

Volume 9, Issue 3 (2025), pp. 83-94  
*Journal of Underrepresented and Minority Progress*  
ISSN: 2574-3465 Print/ ISSN: 2574-3481 Online  
Star Scholars Press  
ojed.org/jump  
<https://doi.org/10.32674/9qbds094>

## **Aging and Demographic Shifts in East Asian Countries Attributed to Low Fertility Rate: A Scoping Review**

Yiru Lou, MPH

University of Louisville School of Public Health and Information Sciences  
*Louisville, KY*

Dani LaPreze, MLS, MS

*Texas A&M University Libraries  
College Station, TX*

Yasmine Bey, MNPO, MSW, CACTS

*University of Louisville School of Public Health and Information Sciences  
Louisville, KY*

Brian P. Schaefer, PhD, MS

*University of Louisville School of Public Health and Information Sciences  
Louisville, KY*

---

### **ABSTRACT**

*The present investigation explores the role of artificial intelligence (AI) in international students' lives. It fosters a sense of belongingness and community engagement among international students at Chandigarh University using AI. It looks at the reality of AI in improving social integration, academic advancement, and general well-being through advanced education mechanisms and support system applications. AI-enabled tools such as smart tutoring systems, chatbots, and language translation software help in academic conversions and cross-cultural communication. Additionally, services like mental health support via accessible counseling services, boosting emotional well-being, self-esteem, and happiness are on offer with AI's help. The research also addresses algorithmic biases and data privacy challenges, stressing the need for ethical considerations in AI use.*

**Keywords:** Declining fertility, East Asia, Fertility, Low fertility, Scoping review

Academic Editor: Mattyna L. Stephens PhD

Joyvina K. Evans PhD, MSPH, MSA

---

## INTRODUCTION

Total fertility has declined conspicuously worldwide in recent decades, from 3.2 live births per woman in 1990 to 2.5 in 2019. The most marked fertility decline has been in East and Southeast Asia, from 2.5 to 1.8 (United Nations, 2019). China's seventh national population census results showed a total fertility rate of 1.3 for women of childbearing age in 2020, which is below the internationally recognized "highly sensitive warning line" of 1.5 (National Bureau of Statistics of China, 2021). South Korea's fertility rate was 0.96 in 2018 (Korean Institute for Health and Social Affairs, 2018). In fact, over the past 40 years, the number of young adults and children in Japan has declined by about 50% (National Institute of Population and Social Security Research, 2018).

One of the consequences of declining fertility along with increasing life expectancy is a demographic shift with a rising proportion of older adults leading to an irreversible global trend toward an aging society. In 2019, Japan's population aged 65 years and older accounted for 28% of the total population and is projected to reach 30.9% by 2030; South Korea's population aged 65 years and older accounted for 15.1% of the total population and is expected to reach 24.7% by 2030 (World Health Organization, 2019). From 2021 to 2050, the number of people aged 65 or older worldwide is projected to more than double from 761 million to 1.6 billion. The number of people aged 80 or older is projected to grow at an even faster rate (United Nations Department of Economic and Social Affairs, 2021).

The projected decline in birth rates will also lead to a reduced labor force, limited economic development, and insufficient innovation, especially in industrially advanced countries (Organization for Economic Cooperation and Development, 2018). An increase in the older population will place a greater burden on society in terms of managing health care, improving social support systems, and expanding public health infrastructure (World Health Organization, 2019).

## METHODS

The search criteria, including keywords and inclusion and exclusion criteria, were determined by the authors, and the search strategy was developed and performed by a clinical librarian. Electronic databases PubMed, EMBASE, APA

PsycINFO, Sociological Collection, and Social Sciences Abstracts were searched to collect literature, with no date restrictions placed on the searches. Key concepts for the search included fertility, infertility, social determinants of health, factors, impact, and intent. These concepts were developed into search strings to include relevant keywords and appropriate MeSH terms in PubMed. Included in each database search was a search string designed to look for research that focused on East Asian countries including China, Hong Kong, Macau, Tibet, Japan, Tokyo, Korea, Mongolia, and Taiwan.

### **Eligibility Criteria**

Studies were included if they focused on East Asian countries, persons within those countries who were within the childbearing age range, and social determinants that impact fertility intention were studied, and were published in peer-reviewed outlets. No date restrictions were placed on the search results to look for trends in social determinants, socio-cultural and economic structures, and policy. Exclusion criteria included those studies where a clinical reason was the cause for infertility or where infertility was involuntary.

### **Study Screening**

The electronic database search resulted in a total of 546 articles being returned from all databases, and an additional 8 articles were added from hand searching (total n=554). Those results were uploaded into Covidence where 89 duplicates were removed (n=87 identified by Covidence, n=2 identified manually). During title and abstract screening, 408 studies were removed, and 146 studies were assessed for eligibility in the full-text screening stage. During the full-text screening, 14 studies were excluded (n=13 wrong study design, n=1 wrong patient population). A total of 132 studies were included in the final review.

## **LITERATURE REVIEW**

Economic stability is a significant determinant of fertility intentions. The high costs associated with raising children including housing, education, and healthcare, deter many young adults from having more children. Studies from Shanxi Province in China, Hong Kong, and Japan reveal that economic pressures significantly influence reproductive decisions (Jiang et al., 2016; Chan & So, 2021; Matsumoto & Yamabe, 2013). Economic uncertainties combined with political instability further exacerbate the reluctance to have more children, particularly in regions like Hong Kong, where political movements have increased such uncertainties (Chan & So, 2021).

In South Korea, economic factors are crucial in determining fertility

intentions among young adults. Lim found that financial burdens, including housing costs and educational expenses, are significant barriers to fertility. Moreover, financial instability and job insecurity further contribute to low fertility rates (Lim, 2022). Similarly in Japan, economic pressures such as high living costs and limited job security for young adults are critical factors influencing their decisions to delay marriage and childbirth (Fukuda, 2016).

The economic burden, especially related to housing and living costs, is a significant obstacles for young couples in Korea. Even when policy incentives are introduced, if the economic foundation is unstable, fertility intentions remain low (Park & Lee, 2018). Despite policy efforts to encourage higher fertility, the overarching economic conditions play a more substantial role in shaping reproductive decisions (Zhao & Zhang, 2018; Lim, 2021; Wang & Sun, 2016).

### **Cultural Norms and Stigma**

Cultural norms and societal expectations, including traditional beliefs and male-child preference, often place a stigma surrounding fertility and reproductive choices on individuals, influencing their decisions regarding family planning. In many East Asian cultures, there is a strong preference for male children, which influences family planning decisions. This preference can lead to practices such as sex-selective abortion, thereby impacting overall fertility rates (Jiang et al., 2016). The strong preference for sons has led to sex-selective practices, which not only affect the gender balance but also create a stigma for families who do not conform to this preference. This societal pressure can lead to fewer childbirths as families may opt for sex selective abortions or choose not to have more children if the desired gender is not achieved (Li et al., 2019).

Modern values are gradually diminishing the importance of traditional beliefs about childbearing, especially among younger generations who prioritize personal and economic stability over traditional family structures (Chan & So, 2021). Single mothers and unmarried couples in East Asian countries face considerable stigma, which impacts their fertility intentions. The traditional view that children should be born within marriage creates a social environment where unmarried individuals feel pressured to either marry before having children or avoid having children altogether. This stigma not only affects fertility rates but also reinforces gender roles and expectations within society (Klitsch, 1994; Li et al., 2019).

In South Korea, traditional cultural norms that emphasize the importance of family lineage and male offspring continue to affect fertility intentions (Yoon, 2017). However, there is a noticeable shift among younger generations towards valuing personal fulfillment and career aspirations over traditional family roles (An et al., 2022). In Taiwan, changing cultural attitudes toward gender roles and family structures have also influenced fertility intentions, with a growing acceptance of smaller family sizes and delayed childbearing (Coombs, 1979;

Basten & Verropoulou, 2015). In Japan, while traditional norms still hold some influence, there is a growing trend towards individualism and self-fulfillment among younger generations. This shift is leading to lower fertility rates as more individuals prioritize personal and professional goals over family expansion (Fukuda, 2016; Klitsch, 1994; Kato, 2018).

## **Educational Attainment**

Higher educational attainment correlates with lower fertility rates. Educated women tend to delay marriage and childbirth due to career aspirations and the opportunity costs associated with raising children (Sohn & Lee, 2019; Karabchuk et al., 2021; Kan & Lee, 2017). This trend is observed across East Asian countries including China, Japan, and Korea (Jiang et al., 2016; National Institute of Population and Social Security Research, 2018). The increasing participation of women in higher education and the labor market has significantly influenced fertility behaviors and intentions.

Lim (2021) stated that higher educational attainment among husbands is associated with lower fertility rates due to delayed marriage and childbearing in South Korea. The study highlighted that highly educated men often prioritize their careers and personal development, AGING AND DEMOGRAPHIC SHIFTS IN EAST ASIAN COUNTRIES 8 leading to a decline in fertility rates (Lim, 2021). In Japan, the trend of delayed marriage and childbearing among highly educated women is also evident, with many women choosing to focus on their careers before starting a family (Klitsch, 1994).

The increasing educational attainment among women in China is leading to greater career aspirations, which significantly delay marriage and childbearing (Blair & Madigan, 2020; Zheng et al., 2016). In Hong Kong, the correlation between higher education and lower fertility intentions is also pronounced, as women with higher educational levels tend to have higher career ambitions, which often take precedence over family formation (Chan & So, 2021).

## **Housing and Education Costs**

The financial burden of housing and education is another critical factor affecting fertility intentions. High real estate prices and expensive education systems discourage young couples from having more children. This is particularly evident in densely populated urban areas across East Asia, where the cost of living is substantially higher (Chan & So, 2021; Jiang et al., 2016). The high cost of education is a significant deterrent. Parents aim to provide the best possible opportunities for their children, often at the expense of having larger families. Housing costs in South Korea are a significant barrier to increasing fertility rates. High housing prices in urban areas discourage young couples from having more children due to the financial burden of maintaining a larger

household (Mi Park et al., 2008). Similarly, in Japan, the high cost of housing and education is a critical factor influencing fertility intentions, with many young adults delaying marriage and childbearing until they achieve financial stability (Fukuda, 2016). In Taiwan, the high costs associated with housing and education are significant factors in the declining fertility rates. Basten and Verropoulou (2015) showed that young couples often delay or forego having children due to the financial pressures associated with securing adequate housing and providing quality education for their offspring. In Hong Kong, the escalating cost of living, particularly in terms of housing, is a significant barrier to higher fertility intentions (Chan & So, 2021).

## **Work Pressure and Work-Life Balance**

Work pressure and the stress of women's multiple roles at work and in the family lead to delayed marriages and low fertility intentions (Matsumoto & Yamabe, 2013; Zhang & Hao, 2024; Komatsu, 2012; Yi et al., 2020). In Japan, for example, the mean age at marriage has increased significantly due to the intense work culture, which prioritizes career advancement over family life. The rise in women's participation in the workforce has also contributed to the delay in starting families, as many women choose to focus on their careers before considering marriage and children (Komatsu, 2012; Klitsch, 1994).

In South Korea, the situation is similar, with work-related stress and long working hours being major factors that discourage young adults from having children. The intense competition in the job market and the high cost of living further exacerbate the situation, making it difficult for couples to consider expanding their families (Cleland, 2020). Additionally, the pressure to maintain a work-life balance while ensuring financial stability often leads to the decision to postpone or even forgo childbearing altogether (Yi et al., 2020; Kim, 2023). Parenting is stressful, especially caring for an infant all day. This brings more parenting stress than balancing work and parenting when both times could be used for breaks (Hwang & Jung, 2016).

In China, "female employees face the double shackles of pressure to have children and pressure to develop their careers" (Zhang & Hao, 2024). In addition to the expectations to perform well in a highly competitive environment and the fear of job insecurity contributing to the hesitation in starting a family, employers are reluctant to hire women who wish to have children (The Law of Unintended Consequences, 2018). Maternity anxiety reduces work commitment. Maternity involves not only the expenditure of time and energy, loss of physical health and emotional commitment, but also the loss, interruption, or abandonment of a career. This puts female employees in a state of permanent depletion of their emotional and psychological resources so that working women with maternity anxiety are more emotionally debilitated. At the same time, childbearing creates new role pressures for working women as mothers, increasing daily family

demands and leading to job insecurity, such as reduced job benefits (Zhang & Hao, 2024). The shift towards a more urbanized and industrialized society has further intensified these pressures, affecting fertility intentions negatively (Zhao & Zhang, 2018; Zuo & Yang, 2009).

## DISCUSSION

The findings of this scoping review highlight the multifaceted nature of the factors influencing fertility intentions in East Asian countries. The interplay of socioeconomic conditions, cultural norms, stigma, educational attainment, housing and education costs, and working pressure created a complex environment that shaped demographic trends.

### Policy Implications

Effective policies must address the diverse determinants of fertility intentions. This includes providing economic support to families, promoting gender equality, improving access to affordable housing and education, and offering comprehensive reproductive health services. Policies that support work-life balance, such as parental leave and flexible working hours, are crucial in encouraging higher fertility rates.

Childcare stress is a key factor affecting infant development and working mothers' willingness to have a second child. Paid maternity leave increases working mothers' fertility intentions as well as having a positive effect on infant development (Hwang & Jung, 2016). However, working mothers who take paid maternity leave tend to experience more parenting stress than mothers who do not take paid maternity leave (Hwang & Jung, 2016). Working mothers with strong support networks (e.g., fathers, grandparents, and childcare) may not need to take maternity leave (Hwang & Jung, 2016). Park et al. (2010) stated, "There were significant influences of relative paternal time for childcare on women's second-child intention, especially among employed women." Relative childcare help also enhances working women's second-child intention (Park et al., 2010).

South Korea needs comprehensive family policies to support fertility intentions. Policies should focus on providing financial incentives, improving childcare services, and promoting gender equality in the workplace to encourage higher fertility rates (Choi et al., 2021). In Japan, similar policy measures are also needed to address the declining fertility rates, including providing economic support to families, improving access to affordable housing, and promoting gender equality. Efforts to shift cultural norms and reduce the stigma associated with certain reproductive choices can further support individuals in achieving their desired family size. For instance, promoting positive attitudes towards the use of health technologies and encouraging greater acceptance of diverse family

structures can help address some of the cultural barriers to higher fertility rates (Kan & Lee, 2017).

In Taiwan, the importance of integrating family-friendly policies with economic incentives to support young couples is evident. Providing subsidies for housing and education, along with improving access to reproductive health services, can significantly influence fertility intentions (Huang et al., 2015; Basten & Verropoulou, 2015). Similarly in Hong Kong, Chan and So (2021) recommended policy measures that address both economic and social barriers to childbearing, emphasizing the need for comprehensive support systems that encourage higher fertility rates.

## **Reproductive Technologies**

The availability of reproductive technologies such as in vitro fertilization (IVF), and the willingness to use these technologies vary across regions and socioeconomic groups (Jiang et al., 2016). In some areas, there is a growing acceptance of these technologies, which can help couples achieve their desired family size despite biological or other challenges. In Taiwan, the willingness to use health technologies is influenced by cultural and socioeconomic factors (Kan & Lee, 2017). In Japan, the increasing availability and social acceptance of reproductive technologies are contributing to changes in fertility behaviors. Couples are more willing to consider IVF and other assisted reproductive technologies to achieve their desired family size, with an expansion of government subsidies for assisted reproductive technology since January 2021. (Katagiri et al., 2023).

## **Future Research Directions**

Future research should focus on longitudinal studies to better understand the long-term effects of these determinants on fertility rates. Additionally, comparative studies between East Asian countries and other regions can provide valuable insights into global demographic trends. Future research should also explore the impact of emerging health technologies and policy changes on fertility intentions and behaviors. Digital technologies, such as telecommuting and online education, can influence fertility intentions by providing greater flexibility in balancing work and family responsibilities. Research on the impact of policy changes, such as the introduction of family-friendly policies and economic incentives can provide valuable insights into effective strategies for addressing declining fertility rates.

Future research should also examine the role of societal attitudes toward gender roles and family structures in influencing fertility intentions since changes in societal norms towards more egalitarian gender roles can significantly impact fertility behaviors (Kim & Parish, 2020). It is also critical to explore the long-

term effects of educational attainment on fertility intentions, considering the increasing trend of higher education among women (Klitsch, 1994).

## CONCLUSION

The decline in fertility rates in East Asian countries is driven by a combination of socioeconomic conditions, cultural norms and stigma, educational attainment, housing and education costs, work pressure, and work-life balance. Understanding these determinants is crucial for developing effective policies to support individuals' reproductive intentions and address the demographic challenges associated with an aging population. Comprehensive strategies that consider economic support, cultural shifts, and improved access to reproductive health services are essential for sustaining these countries' demographic and economic stability.

## REFERENCES

- An, D., Lee, S. L., & Woo, H. (2022). Marriage intention among Korean young adults: Trends and influencing factors. *International journal of environmental research and public health*, 19(14), 8557.
- Basten, S., & Verropoulou, G. (2015). A re-interpretation of the 'two-child norm' in post-transitional demographic systems: Fertility intentions in Taiwan. *PLoS One*, 10(8), e0135105.
- Blair, S. L., & Madigan, T. J. (2020). Marriage and fertility preferences among young women in China: Changes over time. *Journal of Family Issues*, 42(10), 2353–2376. <https://doi.org/10.1177/0192513x20980040>
- Chan, C., & So, Y. K. (2021). Adding fuel to the flame of low fertility: Fertility intention and perceived socio-political stability of young adults in Hong Kong. *Human Reproduction*, 36, 480. <https://doi.org/10.1093/humrep/deab130.479>
- Choi, S. won, Yellow Horse, A. J., & Yang, T. C. (2018). Family policies and working women's fertility intentions in South Korea. *Asian Population Studies*, 14(3), 251–270. <https://doi.org/10.1080/17441730.2018.1512207>
- Cleland, J. (2020). *The 'population problem' in Pacific Asia: 2019*. By STUART GIETEL-BASTEN. Oxford University Press.
- Coombs, L. C. (1979). Prospective fertility and underlying preferences: A longitudinal study in Taiwan. *Population Studies*, 33(3), 447. <https://doi.org/10.2307/2173891>
- Fukuda, N. (2016). *Marriage and fertility behavior in Japan: Economic status and Value-Oriented*. In N. Fukuda (Ed.), *Economic change, value shift and marriage behavior*. (pp. 41-88). Springer.

- Huang, T., Chiang, T. F., & Pan, J. N. (2015). Fertility and crime: Evidence from spatial analysis of Taiwan. *Journal of Family and Economic Issues*, 36(3), 319–327. <https://doi.org/10.1007/s10834-015-9440-9>
- Hwang, W., & Jung, E. (2016). Does paid maternity leave affect infant development and second birth intentions? *Family Relations*, 65(4), 562–575. <https://doi.org/10.1111/fare.12214>
- Jiang, Q., Li, Y., & Sanchez-Barricarte, J. J. (2016). Fertility intention, son preference, and second childbirth: Survey findings from Shaanxi Province of China. *Social Indicators Research*, 125(3), 935–953. <https://doi.org/10.1007/s11205-015-0875-z>
- Karabchuk, T., Dülmer, H., & Gatskova, K. (2021). Fertility attitudes of highly educated youth: A factorial survey. *Journal of Marriage and Family*, 84(1), 32–52. <https://doi.org/10.1111/jomf.12790>
- Katagiri, Y., Jwa, S. C., Kuwahara, A., Iwasa, T., Ono, M., Kato, K., Kishi, H., Kuwabara, Y., Harada, M., Hamatani, T., & Osuga, Y. (2023). Assisted reproductive technology in Japan: A summary report for 2020 by the ethics committee of the Japan Society of obstetrics and gynecology. *Reproductive Medicine and Biology*, 23(1), e12494. <https://doi.org/10.1002/rmb2.12494>
- Kato, T. (2018). Associations of gender role attitudes with fertility intentions: A Japanese population-based study on single men and women of reproductive ages. *Sexual & Reproductive Healthcare*, 16, 15–22. <https://doi.org/10.1016/j.srhc.2018.01.002>
- Kim, E. J., & Parish, S. L. (2020). Family-supportive workplace policies and benefits and fertility intentions in South Korea. *Community, Work & Family*, 25(4), 464–491. <https://doi.org/10.1080/13668803.2020.1779032>
- Kim, T. (2023). The impact of working hours on pregnancy intention in childbearing-age women in Korea, the country with the world's lowest fertility rate. *PLOS ONE*, 18(7). <https://doi.org/10.1371/journal.pone.0288697>
- Klitsch, M. (1994). Decline in fertility among Japanese women attributed not to contraceptive use but to late age at marriage. *Family Planning Perspectives*, 26(3), 137. <https://doi.org/10.2307/2136042>
- Komatsu, H. (2012). An economic analysis of fertility in Japan: Will the husband's time spent in housework and childcare increase birth probabilities? [Doctoral dissertation]. American University.
- Li, X., Fan, Y., Assanangkornchai, S., & McNeil, E. B. (2019). Application of the theory of planned behavior to couples' fertility decision-making in Inner Mongolia, China. *PLOS ONE*, 14(8). <https://doi.org/10.1371/journal.pone.0221526>
- Lim S. (2021). Socioeconomic differentials in fertility in South Korea. *Demographic research*, 44, 941–978. <https://doi.org/10.4054/demres.2021.44.39>

- Matsumoto, Y., & Yamabe, S. (2013). Family size preference and factors affecting the fertility rate in Hyogo, Japan. *Reproductive Health, 10*, 6. <https://doi.org/10.1186/1742-4755-10-6>
- Mi Park, S., Il Cho, S., Nang Jang, S., Tae Cho, Y., & Won Chung, H. (2008). The preference for an additional child among married women in Seoul, Korea. *Journal of Biosocial Science, 40*(2), 269–281. <https://doi.org/10.1017/s002193200700212x>
- Statistics, C. N. B. O. (2021). Office of the leading group for the seventh national census of the state council, the seventh national census bulletin (No. 5)–age composition of the population. *China Statistics, 10*-11.
- National Institute of Population and Social Security Research. (2018). Population projections for Japan: 2015-2045. <https://www.ipss.go.jp/pp-shicyoson/e/shicyoson18/t-page.asp>
- Organization for Economic Cooperation and Development. (2018, June 21). *OECD Economic Outlook*. [https://www.oecd.org/en/publications/2018/05/oecd-economic-outlook-volume-2018-issue-1\\_g1g8d58b.html](https://www.oecd.org/en/publications/2018/05/oecd-economic-outlook-volume-2018-issue-1_g1g8d58b.html)
- Park, S.-M., Cho, S.-I., & Choi, M.-K. (2010). The effect of paternal investment on female fertility intention in South Korea. *Evolution and Human Behavior, 31*(6), 447–452. <https://doi.org/10.1016/j.evolhumbehav.2010.07.001>
- Sohn, H., & Lee, S. W. (2019). Causal impact of having a college degree on women's fertility: Evidence from regression kink designs. *Demography, 56*(3), 969–990. <https://doi.org/10.1007/s13524-019-00771-9>
- Escap, U. N. (2022). Asia-Pacific Report on Population Ageing 2022: Trends, policies and good practices regarding older persons and population ageing.
- United Nations. (2019). World Population Prospects 2019: Highlights Wang, Q., & Sun, X. (2016). The role of socio-political and economic factors in fertility decline: A cross-country analysis. *World Development, 87*, 360–370. <https://doi.org/10.1016/j.worlddev.2016.07.004>
- World Health Organization. (2019). Aging and health. <https://www.who.int/news-room/fact-sheets/ageing-and-health>
- Yi, J.-S., Jung, H.-S., Kim, H., & Im, E.-O. (2020). Trends in female workers' childbearing intentions in South Korea. *Asia Pacific Journal of Public Health, 32*(5), 242–249. <https://doi.org/10.1177/1010539520930129>
- Yoon, S. Y. (2017). *Fertility attitudes and behavior: the effects of gender equity on fertility in South Korea* (Doctoral dissertation, University of Illinois at Urbana-Champaign).
- Zhang, X., Hao, X. (2024). How does fertility pressure affect Chinese working women? Negative effects of fertility anxiety on women's work engagement. *Curr Psychol, 43*(20), 18389–18403. <https://doi.org/10.1007/s12144-024-05661-x>

- Zhao, Z., & Zhang, G. (2018). Socioeconomic factors have been the major driving force of China's fertility changes since the mid-1990s. *Demography*, 55(2), 733–742. <https://doi.org/10.1007/s13524-018-0662-y>
- Zheng, Y., Yuan, J., Xu, T., Chen, M., Liang, H., Connor, D., Gao, Y., Sun, W., Shankar, N., Lu, C., & Jiang, Y. (2016). Socioeconomic status and fertility intentions among Chinese women with one child. *Human Fertility*, 19(1), 43–47. <https://doi.org/10.3109/14647273.2016.1154988>
- Zuo, X., & Yang, X. (2009). The long-term impact on the Chinese economy of an aging population. *Social Sciences in China*, 30(1), 197–208. <https://doi.org/10.1080/02529200802704027>