Nov 16.

Bird D.C., Freund K., Fortinsky R.H., Staplin L., West B.A., Bergen G., **Downs J.** Driving Self-Regulation and Ride Service Utilization in a Multi-Community, MultiState Sample of U.S. Older Adults. Traffic Inj Prev. Published online 2016 Aug 30.