Yi-Hsuan (Roger) Chen

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SUMMARY

Data analyst trained at Johns Hopkins University with **real-world evidence (RWE)** research experience using **Electric Health Records (EHR)** datasets (TriNetX, NHIRD). Skilled in R, Python, SQL, and advanced **statistical modeling** (Cox, Poisson, INLA), with expertise in **dashboard** development (RShiny, ESRI). Independently led a COPD study supporting **FDA-relevant findings**.

SKILLS

Computing Languages	R, Python, SQL, SAS, MATLAB
Statistical Analysis & Modeling	Regression (Cox, logistics, Poisson), Bayesian statistics (INLA), Time series (ARIMA), Generalized estimating equations
Data Science & Machine Learning	Decision trees, Random forests, Principal component analysis, Artificial neural network
GIS & Spatial Analysis	SaTScan, Geostatistics, ArcGIS, Google earth engine
Visualization & Dashboarding	RShiny, ESRI, PowerBI, ggplot2, highcharter, Tableau

EXPERIENCE

Research Data Analyst – Johns Hopkins University **Jul. 2024 – Present**

- Analyzed 7 years of Baltimore crime data (~10M records), revealing a 72% crime drop in greener areas via counterfactual modeling, reinforcing the effectiveness of urban greening interventions in crime prevention.
- Developed a dashboard visualizing 107 childhood health outcomes and related exposure variables, integrating predictive analytics to forecast climate-driven medical demand.
- Disaggregated area-level data using geostatistical techniques and projected it onto hexagonal units, thereby establishing more precise units for neighborhood-level analysis.

Intern – CommonSpirit Health **Sept. 2024 – Present**

- Developed an ESRI dashboard integrating climate, social vulnerability, and clinical data, informing management of population health needs in markets affected by wildfires and droughts.

Research Assistant – National Taiwan University **May 2020 – Jul. 2022**

- Developed epidemiological models using 23 million electronic health records to quantify air pollution's impact on disease burden and healthcare costs, projecting $4 billion in potential savings under improved air quality scenarios.
- Designed an RShiny decision support dashboard to visualize the nationwide impact of overall disability-adjusted life years (DALYs), supporting policy evaluation and decision making in Taiwan.

Research Assistant – National Cheng Kung University **Sept. 2016 – Mar. 2019**

- Demonstrated groundwater as a stable buffer resource through hydrological modeling, leading to a successful recommendation for Taiwan's Water Resources Agency to develop groundwater reservoirs for water resource security.

EDUCATION

Sc.M., Environmental Health Engineering – Johns Hopkins University **2022 – 2024**

- **Thesis:** *Evaluation of the Co-Influence of Heat Index, Social Vulnerability Index, and Neighborhood Factors on Crime Rate – A Case Study of Baltimore City*

M.S., Resources Engineering – National Cheng Kung University **2017 – 2019**

- **Thesis:** *Evaluation of Hydrological Responses to Climate Change for a Data-Scarce Mountainous Watershed in Taiwan*

B.S., Resources Engineering – National Cheng Kung University **2013 – 2017**

SELECTED PUBLICATIONS

Chen YHR, Lee WC, Liu BC, et al. Quantifying the potential effects of air pollution reduction on population health and health expenditure in Taiwan. *Environ Pollut*. 2023;336:122405. doi:10.1016/j.envpol.2023.122405.

- Led a study that quantified the benefits of targeted mitigation strategies for PM2.5, showing potential reductions of 3.19 million DALYs and $3.67 billion in healthcare costs by 2050.

Sun CY, Tesfaigzi Y, Lee GY, Chen YH, Weiss ST, Ma KSK. Clinical effectiveness and safety of dupilumab in patients with chronic obstructive pulmonary disease: a 7-year population-based cohort study. *J Allergy Clin Immunol*. 2025;155(1):219-222. doi:10.1016/j.jaci.2024.09.019.

- Conducted a retrospective cohort study using TriNetX EHR and Cox models with propensity score matching, showing dupilumab significantly reduces mortality, exacerbations, and pneumonia in COPD patients—supporting FDA approval.