

# Jacob Ford

*Data Scientist with expertise in machine learning development, model validation and technical project leadership for sustainable technology solutions*

[ [website](#) ] . [ [linkedin](#) ] . [ [github](#) ] . [ [jake.ford927@gmail.com](mailto:jake.ford927@gmail.com) ] . [ 724 681 3467 ]

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## EXPERIENCE

### Solstice Power Technologies

Cambridge, MA (Remote)

Data Scientist

March 2022- Present

- Served as technical project manager after independently securing a \$850,000 grant from Google.org to support the full development, from API construction to model validation, of a machine learning model designed to be a more inclusive and accurate risk predictor for clean energy products.
- Led analysis into bias and fairness metrics within credit risk alternative machine learning model, evaluating impacts on protected classes and developing guidelines for safe and ethical application by end users.
- Designed data pipeline to feed into custom churn prediction model using XGBoost classifier algorithm, using K-means to cluster customers into segments, leading to 20% decrease in churn for high-risk customers.
- Developed credit boosting project by designing an ETL pipeline between customer data and credit reporting agency, offering a no-cost no-risk service for customers to increase credit scores by 10-15 points, increasing financial freedom and wellbeing.

### Durham-Carrboro-Chapel Hill Metropolitan Planning Organization

Durham, NC

Transportation Modeler

February 2020- March 2022

- Maintain and update regional transportation model providing predicted multimodal travel volume to support local, regional, state and federal funding of highway, transit and pedestrian networks.
- Apply advanced mathematical and machine learning techniques such as iterative proportional fitting, neural networks for multimodal choice, and decision tree models to determine the number and purpose of trips.
- Analyze and synthesize model scenario outputs using R and Python to build interactive data dashboards designed to increase accessibility, engage policymakers and to inform the public of trends in travel behaviors.

### North Carolina General Assembly, Program Evaluation Division

Raleigh, NC

Program Evaluator

July 2018- February 2020

- Conducted comprehensive evaluations and recommend programmatic solutions for joint committee tasked with improving the effectiveness and efficiency of state policies to better serve constituents.
- Identified \$3.7 million in unnecessary state spending resulting from an errant matching mechanism for hurricane relief funding, allowing for future funds to be correctly utilized, resources conserved, and victims assisted.

### AnLar, LLC

Rosslyn, VA

Statistician

May 2017- May 2018

- Lead data analyst responsible for statistical models for multiple reports published by the Institute for Education Sciences (IES) to identify trends in high school dropouts, college access, and financial aid.
- Designed survey weight methodologies, including bootstrap and balanced repeated replication techniques.

### Cambridge Associates

Arlington, VA

Analyst

June 2014-August 2016

- Led team of four financial analysts in financial and regulatory research for nonprofit and endowments.

## SKILLS

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|---|---|
| <input type="checkbox"/> Programming expertise in Python, R and SQL | <input type="checkbox"/> Machine learning algorithm design, development, and validation |
| <input type="checkbox"/> Data ETL and querying                      | <input type="checkbox"/> Model bias and fairness evaluation                             |
| <input type="checkbox"/> Geospatial analysis                        | <input type="checkbox"/> Retention and churn modeling                                   |
| <input type="checkbox"/> BI Tools: Tableau, Plotly, Shiny           | <input type="checkbox"/> Version control and git  |

## **EDUCATION**

### **Georgetown University**

*McCourt School of Public Policy, Master of Public Policy*

Baker Innovation Scholar: Managed \$20,000 project to decrease truancy rates for at-risk youth at Anacostia High School

Editor-in-Chief, Georgetown Public Policy Review

Research Fellow, Center for Research on Children in the United States

**Washington, DC**

*May 2018*

### **Allegheny College**

*Bachelor of Science in Mathematics, Minors in Economics and History*

**Meadville, PA**

*May 2014*

## **PUBLICATIONS**

Jacob Ford\*, "Fairness in Focus: Insights into Bias Within Machine Learning Risk Evaluations and Establish Credit Models" (in preparation)

Zahra Thani, Winslow Lewis, Liz Neyens, **Jacob Ford\***, "[Priorities' Role in Community Solar: Survey-Based Study and Payment Performance Analysis](#)", Proceedings of the 52nd American Solar Energy Society National Solar Conference 2023. ASES SOLAR 2023. Springer Proceedings in Energy. Springer, Cham., August 2023.

Allison LaFave, Emily Kelly, and **Jacob Ford**, "Reasons High School Students Change Their Educational Setting", National Center for Education Statistics (NCES), series [NCES 2019-119](#), November 2018.

Allison LaFave, Emily Kelly, and **Jacob Ford**, "Factors that Influence Student College Choice", National Center for Education Statistics (NCES), series [NCES 2018-119](#), June 2018.

Laura White and **Jacob Ford**, "The U.S. Market for Defense-Related or Dual-Use Goods and Opportunities for Portuguese Small and Medium Size Enterprises: Competition and Demand" (2017), published by the Associação Empresarial de Portugal (AEP) and the Industry of Porto, funded by the European Union (EU), The European Regional Developmental Fund. March 2017.

Laura White and **Jacob Ford**, "The U.S. Market for Ornamental Stones and Opportunities for Portuguese SMEs: Competition and Demand – Volumes One and Two" (2016), published by AEP and the Industry of Porto, funded by the EU, The European Regional Developmental Fund. November 2016.

\*Corresponding Author

## **PROFESSIONAL CONFERENCES**

"Machine Learning for Alternative CApplying an Alternative Machine-Learning Qualification Metric: Impacts for Inclusion, Accuracy and Revenue". Sole Presenter at American Solar Energy Society, Boulder, Colorado, August 8-11<sup>th</sup>, 2023.

"Applying an Alternative Machine-Learning Qualification Metric: Impacts for Inclusion, Accuracy and Revenue". Sole Presenter at American Solar Energy Society, Boulder, Colorado, August 8-11<sup>th</sup>, 2023.

"Bringing Community Perspectives to Community Solar: Expanding Equitable Community Solar by Centering Industry and Community Priorities". Presenter with Zahra Thani at Behavior, Energy and Climate Change Conference, Washington, D.C., November 13-16<sup>th</sup>, 2022.

"Use of Social Media to Promote Your Policy Research". Moderator and Panelist with Dr. Jennifer Doleac, Dan Kaplan, and Liza Morris at the Association for Public Policy and Management, Washington, D.C., April 6-7<sup>th</sup>, 2018.