

Tufts-Laidlaw Faculty Proposed Projects

Table of Contents

I. Economics and Labor Market Research Projects (Professor Laura Gee)

- 1. Gender Disparities in Parental Involvement and Labor Market Outcomes**
- 2. Rethinking Measurement: Uncovering Biases in Labor Market Gaps**
- 3. Understanding Why Women Avoid Economics as a Major and Career Path**

II. Public Health and Healthcare Research Projects (Professor Shayesteh Jahanfar)

- 4. Understanding Self-Care in Patients with Atrial Fibrillation**
 - **Faculty Mentor: Professor Shayesteh Jahanfar**
- 5. Patient Perspectives on Telemedicine in Breast Cancer Care**
 - **Faculty Mentor: Professor Shayesteh Jahanfar**

III. Community Health and Aging Research (Professor Elizabeth Marfeo)

- 6. Aging, Accessibility, and Community Health**
 - **Faculty Mentor: Professor Elizabeth Marfeo**

IV. Molecular Biology and Genetic Stability Research (Professor Catherine Freudenreich)

- 7. Overcoming Replication Fork Barriers**
 - **Faculty Mentor: Professor Catherine Freudenreich**

I. Economics and Labor Market Research Projects (Professor Laura Gee)

1. Gender Disparities in Parental Involvement and Labor Market Outcomes

Faculty Mentor: Professor Laura Gee

Department: Economics, School of Arts and Sciences

Location: Medford Campus (In-person preferred, with weekly office visits)

Project Overview:

This project investigates how external demands for parental involvement contribute to gender disparities in the labor market. Using a large-scale field experiment with schools, the study examines whether schools disproportionately contact mothers over fathers and how this dynamic may influence women's professional choices and labor participation.

Key Responsibilities:

- Assist in managing large-scale data collection through school communication records.
- Monitor and track responses to outreach.
- Support data cleaning and analysis in statistical software (Stata).
- Contribute to summarizing findings for reports and presentations.

Ideal Candidate:

- Detail-oriented and highly reliable.
- Interest in gender studies, labor economics, and social inequality.
- Familiarity with or willingness to learn statistical programming (e.g., Stata).
- Ability to work independently and collaboratively.

Learning Outcomes:

- Gain hands-on experience in experimental economic research.
- Develop data management and statistical analysis skills.
- Understand the impact of social norms on gendered labor outcomes.

2. Rethinking Measurement: Uncovering Biases in Labor Market Gaps

Faculty Mentor: Professor Laura Gee

Department: Economics, School of Arts and Sciences

Location: Medford Campus (In-person preferred, with weekly office visits)

Project Overview:

This project explores how different methods of measuring labor market disparities (gender, race, criminal record) influence our understanding of these gaps. The study seeks to determine whether certain measurement techniques unintentionally obscure or exaggerate labor inequalities.

Key Responsibilities:

- Collect and organize diverse labor market datasets.
- Clean and analyze data using statistical software (Stata).
- Assist in designing experimental frameworks to compare measurement approaches.
- Summarize insights for research reports and presentations.

Ideal Candidate:

- Strong interest in data analysis, social justice, and labor economics.
- Basic knowledge of or interest in learning statistical programming tools.
- Analytical thinker with attention to detail.
- Self-motivated and capable of working independently.

Learning Outcomes:

- Deepen understanding of research methodologies in economics.
- Learn how data measurement impacts the interpretation of social issues.
- Enhance quantitative research and critical analysis skills.

3. Understanding Why Women Avoid Economics as a Major and Career Path

Faculty Mentor: Professor Laura Gee

Department: Economics, School of Arts and Sciences

Location: Medford Campus (In-person preferred, with weekly office visits)

Project Overview:

Despite economics being a high-impact and lucrative field, women are underrepresented in economics majors and related careers. This project investigates the underlying factors deterring women from pursuing economics, exploring educational environments, cultural perceptions, and institutional barriers.

Key Responsibilities:

- Collect and analyze data from surveys or experiments related to students' academic choices.
- Support qualitative research efforts, including designing surveys and monitoring responses.
- Clean and analyze data using statistical software (Stata).
- Assist in preparing research findings for publication and presentation.

Ideal Candidate:

- Passionate about gender equality in education and economics.
- Curious about behavioral economics and social influences on career choices.
- Strong organizational skills and attention to detail.
- Interest in learning or enhancing statistical programming skills.

Learning Outcomes:

- Gain insight into gender disparities in higher education.
- Develop research skills in both data collection and analysis.
- Contribute to creating strategies that promote diversity in economics.

II. Public Health and Healthcare Research Projects (Professor Shayesteh Jahanfar)

4. Understanding Self-Care in Patients with Atrial Fibrillation

Faculty Mentor: Professor Shayesteh Jahanfar

Department: Public Health and Community Medicine

School: Tufts University School of Medicine

Location: Malaysia

Project Overview:

This study explores the factors influencing **self-care behaviors** in patients with atrial fibrillation. The research aims to identify key enablers and barriers that impact patients' ability to manage their condition effectively, ultimately contributing to improved healthcare practices and patient outcomes.

Required Applicant Qualifications:

- Familiarity with **statistical analysis software (Stata, SPSS)** or willingness to learn.
- Strong **writing and literature review skills**.
- **Detail-oriented, organized, and able to work independently.**

Additional Mentee Requirements:

- Must be available for **regular meetings** with Professor Jahanfar.
- Must be **dedicated, reliable, and passionate** about research.
- Preferred candidates should have **prior international travel experience**.

Learning Outcomes:

- Develop **qualitative and statistical data analysis skills**.
- Gain **experience in academic writing and manuscript preparation**.
- Understand **how self-care behaviors influence patient health outcomes**.

International Research Collaboration:

- **Host Institution:** University of Malaya, Kuala Lumpur
- **Co-PI:** Prof. Dr. Li Ping Wong, Department of Public Health and Social Medicine
- **Collaboration:** Professor Jahanfar has worked with Dr. Wong on multiple public health research projects.
- **More Info on Co-PI:** [Prof. Wong's Bio](#)

Housing & Transportation Arrangements:

- **Housing Type:** Airbnb (Students will arrange accommodations near the University of Malaya with guidance from Prof. Jahanfar and Dr. Wong).
- **Recommended Setup:** Two students share an Airbnb with cooking facilities, TV, and internet.
- **Transportation:** Taxis are affordable and widely available.

Health & Safety Requirements:

- **Hepatitis B vaccination is recommended.**
- Students should **check the U.S. Travel website** for updated vaccination guidelines

5. Patient Perspectives on Telemedicine in Breast Cancer Care

Faculty Mentor: Professor Shayesteh Jahanfar

Department: Public Health and Community Medicine

School: Tufts University School of Medicine

Location: Malaysia

Project Overview:

Telemedicine has transformed healthcare delivery, particularly in cancer care. This study investigates **breast cancer patients' experiences with telemedicine consultations**, assessing their satisfaction levels, challenges faced, and potential areas for improvement. The findings will contribute to enhancing **patient-centered telehealth practices**.

Key Responsibilities:

- Design and administer patient **surveys and interviews**.
- Analyze **qualitative and quantitative data** on telemedicine experiences.
- Assist in preparing research reports and **conference abstracts**.
- Develop **recommendations for improving virtual healthcare delivery**.

Required Applicant Qualifications:

- Interest in **healthcare innovation, telemedicine, and patient-centered research**.
- Strong **writing, critical thinking, and data analysis skills**.
- Comfort with **survey design and qualitative data collection**.
- Familiarity with **data coding and statistical software is a plus**.

Additional Mentee Requirements:

- Must be available for **regular meetings** with Professor Jahanfar.
- Should be **highly motivated, detail-oriented, and organized**.
- **Prior travel experience is preferred**.

Learning Outcomes:

- Understand **how telemedicine impacts cancer care**.
- Gain experience in **survey-based healthcare research**.
- Develop skills in **qualitative and quantitative research methods**.
- Improve **scientific writing and presentation abilities**.

International Research Collaboration:

- **Host Institution:** University of Malaya, Kuala Lumpur
- **Co-PI:** Prof. Dr. Li Ping Wong, Department of Public Health and Social Medicine
- **Collaboration:** Professor Jahanfar has worked with Dr. Wong on multiple research projects.
- **More Info on Co-PI:** [Prof. Wong's Bio](#)

Housing & Transportation Arrangements:

- **Housing Type:** Airbnb (Students will arrange accommodations near the University of Malaya with guidance from Prof. Jahanfar and Dr. Wong).
- **Recommended Setup:** Two students share an Airbnb with cooking facilities, TV, and internet.
- **Transportation:** Taxis are affordable and widely available.

Health & Safety Requirements:

- **Hepatitis B vaccination is recommended**.
- Students should **check the U.S. Travel website** for updated vaccination guidelines.

III. Community Health and Aging Research (Professor Elizabeth Marfeo)

6. Aging, Accessibility, and Community Health

Faculty Mentor:

- **Name:** Professor Elizabeth Marfeo
- **Department:** Community Health
- **School:** School of Arts and Sciences

Project Overview:

This research project examines the **key factors influencing health and participation among older adults** in community-based settings. Using a **mixed-methods approach**, this study will explore how **physical, mental, and social well-being** are shaped by individual characteristics, social support systems, and community environments.

Findings from this study will inform **public health policies and interventions** aimed at improving **aging-related health outcomes, social integration, and access to services**. Specific research areas include:

- **Caregiver health and quality of life**
- **Effectiveness of intergenerational programs**
- **Productive aging and its relationship to life transitions**

Scholar Participation:

- **Project Timeline:** Structured in four phases:
 1. **Preparation and Planning**
 2. **Data Collection**
 3. **Data Analysis**
 4. **Writing and Dissemination**
- **Location:** Both remote and in-person options available
- **Expected Duration:** Minimum of **six weeks**, with potential to extend based on student interest and availability

Scholar Responsibilities:

- **Develop quantitative surveys** to assess health outcomes, service access, and social engagement
- **Conduct qualitative interviews and focus groups** with older adults and community members
- **Perform systematic literature reviews** to advance research in public health, gerontology, and health policy
- **Analyze and visualize data** to identify trends in health and participation
- **Engage in community-based data collection** at senior centers in Medford, MA

Expected Scholar Deliverables:

- **Conference abstracts** for submission to the American Public Health Association, Gerontological Society of America, and International Society of Quality-of-Life Research
- **Manuscripts and research summaries** for peer-reviewed journal submissions
- **Data visualizations (charts, graphs, infographics)** to communicate research findings
- **Reports for community leaders** to inform public health initiatives

Required Applicant Qualifications:

- **Ability to work both independently and collaboratively** in a research setting
- **Strong writing skills** to synthesize complex ideas and produce structured reports
- **Interpersonal communication skills** for engaging with older adults and community stakeholders
- **Project management and leadership abilities** to take initiative and guide research activities

Additional Mentee Requirements:

- Students should have a **high standard of ethical conduct** and a commitment to the **public health impact of their research**
- Experience in **quantitative or qualitative research methods** is helpful but not required
- Scholars should be comfortable **adapting to diverse research settings**, including community-based engagement

Learning Outcomes:

- Gain knowledge of **aging-related public health issues** and apply research to **real-world settings**
- Develop **quantitative and qualitative research skills** through hands-on experience
- Learn to **collaborate effectively in research teams** and **manage independent projects**
- Improve communication skills to **tailor research findings** for different audiences, including academics, policymakers, and community organizations

IV. Molecular Biology and Genetic Stability Research (Professor Catherine Freudenreich)

7. Overcoming Replication Fork Barriers

Faculty Mentor:

- **Name:** Professor Catherine Freudenreich
- **Department:** Biology
- **School:** School of Arts and Sciences

Project Overview:

DNA replication is essential for maintaining **genome stability**, yet it frequently encounters barriers that can disrupt the process. This project focuses on **replication fork barriers (RFBs)** caused by DNA-bound proteins. Using a **model inducible protein barrier**, this study will investigate:

- **How replication forks navigate barriers within the nucleus.**
- **The cellular mechanisms used to overcome these obstacles.**
- **How genetic mutations impact RFB recovery and genome stability.**

This research contributes to a **greater understanding of genetic stability** and has implications for **genetic disorders and cancer research**.

Scholar Participation:

- **Number of Students:** 2
- **Project Timeline:** Full-time, in-person research during **Summer 1 of the Laidlaw-funded period**
- **Location:** Mentor's laboratory at **200 Boston Ave, Medford**
- **Expected Duration:** Minimum of **six weeks**, with potential for further involvement

Scholar Responsibilities:

- Conduct **full-time laboratory research** following established molecular genetics protocols.
- Adhere to **lab safety guidelines** and proper equipment use.
- Attend **weekly lab meetings** and engage in discussions about research progress.
- Maintain an **organized digital lab notebook** with detailed experimental procedures and results.
- Contribute to the **maintenance of an organized lab dataset** for future analysis.
- Read relevant **scientific literature** to support research planning and hypothesis development.
- Present **research findings** at the end of the summer.

Expected Scholar Deliverables:

- **Generation of new experimental data** to support ongoing research.
- **Detailed lab records** and analysis contributing to future publications.
- **Presentation of findings** within the lab and potentially at scientific conferences.

Required Applicant Qualifications:

- **Must have completed Genetics (Bio 41) and at least one college-level laboratory course.**
- **A course in Molecular Biology or Biochemistry is recommended but not required.**
- **Prior research or laboratory experience in molecular biology is helpful but not required.**

Additional Mentee Requirements:

- Strong **enthusiasm for scientific discovery** and a willingness to **engage in complex problem-solving**.
- Must be comfortable working in a **full-time in-person laboratory setting**.

Learning Outcomes:

- Develop expertise in **molecular, genetic, and microscopy techniques**.
- Gain hands-on **experience in project design and scientific investigation**.
- Deepen understanding of **DNA replication and genome instability**.
- Contribute to the **discovery of new insights into cellular function**.