JON DOWNS, MPH

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DATA SCIENTIST
USE TECHNOLOGY TO DRIVE INSIGHTS AND INNOVATION

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 trained large language models to predict cause of death codes.

- Analyzed excess death during the COVID-19 era and found 10,000+ more deaths than expected from historical trends. The least vaccinated areas had the highest rates of excess death.
- 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 model that predicts 90% of cause of death ICD-10 codes correctly.
- Developed procedures to securely geocode addresses of 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 for federal, local, and private partners.

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 track progress on key performance indicators such as timeliness of data, hospitalization trends, and arrests among mental health clients.
- Analyzed large datasets of mental health service hours, diagnosis codes, and charge codes.
- Cleaned, analyzed, and mined data from multiple sources for a mental health payment model.
- Wrote clear technical documentation of the risk stratification process to provider network.
- Predicted which clients would use crisis services 5+ times in the next six 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 charge codes, CPT codes, prescription utilization, and diagnosis codes in a state HIV medical claims program.
- Created procedures to quantify staffing time requirements to address medical claims backlogs.

- 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.

OAK RIDGE INSTITUTE FOR SCIENCE AND EDUCATION, Atlanta, GA   12/2015 – 7/2017
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 data pipelines by introducing SQL-like SAS procedures to the team.
- Wrote methods section of scientific article on traffic safety in rural and urban areas
- Performed multiple regression analyses (logistic and Poisson regression)
- Used multiple imputation to handle missing survey response data.
- Performed qualitative analysis of short answer responses to evaluate an educational pamphlet

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.

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, Winquist 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.