# YUHUI LIN

## PROFILE

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## EDUCATION

DOCTORATE RESEARCH STUDENT, MAX PLANCK INSTITUTE FOR DEMOGRAPHIC RESEARCH (MPIDR), GERMANY

(2011- 2014)

M.SC. MODERN EPIDEMIOLOGY

IMPERIAL COLLEGE LONDON, LONDON, UNITED KINGDOM

(2007 - 2009)

B.SC. BIOMEDICAL SCIENCES, HONS.

UNIVERSITY OF MANCHESTER, MANCHESTER, UNITED KINGDOM

(2005 - 2007)

During my research years at the European Union (EU), I was funded by the Max Planck Society and partially funded by AXA Insurance for longevity risk and biodemography research (2011 - 2014); three to five million Euros grant. In 2013 - 2014, my doctorate research work had also helped MPIDR to secure a research grant for up to 20 million Euros to establish a new population research centre in Denmark. My doctorate chapter was presented at the Nobel Forum at Karolinska Institute, Sweden in 2012 by my doctorate advisor *Prof. James W. Vaupel*. During my time at MPIDR, I was also part of a mathematical team to determine the human aging rate from various life-time risk exposures.

My main expertise is in mortality and survival analyses. I have worked on empirical individual survival profiles, life-tables, and data reconstruction. I have also established a protocol for simulation, clones and resilience testing that aid in the construction predictive and projection models when empirical data is limited. I have also recently touch based on health economics methods such as experts' consensus approach - Delphi method for generating quantitative assessment tools such as QoL questionnaires.

I had served as a senior statistician and head of biostatistics & epidemiology for a medical affairs company located in the UK and Portugal. Some of my selected previous

works are listed in this portfolio. Though data are anonymised, most data access are restricted to geographical location or region.

I now own a startup in Singapore, The Waterhouse 水の家, Keras360 that works on designing data and analytical solutions for healthcare and art forensics.

## SCIENTIFIC PUBLICATIONS

Lin, Y., Gajewski, A., & Poznańska, A. (2016). Examining mortality risk and rate of ageing among Polish Olympic athletes: a survival follow-up from 1924 to 2012. **BMJ open**, 6(4), e010965. doi:10.1136/bmjopen-2015-010965

Lin, Y. (2018). AFT survival model to capture the rate of aging and age-specific mortality trajectories among first-allogeneic hematopoietic stem cells transplant patients. **Plos one**, 13(3), e0193287. doi:10.1371/journal.pone.0193287

Lin, Y. (2018). The Oddity of Heterogeneity: A Blessing in Disguise. **Nature Scientific Reports**, 8(1), 10782. doi:10.1038/s41598-018-29081-7

Lin, Y. (2019). 3D Age-Specific Mortality Trajectory: A Survival Analysis Protocol. **Springer Nature. Stem Cells and Aging: Methods and Protocols**, 311-321. doi:10.1007/7651_2018_189

Lin, Y. (2023). The Lesser Evil: Plutonium-239 or Uranium-235? A Study on F0 Atomic Bomb Survivors. **Qeios**. doi:10.32388/6GKULJ. {Preprint}

Lin, Y. (2024). The Pandora Box from 12 Countries: Who Benefits More from Modern Interventions?. **Qeios**. doi:10.32388/JPICV8. {Preprint}

## RESEARCH DATA

### I) PATIENTS' PROFILES

§ Center for International Blood and Marrow Transplant Research (CIBMTR; US)

§ European Renal Transplantation & Dialysis Registry (EU, Amsterdam)

§ Cystic Fibrosis Registry (EU, Belgium)

### II) NON-PATIENTS' PROFILES

§ SHARE European longitudinal study (EU, Amsterdam)

§ Danish Twins Registry (EU, Denmark)

§ Lufthansa's Cabin Crew and Pilots (initiated by researchers in affiliation with the WHO; EU, Germany)

§ Polish Olympic Athletes (EU, Poland)

§ European Prospective Investigation into Cancer (EPIC; UK) for Amyotrophic Lateral Sclerosis (ALS) aetiology

### III) LIFE-TABLES

§ Human Mortality Database - the data contains country-specific general population and it is usually used as a baseline check during data analysis, e.g., standardised mortality rate ratio. In rare occasions, longevity research would be carried out for ages 80 - 95 and beyond 90 years old. Retirement age and longevity risk for France was assessed in 2013. Due to the improvements made in tech and healthcare, retirement age was suggested to be altered to age 65. The output was transferred to economists at INED (France) and Max Planck Institute (Germany). In April 2023, the French government adjusted the retirement age from 62 to 64.

§ RERF for Atomic Bomb Survivors Life tables survival from 1950 onwards by isotope, dose and distance to the epicenter.

## MEDICAL TREATMENTS ASSESSMENTS

### I) VOSORITIDE FOR ACHONDROPLASIA: BIOMARIN, APPROVED BY THE FDA IN 2021

A height growth enhancer medication for children suffering from Achondroplasia. Based on the results from clinical trials, it is possible to predict Achondroplasia children's height growth from duration of treatment and potential maximum height at end puberty. Similar to other height growth enhancer medication, the intent is to lower the risk and need for invasive operations such as Chiari Surgery, Osteoplasty, *etc.* It is still uncertain whether long-term use of Vosoritide among Achondroplasia patients would lower the risk for heart problems during adulthood and lower the occurrence of repetitive infections such as otitis media. An expensive drug at launch, and it appears to have the potential to change the treatment workflow for Achondroplasia patients.

### II) AFLIBERCEPT FOR WET-AMD: BAYER

Age-related macular degeneration (AMD), WET-AMD is an eye-related disease with an onset age as young as 45 ~ 50 among European populations. Without appropriate treatment, patients would experience irreversible blindness within two to three days. At present, there are many drugs for WET-AMD and AMD treatment on the market, with a few inline to complete clinical trials. The project outlines the potential total costings and adverse events among patients until the occurrence of event, blindness. A change in medical regimen (Aflibercept - Ranibizumab; and *vice versa* intravitreal injections) was also part of the project for it would be a portfolio proposal to the NHS in the UK. I worked on costings, annual cost inflation, new text mining procedure and compartmentalised workflow for disease progression.

### III) HYPEREOSINOPHILIC SYNDROME (HES): ASTRAZENECA

A proposal made by AstraZeneca to examine HES. A rare disease that can occur in severe asthmatic patients and during adverse events. A systematic literature review (SLR) was ordered to examine the disease prevalence and incidence rates. An outline for diagnosis criteria with the possible co-morbidities to be established. I have constructed a new protocol for SLR text mining, and a calculator for exact disease prevalence and incidence rates to deduce total number of diagnosed and yet-to be diagnosed patients.

AstraZeneca's Fasenra has recently received an accelerated approval by the FDA for HES treatment - decision was based on real world evidence (RWE) data and clinical trials.

## IV) AMBRISENTAN FOR PULMONARY ARTERIAL HYPERTENSION (PAH): GSK AND SANOFI

I constructed a simulation model to deduce the use of RWE in clinical trials, and in the scenario when a drug were to undergo accelerated UK/EU regulatory approval the potential earnings that a biopharma could benefit from early market access, and the increment in patients' life expectancy. There were substantial RWE data in the US prior to the UK/EU clinical trials and regulatory approval.