

# Ioanna Maria Spyrou

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Doctoral Research Fellow, Georgia Institute of Technology, School of Economics

## EDUCATION

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### Ph.D. Economics

(Anticipated graduation 05/2024)

Dissertation Title: "Impact of Natural Disasters on Well-Being and Sustainable Agriculture as Alleviation Strategy", Advisor: Dr. Shatakshee Dhongde

Georgia Institute of Technology

Atlanta, GA

### M.S. Economics

(Awarded May 2023)

Georgia Institute of Technology

Atlanta, GA

### M.A. Statistics & Applied Mathematics

(Awarded: June 2017)

City University of New York

New York City, NY

### B.S. Mathematics

(Awarded: June 2014)

Aristotle University

Thessaloniki, Greece

### B.S. & M.S. Plant Protection Science

(Awarded: November 2008)

Aristotle University

Thessaloniki, Greece

## RESEARCH INTERESTS

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Sustainable Development, Development and Environmental Economics, Agriculture Economics, Data Science, Econometrics, Team Science

## PUBLICATIONS

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- Meaghan McSorley, Bettina K. Arkhurst, Marjorie Hall, Yilun Zha, **Ioanna Maria Spyrou**, Katherine Duchesneau, Udit Ringania, Michael Chang (2023) For graduate students to become leaders in sustainability, we must transcend disciplinary boundaries, *Elementa: Science of the Anthropocene* Vol. 11, Issue 1 <https://doi.org/10.1525/elementa.2023.00012>

- **Ioanna Maria Spyrou**, Christos Frantzidis, Charalampos Bratsas, Ioannis Antoniou, Panagiotis D. Bamidis. (2016) Geriatric depression symptoms coexisting with cognitive decline: A comparison of classification methodologies, *Biomedical Signal Processing Control*, Vol. 25, pp 118-129 <https://doi.org/10.1016/j.bspc.2015.10.006>

- S. Billis, Evdokimos I. Konstantinidis, **Ioanna Maria Spyrou**, Panagiotis Antoniou, Panagiotis D. Bamidis. (2015) Exercise Intensity Forecasting: Application in Elderly Interventions that Promote Active and Healthy Aging. *International Journal of E-Health Medical Communications*, Vol. 6, Issue 4, pp 1-19 <https://doi.org/10.4018/IJEHMC.2015100101>

- **Ioanna Maria Spyrou**, Dimitrios G. Karpouzas, Urania Menkissoglu-Spiroudi. (2009) Do botanical pesticides alter the structure of the soil microbial community? *Microbial Ecology*, Vol. 58, Issue 4, pp 715-727 <https://doi.org/10.1007/s00248-009-9522-z>

## RESEARCH PAPERS

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- **Impact of Drought on Children's Educational Outcomes. (Job Market Paper)**

(with Dr. Shatakshee Dhongde), November 2022 <https://dx.doi.org/10.2139/ssrn.4547663>

Droughts have become more frequent and more intense in countries across the world. In this study, we assess the impact of droughts on children's well-being. We combine a rich panel data set on 2000

school-aged children with monthly rainfall data in Ethiopia between 2009 and 2017. We find that droughts decrease the probability that a child will remain enrolled in school by more than 36%. Among children who remain enrolled, droughts adversely affect their grade progression. These children suffered from high food insecurity. Girls, in particular, were at a greater risk of being malnourished and stunted. With the onset of a drought, children spent more time on paid activities and less time on sleep. Overall droughts had a significant negative impact on children's overall well-being.

**- Sustainable Agricultural Practices (SAPs) as determinants for food security.** March 2023

This paper examines household determinants for adopting sustainable agricultural practices and uses different food insecurity measures to identify household food conditions, suggesting that adopting Sustainable Agricultural Practices (SAPs) improves food security in a household. Among different SAPs, I examine their impact of crop rotation, and mixed cropping on food insecurity using measures such as Food Insecurity Experience Scale (FIES), Household Food Insecurity Access Scale (HFIAS) and Prevalence (HFIAP) and Household Dietary Diversity Score (HDDS). Adopting SAPs is affected by whether farmers receive agricultural assistance, by production allocation, household shocks and household characteristics. SAPs are found to reduce food insecurity by up to 21 percent.

**- Food insecurity forecasting using Machine Learning Techniques.** July 2023

This paper is using machine learning to forecast food insecurity in several countries in Africa aggregating data from 2020 to present. I am combining data on food insecurity with weather data including drought indices such as SPEI, with disorder data, food prices indices, and NDVI data (GIMMS Global Agricultural Monitoring).

## RESEARCH EXPERIENCE

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**Graduate Research Fellow**

Aug 2019 -

Georgia Institute of Technology, School of Economics, Brook Byers Institute of Sustainable Systems

- Forecasting using Machine Learning.
- Panel data analysis using random, fixed effects estimation.
- Sustainability: Interdisciplinary Teams and Leadership, participated in: Climate Action Plan Advisory Task Force Working Group, The Georgia Tech Research Institute grant proposal process, interdisciplinary BBISS team for project design and implementation.

**Research Assistant**

Oct 2013 to Aug 2015

Aristotle University, School of Medicine, Medical Physics Laboratory

- Examined and Evaluated Data Mining Techniques (Random Forests, Random Trees, Support Vector Machines (SVMs) and Multilayer Perceptron (MLP) Networks).
- Generated time-series forecasting models.

**Senior Research Data Scientist**

Aug 2008 to Aug 2015

European Apiculture Programs Supervisor Institute of Plant Breeding and Genetic Resources (IPB & GR) of the Hellenic Agricultural Organization-Demeter (formerly NAGREF) supervised by the Ministry of Agriculture

- Analyzed and Evaluated Data Mining Techniques and Extracted Knowledge for Price and Subsidies Policy Determination.
- Analyzed of Honey Samples in the lab for pesticides residuals detection.

**Graduate Research Assistant**

Jan 2003 to Aug 2009

Aristotle University, School of Agriculture, Plant Pathology Laboratory

- Applied and Analyzed Data Mining Techniques and Evaluated Statistical Inference. Applied Principal Component Analysis (PCA), three-way and a two-way analysis of variance (ANOVA).

## CONFERENCES/PROGRAMS PRESENTATIONS

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**2023:** Southeastern Economic Association Conference (SEA), New Orleans, Association for Public Policy Analysis & Management Conference (APPAM), Atlanta, The South East Exchange of Development Studies (SEEDS, Georgia Institute of Technology,

**2022:** Rapid Fire Presentations on Global Development, 1st Brook Byers Institute for Sustainable Systems Scholar Symposium, Georgia Institute of Technology

**2022:** Southeastern Economic Association Conference (SEA), Fort Lauderdale, Ivan Allen College Graduate Student Conference, and Ivan Allen College Focus Scholars Program, Georgia Institute of Technology,

**2021:** Southeastern Economic Association Conference (SEA), Houston

## TEACHING EXPERIENCE

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**Instructor**, Georgia Institute of Technology, School of Economics

- ECON 2106: Principles of Microeconomics Aug 2023 to Dec 2023

**Graduate Teaching Assistant**, Georgia Institute of Technology, School of Economics

- ECON 4340: Industrial Organization May 2021 to July 2021
- ECON 2106: Principles of Microeconomics Aug 2020 to July 2021
- ECON 4440: Economics of the Environment Jan 2020 to May 2020
- ECON 4180: Game Theory Economics Aug 2019 to Dec 2019

## FELLOWSHIPS

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- Brook Byers Institute for Sustainable Systems (Graduate Research Fellow) Aug 2021 to July 2023
- Gerondelis Foundation (for Academic Excellence) Jan 2019 to Dec 2020

## MEMBERSHIPS

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- Southeastern Economic Association
- American Economic Association

## PREVIOUS EMPLOYMENT

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Graduate Research Assistant, Brook Byers Institute of Sustainable Systems, Georgia Institute of Technology, Aug 2021 to July 2023

Graduate Fellow, Dept. of Applied Mathematics & Statistics, Stony Brook University, Aug 2017 to June 2018

Senior Research & Data Scientist, European Apiculture Programs Supervisor, Institute of Plant Breeding & Genetic Resources, Thessaloniki, Greece, Aug 2008 to Aug 2015

## SKILLS

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- Python, C, C++, R, STATA, MATLAB, Weka, SQL, Tableau
- Tech to Teach Certificate (Georgia Institute of Technology)

## LANGUAGES

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English (Fluent), German (Fluent), Greek (Native)

## REFERENCES

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- Dr. Shatakshee Dhongde  
School of Economics  
Georgia Institute of Technology  
shatakshee.dhongde@econ.gatech.edu
- Dr. Casey Wichman  
School of Economics  
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- Dr. Karen Yan  
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- Dr. Olga Shemyakina  
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- Dr. Robert Gonzalez  
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