MaryClare **Roche**

DATA SCIENTIST · POLITICAL SCIENTIST

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Work Experience

Director of Technology & Innovation
Washington, D.C.

ARAB BAROMETER, PRINCETON UNIVERSITY
September 2022 - present

- Decides the direction of Arab Barometer's technological advances by evaluating all new technology Arab Barometer adopts
- Develops strategies for survey programming & stress-testing, as well as processing & publishing incoming data
- Designs programming assessments for applicants & on-boarding materials for new hires
- Responsible for hiring, training, managing & mentoring Data Team members
- Coordinates with field partners across the Middle East & North Africa to assist with quality control, respond to real-time tech issues
- Represents Arab Barometer on various panels discussing Arab Barometer's data, particularly as it relates to views of gender dynamics
- Manages communications and expectations between data team members and the rest of the staff
- Designs programming assessments for applicants & on-boarding materials for new hires
- Creates & maintains database of 16 years of Arab Barometer data
- Manages communications and expectations between Data Team members & Media Team

Senior Research Specialist
Washington, D.C.

ARAB BAROMETER, PRINCETON UNIVERSITY
August 2020 - September 2022

- Oversaw and aided in the development of custom data verification software used in real-time to evaluate the quality of incoming survey data
- Built custom graphing and statistical analysis R packages exclusively for Arab Barometer for both English and Arabic
- Created data processing pipeline that decreased time-to-publication by over six months
- Developed novel SMS messaging program in python to routinely deliver surveys across the Middle East and North Africa
- Designed and oversaw data processing pipeline for incoming data from 12 countries across three platforms with the use of Stata, R, and SPSS
- Created econometric models and data visualization to be presented at the US State Department, several US Embassies, the United Nations, & various international non-profits

Doctoral Thesis Work
Rochester, New York

UNIVERSITY OF ROCHESTER
2013-2020

- Scraped original text data via multi-threading over a generated cluster of temporary, localized IP addresses with Microsoft Azure and Docker
- Utilized Optical Character Recognition (OCR) API on official government documents in Arabic to supplement missing information
- Built an Arabic-to-English dictionary using Google and Bing translator APIs
- Analyzed Irregular Time Series data to uncover temporal speaking patterns
- Uncovered unexpected gender dynamics in Middle Eastern semi-democratic parliaments

Selected Presentations

European Political Science Association
Glasgow, Scotland

NATURAL LANGUAGE PROCESSING FOR SHORT, ANONYMIZED SURVEY RESPONSES
June 2023

- Served as Panel Chair for New Developments in Text Analysis

World Association for Public Opinion Research
Dubai, United Arab Emirates

NATURAL LANGUAGE PROCESSING FOR SHORT, ANONYMIZED SURVEY RESPONSES
November 2022

- Served as Panel Chair for Big Data, Sentiment Analysis, and Machine Learning

World Bank
Washington, D.C.

HOW CAN FACTS HELP US BRING WOMEN INTO THE WORKFORCE IN MENA?
February 2023

- Reviews findings on gender attitudes from Arab Barometer Wave VII and historical data

Middle East Institute
Washington, D.C. - Remote

GENDER ATTITUDES AND TRENDS IN MENA
October 2022

- Reviews findings on gender attitudes from Arab Barometer Wave VII

United Nations
New York, NY - Remote

WOMEN AND COVID-19 IN MENA: FINDINGS FROM THE SIXTH WAVE OF ARAB BAROMETER
September 2021

- Co-presented with Dr. Amaney Jamal, Dean of Princeton School of Public and International Affairs
- Served as data analyst, presentation creator

Skills

Programming	R: tidyverse, topicmodels, stm, quanteda, TensorFlow, zoo, arabicStemR, ggplot2; python: numpy, pandas, TensorFlow, scipy, spaCy, gensim, matplotlib, multithreading, multiproccesing, selenium
Software	Matlab, Mathematica, ArcGIS, Docker, Stata, SPSS, LaTeX, Excel
Technical	Econometrics (Advanced), Time Series Analysis, Structural Estimation, Causal Inference, Machine Learning, Imputation, Web Scraping, Natural Language Processing (NLP) in English and Arabic

Education

University of Rochester *Rochester, NY*

Ph.D., M.A. in Political Science *2013 - 2020*

University of Maryland, College Park *College Park, MD*

B.S. in Physics (Primary) and Government & Politics (Secondary) *2009 - 2013*