

# Christopher Burch

DATA SCIENTIST AND CONSULTANT

Fredericksburg, Virginia

☎ +1 919 593 2796 | ✉ christopher.m.burch@gmail.com | 🏠 cmburch.com | 📱 burch-cm | 🌐 christopherburch

## Summary

An experienced data analyst and team leader. I take pride in transforming data into business insight and building teams that perform as more than the sum of their parts.

Experienced research data scientist with ten years of experience in complex systems modeling, analysis, and simulation.

Social systems

Epidemiology

Business processes

Survey design

Hypothesis testing

Causal analysis

## Experience

### The MITRE Corporation

LEAD DATA SCIENTIST

2022 - 2025

- Expertise in complex systems modeling, analysis, and simulation.
- Presented the findings, recommendations, and the results of complex analysis to a variety of internal and external audiences, including executive-level decision makers.
- Developed company-internal R visualization and data processing packages used by multiple projects across the organization.
- Developed and validated statistical models to design interventions into complex social, logistical, and physical engineering problems.
- Build, programmed, and analyzed results of an agent-based epidemiological simulation, which led to actionable interventions to prevent the spread of disease in commercial agricultural populations.
- Trained data analysts and mentored junior data scientists in statistical techniques, complex systems modeling, simulation methods, and data analysis best practices.
- Assisted with research design and coded the a comprehensive metaanalysis of Alzheimer's Disease and related dementias (ADRD), projecting expected ADRD burden at the US State and County level.
- Lead a baseline testing team and served as the epidemiology modeling expert for the DARPA Automated Scientific Knowledge Extraction and Modeling (ASKEM) evaluation over three years.
- Developed survey response questions and analyzed results for multiple targeted interventions into hiring, promotion, and accommodation decisions across multiple US Federal departments.

### Grant Leading Technology

DATA SCIENTIST AND CONSULTANT

2018 - 2022

- Technical lead for FAA property data visualization, covering more than \$9 billion in managed property.
- Built machine learning models to analyze and predict vehicle fleet fuel use, mileage, and accident rates, resulting in improved FAA vehicle training policy.
- Wrote and maintained open-source R packages to interface with existing Federal APIs, improving FAA reporting automation and reducing errors.
- Managed development of the FAA-wide vehicle recall status tracking system, reducing outstanding vehicle recalls by 90%.
- Applied systems theory to model complex interactions between business units, and proposed workflow process improvements based on those models.

Wrote, built, and administered rollout of a new company-wide employee evaluation system.

### Cogentis Therapeutics

COFOUNDER / CHIEF DATA OFFICER

2014 - 2018

- Developed financial models which reduced investor risk and controlled experimental risk for increased stability in the startup ecosystem.
- Created company data standard operating procedures (SOP), code books, and data dictionaries.
- Prepared R visualization for company communication, publication, and grantwriting.

### US Army 20th Special Forces Group

ADVANCED SKILLS INSTRUCTOR

2009 - 2011

- Senior CQB/Close Combat Instructor for US Army, US Navy, and NATO forces in close quarters combat (CQB), fighting in built-up areas (FIBU), advanced urban combat (SFAUC), and advanced special operations (ASO).
- Lead a team of 5 – 10 junior instructors; responsible for subordinate instruction in firearms and small unit tactics proficiency, range preparation, and field exercise coordination.
- Developed a metrics-based training evaluation system to A/B test multiple techniques.

US Army 10th Special Forces Group

SPECIAL FORCES COMMUNICATIONS NCO

2004 - 2009

- Trained and advised more than 2,000 foreign military and police force personnel in patrolling, advanced urban combat, marksmanship, and mission planning.
- Participated in more than 250 named missions across Afghanistan, Africa, and Eastern Europe in support of US and NATO counterterrorism efforts.

Technical Skills

## # A tibble: 0 x 0

Education

Massachussetts Institute of Technology

MICROMASTERS CERTIFICATE

2015-2017

Graduate training in Data, Economics, and Developmental Policy (DEDP)

Johns Hopkins University

MASTER OF BUSINESS ADMINISTRATION

2013-2015

Double Specialization in Enterprise Risk Management (ERM) and Marketing

Arizona State University Global Campus

BACHELOR OF ARTS, ORGANIZATIONAL MANAGEMENT

2011-2013

- SALUTE National Honors Society

## Current Certifications

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### Certified Professional Property Specialist (CPPS)

NATIONAL PROPERTY MANAGEMENT ASSOCIATION

### Lean Six Sigma Yellow Belt

GRANT LEADING TECHNOLOGY

### Certified Risk Analyst (CRA)

GLOBAL ACADEMY OF FINANCE AND MANAGEMENT

## Memberships

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### ASTM International

VOTING MEMBER ON SUBCOMMITTEES FOR SAMPLING/STATISTICS, DATA MANAGEMENT, FLEET MANAGEMENT

### National Property Management Association

MEMBER, FEDERAL CHAPTER

### Data Science Council of America

MEMBER AT LARGE

## Awards

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### The MITRE Corporation

SPARK AWARD

2023

### MassChallenge

FINALIST

2020 & 2016

- Startup incubator and business model contest. Selected as a Top 20 Finalist, the incubator's highest honor, from more than 500 startups from across the globe.

### Neuro Startup Challenge

1ST PLACE

2015

### Wake Forest Business School Business Case Competition

1ST PLACE

2015

### Federal Bureau of Investigation

DIRECTOR'S AWARD FOR EXCELLENCE

2014

### US Army

BRONZE STAR MEDAL

2009

- Awarded for combat actions in Logar, Afghanistan.

## Publications

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1. Burch, C. (2020). *Altfuelr: An interface to the NREL alternate fuels locator*. <https://CRAN.R-project.org/package=altfuelr>
2. Burch, C. (2020). *Vindecodr: An interface to the US department of transportation VIN decoder*. <https://CRAN.R-project.org/package=vindecodr>
3. Burch, C. (2021). *Excelstrippr: Extracts tabular data from excel reports*. <https://CRAN.R-project.org/package=excelstrippr>