

Paper 1

Mika Akesaka and **Hitoshi Shigeoka** (University of Tokyo)

*“Invisible Killer”: Seasonal Allergy and Accidents*

Abstract:

Despite at least 400 million seasonal allergy sufferers worldwide, the adverse impacts of pollen on ‘non-health’ outcomes such as cognition and productivity are surprisingly understudied. Using the universe of ambulance records in Japan, we are the first to show that high pollen days are associated with more accidents—the most extreme consequence of cognitive impairment. Using geolocation data, we find limited evidence of avoidance behaviors, implying that the risk of pollen exposure is severely discounted. Finally, the increased pollen concentrations due to climate change are projected to aggravate pollen-induced accidents, with a minimum social cost of USD231 million annually.

Paper 2

**Meng-Chi Tang** (National Chung Cheng University)

*Physician Agency and Inappropriate Antibiotic Prescriptions in Taiwan*

Abstract:

As antimicrobial resistance becomes a global threat in public health, this paper shows physician agency is the main driver behind inappropriate antibiotic prescriptions. I used data from Taiwan with more than 10 million patient visits for viral upper respiratory tract infections and found that antibiotics were prescribed in 12% of the visits. Empirical results show that the inappropriate antibiotic prescriptions were more likely to be given by physician owners and dispensers. The number of doses prescribed is found to increase with the profit margin. The results also reveal that patients did not prefer to receive antibiotics, as their chances of returning to the same doctor would be reduced if they had received inappropriate antibiotics in the previous visit. Medical providers facing less competition were found to be more likely to prescribe inappropriate antibiotics given patients' sparse alternatives.

Paper 3

**Norihiro Komura** (Kyoto University), and Shun-ichiro Bessho

*The Longer-Term Impact of Coinsurance for the Elderly*

Abstract:

We estimate the impact of coinsurance on healthcare spending dynamics by cohort difference-in-discontinuities with population data. We use its difference, 10% vs 20%, during ages 70-74 depending on the timing of birth. We find that the 5-year impact on total spending is similar to the immediate impact, while heterogeneity by type of care exists; the impact on discretionary care becomes larger over time and exhibits stronger persistence after 75. Elasticities across care are more diverged in the long run. The estimated response dynamics of discretionary care are consistent with habit formation, given no discernible change in health and health-improving behaviors.

## Paper 4

**Yunji Choi** (Seoul National University) and Sok Chul Hong

*Physician's Response to a Revenue Shock: Evidence from a Fee Change in the Korean Vehicle Insurance Market*

### Abstract:

In Korea vehicle insurance is a mandatory insurance and any medical expenditure after a vehicle accident is fully covered by the insurance companies. Out of the total medical expenditures claimed to the vehicle insurance companies in 2021 (a market of 1.8 billion USD), more than half was spent on oriental medicine and this is a significantly large share considering the fact that only 3 percent was spent on oriental medicine under the universal health insurance in Korea (the NHIS, National Health Insurance Service). Hence, we aim to study the behavior of oriental medical institutions when treating vehicle accident patients. In particular, we study whether providers of oriental medicine exhibit demand-inducing behavior when faced with a fee change that generates a negative revenue shock. We exploit the two distinctive features of the vehicle insurance plan. First, medical treatment under vehicle insurance covers extra procedures that are not covered under the universal health insurance (the NHIS) - even those without a relative value unit assigned. Second, medical treatment under vehicle insurance has virtually zero copayment, meaning that we are able to control for the patients' response. This creates a setting where the fee change affects provider's financial incentives while having no influence on the patient's incentives. We use the administrative claims data of every post-accident medical services from all vehicle insurance companies over the period of July-November 2017. We find that, as a response to the negative revenue shock caused by a fee change, oriental medical institutions recoups all (and even more) of the lost revenue from other medical services. We also find some heterogeneous behaviors across provider and type of patients: providers that used to raise more revenue from profitable services tend to be more responsive; and provider tend to raise more revenue from medical procedures that are deemed to have less clinical benefit from mild-case patients.

## Paper 5

John Mullahy and **Edward Norton** (University of Michigan)

*Why Transform Y? A Critical Assessment of Dependent-Variable Transformation in Regression Models for Skewed and Sometimes-Zero Outcomes*

### Abstract:

Dependent variables that are non-negative, follow right-skewed distributions, and have large probability mass at zero arise often in empirical economics. Two classes of models that transform the dependent variable  $y$  — the natural logarithm of  $y$  plus a constant and the inverse hyperbolic sine — have been widely used in regression modeling of such outcomes. We show that these two classes of models share several features that raise concerns about their application. The concerns are particularly prominent when dependent variables are frequently observed at zero, which in many instances is the main motivation for using them in the first place. The crux of the concern is that in addition to covariates' slope parameters these models all have an extra parameter that is generally not determined by theory but whose values have enormous consequences for point estimates. As these parameters go to extreme values (zero or infinity) the estimated marginal effects on outcomes' natural scales approach those of either an untransformed linear regression or a normed linear probability model. These results have many implications for how to model non-negative outcomes with a mass at zero. Across a wide variety of simulated data, two-part models, which correspond to a data generating process with a mass at zero and positive values, yield correct marginal effects, as do OLS on the untransformed  $y$  and Poisson regression. If researchers care about estimating marginal effects, then we recommend using these simpler models that do not rely on transformations.

Paper 6

**Lynn Hua** (University of Pennsylvania)

*Managing Behavioral Hazard: Value-Based Insurance Design and Inertia*

Abstract:

Health insurance can be used as a mechanism for more efficient health care decisions. While value-based insurance design may seem attractive by aligning cost-sharing with clinical value, whether consumers reduce their medical expenditures is unclear. I study the impact of a new value-based insurance design and consumer inertia. Copays for primary care physician visits decreased and preventive care incentives can be completed to reduce the deductible. New employees can actively choose the value-based plan, however existing employees may be defaulted into the value-based design if they were enrolled prior to the policy change. I estimate the structure of a consumer's decision of plan choice and deductible level and investigate responses to counterfactual plan menus which i) reduce the number of plan options, ii) introduce an active choice environment, and iii) mandate enrollment in the value-based plan. The valuebased design attracts new employees who lower their spending relative to old employees. A smaller plan menu or active choice policy would motivate 52% of HMO subscribers to switch to the value-based plan. These predicted enrollees can reduce their premium paid by as much as \$4,351, however there is an expected increase in out-of-pocket payments of \$85 for healthy and \$285 for sicker subscribers. These results highlight the importance of multiple components to motivate changes in consumer behavior: active choice polices coupled with decision aids, targeted information about changes in coverage, and strong financial incentives.

## Paper 7

Adam A. Dzulkipli, **Nicole Black** (Monash University), David Johnston, and Leonie Segal

### *Compulsory Schooling and Adverse Outcomes of Maltreated Children*

#### Abstract:

Abused and neglected children are at extreme risk of adverse outcomes, including higher rates of mental illness, substance abuse, injury, and teenage pregnancy. Interventions that could prevent maltreatment or alleviate the harmful effects would produce substantial welfare gains. Regrettably, robust causal evidence on the effectiveness of interventions is limited. In this study, we use an Australian education reform, which raised the school-leaving age from 16 to 17, to test whether additional compulsory schooling improves maltreatment-related outcomes. Using linked administrative records on all children and regression-discontinuity techniques, we find that the reform: (i) reduced maltreatment at age 16; (ii) reduced maltreated children's need for emergency healthcare, particularly among age 16 boys; and (iii) reduced pregnancies at age 16. These findings suggest that compulsory schooling can improve the safety of children and outcomes of maltreated children, with an incapacitation effect being the likely mechanism.

## Paper 8

Amanda Guimbeau, James Ji, Zi Long, and **Nidhiya Menon** (Brandeis University)

*Water, Water Everywhere and Not a Drop to Drink? Ocean Salinity, Early-Life Health, and Adaptation*

### Abstract:

We study the effects of in utero exposure to climate change induced high ocean salinity levels on children's anthropometric outcomes. Leveraging six geo-referenced waves of the Bangladesh Demographic and Health Surveys merged with gridded data on ocean salinity, ocean chemistry and weather indicators (temperature, rainfall and humidity) from 1993 to 2018, we find that a one standard deviation increase in in utero salinity exposure leads to a 0.11 standard deviation decline in height-for-age. Effects on weight-for-height and weight-for-age for a similar magnitude increase in salinity are 0.13 and 0.15 standard deviations, respectively. Analyses of parental investments and health-seeking behaviors demonstrate that there are relatively few compensating actions along these dimensions to attenuate the detrimental effects of salinity, especially among poorer households. Using satellite-sourced datasets on agriculture and land-use, we find that increasing salinity constrains farmers' land use choices, leading to lower agricultural profitability. In particular, the effects of salinity on child health mainly originate in areas with lower agricultural intensity caused by the progressive salinization of productive lands. These results highlight the costs of environmental shocks on early-life health outcomes in vulnerable populations.

Paper 9

**Karine Lamiraud** (ESSEC Business School), Morgane Le Guern, Michael Rockinger, and Christine Sevilla-Dedieu

*The Cost of Medical Gender Imbalance*

Abstract:

Using a proprietary database from a French health insurer, with information on French GP and their patients we aim at revealing the pattern of GP consulting using socio-economic criteria and a particular emphasis on gender. By estimating a Heckman 2 stage model we estimate the frequency of consulting based on socioeconomic variables and the probability to consult a GP of given gender given a patient's gender. We demonstrate that there is gender preference for consultation. Importantly, we reveal a non-linear relation between the probability of consulting as one changes the number of GPs and their gender. For Departments with a sufficient share of female GPs, more GPs reduces the consultation whereas for a low share the pattern is very irregular. By performing a cross regional comparative static exercise we reveal a social cost in terms of missed consultations if in a region lacking GPs of the same gender as patients. Thus, our paper adds to the small literature on what patients actually do instead of what they claim to do. The current literature is sometimes contrarian possibly due to survey based data.

Paper 10

**Arezou Zaresani** (University of Sydney) and Lucie Schmidt

*Unintended Consequences of Policy Interventions: Evidence from Mandated Health Insurance Coverage for IVF Treatment*

Abstract:

Mandated health insurance coverage for expensive In Vitro Fertilization (IVF) varies widely in generosity across the US states. We find that more generous coverage within the states that mandate any coverage causes an increase in risky and costly multiple births. While more generosity is associated with fewer embryos transferred, that effect is dominated by changes in the composition of patients, where more older women with lower fertility pursue treatment. This is mirrored by a greater decline in child adoption by older women in states with more generous coverage. Compositional effects imply that increased access without regulation might impose additional burdens on the healthcare system.

Paper P1

**Chon-Kit Ao** (National Cheng Kung University)

*Municipal Water Filtration Development and Children's Human Capital Investment*

Abstract:

Numerous studies show that access to clean water reduces child mortality and morbidity, but little work has been done on the consequences for school enrollment and child labor. The effects are theoretically ambiguous because healthier children could go to school or go to work. I examine the short-term effect of municipal installation of water filtration plants on school enrollment and child labor in American cities from 1880-1920. Using a difference-in-differences approach, I find that municipal water filtration has a positive effect on school enrollment. Also, I find a negative effect on child labor, but it is not significant at conventional levels.

Paper P2

**Aarushi Dhingra** (University of Queensland)

*Body Mass Index and Healthcare Expenditure: Where to Draw the Line?*

Abstract:

This paper examines whether there are specific ranges of body mass index (BMI) values that are associated with variation in child healthcare cost. To find a relationship between BMI and child healthcare cost, most previous literature apply pre-determined BMI thresholds based on generic growth charts. This paper hypothesises that these charts could be defined further, in relation to assessing healthcare costs for children. Additionally, the relationship between BMI and cost might not be a simple linear one, that determines healthcare expenditure by the level of severity of overweight measured using BMI. This paper applies grid-search techniques to estimate threshold effects in nonlinear models. Furthermore, the inverse hyperbolic sine (IHS) transformation is applied to the healthcare cost. Overall, the results show a positive relationship between BMI and child healthcare cost. Importantly, this relationship varies at different BMI thresholds for different age groups. For children aged 6 and above, above the BMI threshold, annual healthcare cost for non-hospital services and probability of incurring a pharmaceutical cost is, on average, significantly higher in the long-run (6 to 8 years later). For younger age cohorts the modelled thresholds are relatively closer to the underweight cutoffs defined by the Centers for Disease Control and Prevention (CDC). Whereas, for the older age cohorts the estimated threshold are closer to the risk of overweight cutoffs defined by the CDC. Additionally, the estimated number of thresholds are lower compared to those indicated in the growth charts. Therefore, use of generic growth charts may lead to very different estimates of disease prevalence and hence, healthcare cost.

Paper P3

**Rong Fu** (Waseda University), Yichen Shen, and Haruko Noguchi

*In Utero Exposure to Radiation Fear and Birth Outcomes: Evidence from Fukushima Nuclear Power Plant Accident*

Abstract:

We study the effects of exposure to radiation fear in utero on health at birth and five years later, using universal birth records linked to censuses in Japan. We are the first to assess maternal stress due to fear of an intangible and uncertain risk radiation exposure. We leverage the Fukushima nuclear power plant accident in 2011 and use a quasi-experimental setting by focusing on children whose expected birthdates were within a 280-day window to the accident. We find that radiation fear causes a 30-gram decrease in birth weight, with significant increases in the risks of low birth weight and preterm delivery. The negative impact is concentrated at the lower end of birth weight distribution, indicating that high-risk newborns are most affected. The impact endures for a brief period after birth, with an increase in physical symptoms at age two and a negligible effect at age five. The exposure to radiation fear in the first-trimester has the largest impact since the fear lingered after the accident, resulting in a longer cumulative exposure on the fetuses. The impact is more pronounced if expectant mothers are less educated or have toddlers, and if expectant fathers work in agriculture, indicating that intelligence collection is important for stress relief and food contamination is the main source of radiation fear. The findings have immediate implications for offspring health loss due to maternal stress from intangible risks like viruses.

Paper P4

Arpita Khanna, and **Tomoki Fujii** (Singapore Management University)

*Do Natural Disasters Cause Domestic Violence?: A Study of the 2015 Nepal Earthquake*

Abstract:

This study estimates the impact of exposure to the 2015 Nepal Earthquake on intimate partner violence with two rounds of Demographic and Health Surveys data. Using differences-in-differences estimation, we find that exposure to the earthquake lead to a statistically and economically significant increase in intimate partner violence in the urban areas but not in the rural areas. This is possibly due to an increase in the stress felt by the earthquake victims. We also offer some evidence that the impact heterogeneity between the urban and rural areas is attributable to the differences in the reconstruction processes and assistance provided.

Paper P5

**Kyogo Kanazawa** (Cabinet Office)

*Pharmaceutical Choice Through the Hospital*

Abstract:

In the healthcare industry, many governments regulate prices for several reasons. To regulate the prices appropriately for policy objectives, it is first necessary to properly understand the response of medical demand to price changes. This study analyzes the Japanese pharmaceutical market for Filgrastim, an expensive biologic drug mainly used for neutropenia in cancer patients, and its generics using a demand model that explicitly incorporates the introduction of generics by hospitals, using 184,954 hospitalized patients data. We analyzed the impact of both drug prices of branded and generic drugs on the introduction of generic drugs in hospitals using the hazard model as a first step, and estimate a discrete choice model for each patient's drug choice but the choice set for each patient is restricted to the drugs that were available at their hospital at that time as a second step. Then, using the results of both steps, we conducted a counterfactual simulation and showed that a 10% reduction in the price of generic drugs would increase its market share by 12.04% in the most recent year. This simulation results were more reasonable than that of the discrete choice model alone.

Paper P6

**Duc Dung Le** (Keio University), Yoko Ibuka, and Minh Nguyen

*The Causal Effect of Parental Education on Child Mortality: New Evidence from the Education Reform in Vietnam*

Abstract:

While much of previous findings of the effects of parental education on child mortality in developing countries has focused on either the sole effect of maternal education or separate effects of mothers and father's education without controlling for spousal education, our paper sets out to complement and bridge gaps in previous literature. Using one of the largest datasets in Vietnam – the 2009 Vietnam Population and Housing Census, we exploit the 1991 Universal Primary Education, which increased the duration of compulsory schooling from zero to 5 years in a regression discontinuity (RD) design contributing new evidence of the impact of parental education on child mortality and the underlying mechanisms. We find that the reform increased the average number of years of education for women and men by 0.55 and 0.53 years, respectively. Our main results show that one additional year of maternal schooling induced by the education reform reduced child mortality by 29.4%. Increased paternal education also had a negative impact on child mortality, but the effect became small and insignificant when controlling for mothers' education. Most improvement in child mortality were concentrated among women living in rural areas and less developed regions. We also identify a number of pathways through which increased maternal education might affect child mortality, including increasing the likelihood of engaging in the labor force, having fewer children, delaying the onset of marriage, and having better prenatal care and health-seeking behaviors during and after pregnancy.

Paper P7

**Ao Liu** (Kyoto University) and Yohei Mitani

*Peer Effects on COVID-19 Vaccine Uptake*

Abstract:

Promoting vaccine uptake has become a major challenge for authorities worldwide in the COVID-19 era. A better understanding of the determinants of vaccine uptake is pivotal for improving policymaking in public health. This paper examines the role of peer effects in vaccination behavior. We use a structural model to identify peer effects on COVID-19 booster uptake among 1800 adults in Japan. We find statistically significant endogenous peer effects on booster uptake. The result indicates that a one-peer increment among five peers increases the individual's probability by 7.6% point. Other significant determinants of booster uptake are age, education, subjective evaluation of health, health conditions, and prosociality measured in an incentivized donation experiment.

Paper P8

**Yanni Shen** (Osaka University) and Miki Kohara

*The Cost of Happy Internet Time: An Examination of the Causal Impact on Health*

Abstract:

This paper investigates the effect of Internet use on well-being and health, focusing on both short-term happiness and long-term health. We employ an instrument variable method with fixed effects, utilizing the individual panel structure. Using the number of broadband access ports per capita as the instrument, the results show that the Internet has a positive despite insignificant effect on short-term happiness, while it has a negative and significant effect on long-term health as it lowers self-rated health, decreases memory and increases the odds of being overweight. This effect is stronger on males, old people, and lower-educated individuals. Our results highlight the gap in personal perceptions of instant non-negative Internet effect and the unconscious negative Internet effect on long-term health.

Paper P9

Jeremy Barofsky, **Huan Wang** (University of Melbourne), Sarah Dickerson, and Victoria Baranov

*The Economic and Human Capital Effects of Antiretroviral Therapy at Scale in Malawi*

Abstract:

Since 2000, the international community has invested heavily in treating HIV through expanded access to antiretroviral therapy (ART). Previous research finds ART produces significant mortality and economic benefits to HIV patients and their families. Less is known about whether this impact extends to the broader community and whether health improvement generates economic benefits in the medium term. Although theory predicts that rising life expectancy should unambiguously raise schooling incentives, employment impacts are unclear, particularly at the national level where general equilibrium effects could outweigh the benefit of local stimulus. We identify the effect of HIV treatment at scale in Malawi using household variation in distance to ART-providing clinic. To validate our strategy, we show that proximity to ART-providing clinic is associated with a large decrease in illness-related, prime-age mortality and substantial declines in household care-taking duties. For economic effects, we find that ART proximity increases household expenditure and adult labor supply, while investment in education and child health also rises. These results confirm that in addition to extending life, ART access improves national economic prospects in the long term.

Paper P10

Ryota Nakamura, and **Ying Yao** (Asian Growth Research Institute)

*Restricting the Availability of Cigarettes Reduces Smoking*

Abstract:

This paper investigates whether restricting product availability constrains addictive behavior in the long run. We capitalize on the unanticipated discontinuation of products caused by the 2011 Great East Japan Earthquake. We examine nationally representative Japanese household scanner data and find that making certain cigarette products unavailable leads smokers to switch to less tar and nicotine-containing products and purchase 32 percent fewer cigarettes per month. The total amount of tar and nicotine in purchased cigarettes decrease by 43 and 30 percentage points, respectively. These effects persist over time. The findings imply that a new policy intervention that reduces the range of cigarette products could help reduce the harm of smoking at the population level.

Paper 11

**Naijia Guo** (Chinese University of Hong Kong), Wei Huang, and Ruixin Wang

*How Do Public Pensions Reshape Eldercare and Social Norms with Son Preference?  
Evidence from China*

Abstract:

We exploit variations in the timing of the New Rural Pension Scheme across counties in rural China and analyze how the pension affects outcomes related to eldercare and social norms over the life cycle. We obtain three different but coherent findings: (1) married sons, not married daughters, are less likely to live with and take care of their parents; (2) parents reduce brideprice to their sons but do not change dowry to their daughters; and (3) the sex ratio is less biased. Pension provision reshapes the eldercare mode and leads to a more balanced preference between sons and daughters.

Paper 12

**Terence C. Cheng** (Harvard TH Chan School of Public Health), Seonghoon Kim, and Dennis Petrie

*How Does Health Shocks Affect the Short-Run Dynamics of Labour Market Outcomes and the Socioeconomic-Health Gradient? Evidence from Singapore*

Abstract:

We provide new evidence on how ill health shapes the socioeconomic health gradient by examining the short- and intermediate-term dynamics on health status, work activity, and income using data from a unique monthly panel survey of older individuals in Singapore. Using a matched event-study difference-in-differences research design, we find that the dynamics of how self-assessed health recovers following the diagnosis of a new heart disease or cancer do not vary significantly across SES groups. Work activity, however, varies significantly with low SES males and females being significantly less likely to be in active employment and have income from work, and are more likely to be in retirement following the onset of ill health. The impacts of ill health are the opposite for high SES males, who we found to work more, and earn more a year after the health shock than they did before they fell ill. We discuss the roles of both individual- and system-level impacts in shaping the socioeconomic-health gradient in older populations.

Paper 13

Chitwan Lalji, Debayan Pakrashi, Sarani Saha, **Soubhagya Sahoo** (Indian Institute of Technology Kanpur), and Russell Smyth

*She can Fight her own Battles: Experimental Evidence on the Effects of Increasing Awareness about Rights and Self-Defense Training on Female Empowerment in India*

Abstract:

Crimes against women have increased in India. While laws protecting women's rights exist, under-reporting of crimes is widespread, reflecting a lack of awareness of those laws. Employing an experiment in Bihar, we examine whether treatments designed to increase awareness and awareness coupled with self-defense training among adolescent girls can improve knowledge about their rights; their ability and confidence to fend off physical and sexual assault; their health and well-being; their hopes for the future and their intentions with respect to their education and participating in the labor force. For a subsample of participants in grades 10 and 12, we also examine the effect of the treatments on their examination results and whether they are more likely to pursue studies in commerce and science. In general, we find large treatment effects on all these outcomes at endline. In addition, we find large spillover effects on the treated adolescent's friends and siblings. We also find that the positive effects on both treatment groups for most of the outcomes persist six months after endline.