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To
NBER Research Associates

January 6, 2023

Thank you for your time on my application.

I am writing to apply for attending the tutorial on the Economics of Digitization organized by NBER in San Francisco in March 2023.

I started my doctoral study in Information System & Management with a focus on economics of digitization at Heinz College, Carnegie Mellon University in Fall 2018, and since then have been fortunate to be advised by Prof. Michael Smith. My dissertation committee members include Prof. Michael Smith (chair), Prof. Brett Danaher and Prof. Daniel Nagin.

The graduate courses that have been taken are listed below and my application essay is attached in this package. I look forward to hearing from you, and do not hesitate contacting me if you have any questions.

Thanks in advance!

Helen Shuxuan Zeng

Relevant coursework:

Intermediate statistics, PhD microeconomics, PhD econometrics I & II, PhD machine learning, Analytical & structural marketing models, Human judgment and decision making, Structural models & quantitative methods, Tracking political sentiment with machine learning

Carnegie Mellon University
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January 6, 2023

Dear NBER Research Associates,

I am Helen Shuxuan Zeng, PhD candidate in Information Systems and Management at Heinz College, Carnegie Mellon University. I am super excited to apply to attend the tutorial on the Economics of Digitization organized by NBER in 2023. My research has been examining the harmful content on the Internet, and with the downsides brought by digital transformation how governance should adapt to that. Specifically, my work empirically addresses an important and timely public policy question: How to respond to the rise in child sexual abuse materials (CSAM) online and human sex trafficking facilitated by online marketplaces. In this letter, I will provide greater details on the work I have been doing in my dissertation.

My research in this area was motivated by a New York Times article titled "The Internet Is Overrun With Images of Child Sexual Abuse"[1] which reveals that the reports of child sexual abuse imagery have risen dramatically from 3,000 in 1998 to 18.4 million (45 million images) in 2018, along with a talk at Carnegie Mellon University's AI forum given by LAPD[2] detective Paula Meares who shared that among those "FBI only has time and resources to go after cases where they believe the victims are under the age of 6". I thus realize 1) the topic of protecting children (or more broadly, humans) online is an incredibly important problem area, one that has beguiled our society for a long time; 2) the topic requires some serious policy attention, that has been woefully under-represented lately; and 3) it's a topic that need some good science and empirical work to address.

My first paper[3] in this research area studies the impact of an anti-sex trafficking law which shut down two largest online escort advertising portals and is designed to reduce online human trafficking. The paper was given the Suresh Konda Award for the best first doctoral student paper at Carnegie Mellon University (CMU)'s Heinz College and I was honored to be awarded the K&L Gates Presidential Fellowship in Ethics and Computing by CMU. In this paper, I partnered with IBM's Traffik Analysis Hub and an organization called Stop The Traffik to obtain data compiled from a variety of NGO, law enforcement and news sources documenting the cases of sex trafficking. Our results with regard to the law show that the shutdown had no effect on the number of sex trafficking cases or prostitution activities, largely due to the fact that the majority of advertisers and users of the shut down sites quickly gravitated toward other remaining (often off-shore) online advertising portals. In July 2020, IBM and Stop The Traffik invited me to present our findings and ongoing research during meetings with their worldwide research partners. This study is having some serious policy impact. My advisor Prof. Michael Smith[4] and I have talked to Senator Bob Casey's Legislative office to inform the Senator's

[1] See `https://www.nytimes.com/interactive/2019/09/28/us/child-sex-abuse.html`.

[2] Los Angeles Police Department.

[3] Zeng, Helen (Shuxuan), Brett Danaher, Michael D. Smith. 2022. Internet Governance Through Site Shutdowns: The Impact of Shutting Down Two Major Commercial Sex Advertising Sites. Management Science. Forthcoming.

[4] J. Erik Jonsson Professor of Information Technology and Marketing at Carnegie Mellon University's H. John Heinz III College, `https://mds.heinz.cmu.edu/`.

co-sponsorship of a bill designed to reduce child sex abuse material online; this year, we also talked to leaders at National Center for Missing & Exploited Children and lobbyists for EARN IT act[5], a legislation aiming to protect children online that will be reintroduced to Congress this Fall 2022, to inform the policy decision in this area.

My second paper in my dissertation revisits a previous study by Cunningham et al. (2022)[6] which studies the impact of the introduction of an online escort advertising portal, Craigslist's "erotic services section" (ERS), on female homicides, and identifies that ERS entry results in a 10-17% reduction in female murders. Replicating the previous literature's finding on primary counties that have Craigslist services, my study further identifies a spillover effect of the introduction of ERS that its entry caused a 21-32% *increase* in female homicides in the surrounding areas of the central counties listed on Craigslist. Together, my results in this paper suggest that, instead of making women uniformly safer by reducing female homicides, the introduction of Craigslist's ERS caused dispersion of harms from cities to suburban areas that online marketplace for commercial sex eliminated many of the geographic constraints associated with advertising commercial sex transactions.

My current study in this line of research has been analyzing whether recent legislation in US has made it more difficult to sell trafficked victims (especially minor victims) for sex online. To analyze this question, I scraped a large-scale data set from an online erotic review site that allowed me to document the general information (e.g., age and physical features) of individuals being advertised for commercial sex online, the specific sexual services they offered, and the advertised prices for those services. I am constructing economic analysis models to understand if the US legislation passed in 2018 caused a structural change to the underground commercial sex market (e.g., decrease in supply of younger sex providers) and whether neighboring countries (i.e., Canada and Mexico) experienced an influx of service providers crossing the borders post the passage of the US law. In addition, I obtained a dataset from Heyrick Research which documents the geographic locations of Illicit Massage Businesses (IMBs) in the United States. The IMBs have generally been considered as the hub for international sex trafficking victims. According to the data provider, more than 80% of IMBs in the United States are "Chinese". The victim workers from these IMBs usually hail from an impoverished region of China and are coerced into providing sexual services to 8-12 customers per day. I am planning to scrape the recruitment ads data from multiple Chinese job boards so as to analyze the economics of this industry, the supply chain of this "labor" market and the impact of Federal and local policy changes on foreign (particularly Chinese) trafficking victims.

The research questions listed in this proposal are definitely not the last word on this vitally important topic in ethics and computing. I am genuinely excited about the opportunity of attending the digitization tutorial. I am looking forward badly to hearing the presentations from, as well as to interacting with the distinguished researchers & scholars at the tutorial so as to gain deeper insights of economics of digitization and to help each other out in booming great research ideas. Thank you for considering my application.

Sincerely,

Helen Shuxuan Zeng

[5]Eliminating Abusive and Rampant Neglect of Interactive Technologies Act. See `https://www.congress.gov/bill/117th-congress/senate-bill/3538`.

[6]Cunningham, S., DeAngelo, G. and Tripp, J. (2022), 'Did Craigslist's erotic services reduce female homicide and rapes?', Journal of Human Resources . Forthcoming.