



Volume 7, Issue 1, 2023

Peer-reviewed, open-access journal dedicated to publishing high-quality original research articles, literature reviews, case studies, and theoretical papers that contribute to the understanding of human behavior and social phenomena.

<https://studies.eigenpub.com/index.php/jhbs>

The Impact of Big Data on Health Economics: Opportunities and Applications

Jonathan Rhoads

Researcher Bothfedd Research Society

ABSTRACT

Big Data has transformed the field of health economics, providing researchers with an unprecedented level of data and insights that can inform healthcare policy and practice. In this study, we explored the opportunities and applications of Big Data in health economics, examining its potential to improve healthcare delivery, reduce costs, and promote better health outcomes. Our findings suggest that Big Data has significant potential to transform the field of health economics. By using predictive analytics, health economists can identify patterns and trends in healthcare utilization, cost, and outcomes, which can inform the design and implementation of more effective and cost-efficient interventions. Additionally, Big Data can be used to develop personalized treatment plans that are tailored to an individual's specific needs, reducing healthcare costs and improving patient outcomes. Furthermore, Big Data can be used to monitor and manage population health by identifying high-risk individuals, predicting disease outbreaks, and developing strategies to prevent and manage chronic conditions. Health economists can also use Big Data to evaluate the impact of health policy interventions, such as Medicaid expansion and value-based care, and inform future policy decisions. Our study demonstrates that Big Data presents numerous opportunities for health economists to improve healthcare delivery, reduce costs, and promote better health outcomes. By leveraging the power of Big Data, health economists can develop new insights and strategies that can transform the field of health economics and benefit patients, providers, and policymakers alike.

Keywords: *Big Data, Health Economics, Predictive Analytics, Personalized Treatment, Population Health Management*

INTRODUCTION

Big

Full article: <https://studies.eigenpub.com/index.php/jhbs/article/view/4>

References

- [1] R. Youngson, "Compassion in healthcare—the missing dimension of healthcare reform," *Caregiver stress and staff support in*, 2011.
- [2] P. E. M. Elias and A. Cohn, "Health reform in Brazil: lessons to consider," *Am. J. Public Health*, vol. 93, no. 1, pp. 44–48, Jan. 2003.
- [3] S. Karakolias and C. Kastanioti, "Application of an organizational assessment tool of primary health care," *Arch Hell Med*, vol. 35, pp. 497–505, 2018.
- [4] C. Scott and A. Hofmeyer, "Networks and social capital: a relational approach to primary healthcare reform," *Health Res. Policy Syst.*, vol. 5, p. 9, Sep. 2007.

- [5] J. Oberlander, "Long time coming: why health reform finally passed," *Health Aff.*, vol. 29, no. 6, pp. 1112–1116, Jun. 2010.
- [6] W. Tompson, "Healthcare reform in Russia," Organisation for Economic Co-Operation and Development (OECD), Jan. 2007.
- [7] A. Vozikis, A. Panagiotou, and S. Karakolias, "A Tool for Litigation Risk Analysis for Medical Liability Cases," *HAPScPBS*, vol. 2, no. 2, pp. 268–277, Dec. 2021.
- [8] S. Karakolias and N. Polyzos, "Application and assessment of a financial distress projection model in private general clinics," *Archives of Hellenic Medicine/Arheia Ellenikes Iatrikes*, vol. 32, no. 4, 2015.
- [9] S. E. Karakolias and N. M. Polyzos, "The newly established unified healthcare fund (EOPYY): current situation and proposed structural changes, towards an upgraded model of primary health care, in Greece," *Health*, vol. 2014, 2014.
- [10] N. Polyzos, S. Karakolias, G. Mavridoglou, P. Gkorezis, and C. Zilidis, "Current and future insight into human resources for health in Greece," *Open J. Soc. Sci.*, vol. 03, no. 05, pp. 5–14, 2015.
- [11] N. Polyzos *et al.*, "Greek National E-Prescribing System: Preliminary Results of a Tool for Rationalizing Pharmaceutical Use and Cost," *Glob. J. Health Sci.*, vol. 8, no. 10, p. 55711, Oct. 2016.
- [12] U. Varshney, *Pervasive healthcare computing: EMR/EHR, wireless and health monitoring*, 2009th ed. New York, NY: Springer, 2009.
- [13] S. Karakolias, C. Kastanioti, M. Theodorou, and N. Polyzos, "Primary care doctors' assessment of and preferences on their remuneration," *Inquiry*, vol. 54, p. 46958017692274, Jan. 2017.
- [14] A. S. W. Chan and Others, "Safe is not enough: better schools for LGBTQ students (youth development and education series)[Book review]," 2021.
- [15] A. S. W. Chan, I. P. Y. Lo, and E. Yan, "Health and Social Inclusion: The Impact of Psychological Well-Being and Suicide Attempts Among Older Men Who Have Sex With Men," *Am. J. Mens. Health*, vol. 16, no. 5, p. 15579883221120984, Sep-Oct 2022.
- [16] M. W. Battersby, "Health reform through coordinated care: SA HealthPlus," *BMJ*, vol. 330, no. 7492, pp. 662–665, Mar. 2005.
- [17] N. Polyzos *et al.*, "The introduction of Greek Central Health Fund: Has the reform met its goal in the sector of Primary Health Care or is there a new model needed?," *BMC Health Serv. Res.*, vol. 14, p. 583, Nov. 2014.
- [18] H. Wang, M. K. Gusmano, and Q. Cao, "An evaluation of the policy on community health organizations in China: will the priority of new healthcare reform in China be a success?," *Health Policy*, vol. 99, no. 1, pp. 37–43, Jan. 2011.
- [19] M. R. Yuce, "Implementation of wireless body area networks for healthcare systems," *Sens. Actuators A Phys.*, vol. 162, no. 1, pp. 116–129, Jul. 2010.
- [20] A. S. W. Chan, J. M. C. Ho, and P. M. K. Tang, "Cancer and the LGBT Community: Cancer and the LGBT Community (2015th ed.), by Boehmer, Ulrike, & Elk, Ronit, Springer International Publishing AG, 2015. https ...," 2021.
- [21] A. S. W. Chan, J. S. F. Li, J. M. C. Ho, H. L. Tam, and W. L. Hsu, "The systematic review and meta-analysis of Chronic Inflammation and Fibrosis in HIV/AIDS and Cancer: Impacts of Psychological Wellbeing among ...," *Frontiers in Public Health*.
- [22] H. Wang, "A dilemma of Chinese healthcare reform: How to re-define government roles?," *China Econ. Rev.*, vol. 20, no. 4, pp. 598–604, Dec. 2009.
- [23] A. S. W. Chan *et al.*, "Impacts of psychological wellbeing with HIV/AIDS and cancer among sexual and gender minorities: A systematic review and meta-analysis," *Front Public Health*, vol. 10, p. 912980, Nov. 2022.

- [24] A. S. W. Chan CPsychol, RSWPhD, "Letter to the Editor: Advocating Worldwide Social Inclusion and Anti-Discrimination Among LGBT Community," *J. Homosex.*, vol. 70, no. 5, pp. 779–781, 2023.
- [25] B. Norgeot, B. S. Glicksberg, and A. J. Butte, "A call for deep-learning healthcare," *Nat. Med.*, vol. 25, no. 1, pp. 14–15, Jan. 2019.
- [26] A. S. W. Chan, "Book Review: Safe Is Not Enough: Better Schools for LGBTQ Students (Youth Development and Education Series)," 2021.
- [27] A. S. W. Chan and P. M. K. Tang, "Application of Novel Psychoactive Substances: Chemsex and HIV/AIDS Policies Among Men Who Have Sex With Men in Hong Kong," *Front. Psychiatry*, vol. 12, p. 680252, Jul. 2021.
- [28] O. Faust, Y. Hagiwara, T. J. Hong, O. S. Lih, and U. R. Acharya, "Deep learning for healthcare applications based on physiological signals: A review," *Comput. Methods Programs Biomed.*, vol. 161, pp. 1–13, Jul. 2018.
- [29] P. Uyyala, "COLLUSION DEFENDER PRESERVING SUBSCRIBERS PRIVACY IN PUBLISH AND SUBSCRIBE SYSTEMS," *The International journal of analytical and experimental modal analysis*, vol. 13, no. 4, pp. 2639–2645, 2021.
- [30] A. S. W. Chan, "Book review: the Educator's guide to LGBT+ inclusion: a practical resource for K-12 teachers, administrators, and school support staff," 2021.
- [31] A. S. W. Chan, "Book review: the deviant's war: the homosexual vs. the United States of America," 2021.
- [32] M. Pilkington, "Can Blockchain Improve Healthcare Management? Consumer Medical Electronics and the IoMT," *Medical Electronics and the IoMT (August 24, 2017)*, 24-Aug-2017.
- [33] A. S. W. Chan, J. M. C. Ho, H. L. Tam, and P. M. K. Tang, "Book review: successful aging: a neuroscientist explores the power and potential of our lives," *Front. Psychol.*, 2021.
- [34] A. S. W. Chan, D. Wu, I. P. Y. Lo, J. M. C. Ho, and E. Yan, "Diversity and Inclusion: Impacts on Psychological Wellbeing Among Lesbian, Gay, Bisexual, Transgender, and Queer Communities," *Front. Psychol.*, vol. 13, p. 726343, Apr. 2022.
- [35] H. S. Ng, M. L. Sim, and C. M. Tan, "Security issues of wireless sensor networks in healthcare applications," *BT Technology Journal*, vol. 24, no. 2, pp. 138–144, Apr. 2006.
- [36] Z. Liang, G. Zhang, J. X. Huang, and Q. V. Hu, "Deep learning for healthcare decision making with EMRs," in *2014 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, 2014, pp. 556–559.
- [37] A. S. W. Chan, P. M. K. Tang, and E. Yan, "Chemsex and its risk factors associated with human immunodeficiency virus among men who have sex with men in Hong Kong," *World Journal of Virology*, 2022.
- [38] S. Mittal and Y. Hasija, "Applications of Deep Learning in Healthcare and Biomedicine," in *Deep Learning Techniques for Biomedical and Health Informatics*, S. Dash, B. R. Acharya, M. Mittal, A. Abraham, and A. Kelemen, Eds. Cham: Springer International Publishing, 2020, pp. 57–77.
- [39] N. Dey, A. S. Ashour, F. Shi, S. J. Fong, and R. S. Sherratt, "Developing residential wireless sensor networks for ECG healthcare monitoring," *IEEE Trans. Consum. Electron.*, vol. 63, no. 4, pp. 442–449, Nov. 2017.
- [40] A. S. W. Chan, "Book review: the gay revolution: the story of the struggle," 2021.
- [41] A. A. Abdullah, M. M. Hassan, and Y. T. Mustafa, "A Review on Bayesian Deep Learning in Healthcare: Applications and Challenges," *IEEE Access*, vol. 10, pp. 36538–36562, 2022.

- [42] A. S. W. Chan, J. M. C. Ho, J. S. F. Li, and H. L. Tam, "Impacts of COVID-19 pandemic on psychological well-being of older chronic kidney disease patients," *Frontiers in Medicine*, 2021.
- [43] P. Uyyala, "Efficient and Deployable Click Fraud Detection for Mobile Applications," *The International journal of analytical and experimental modal analysis*, vol. 13, no. 1, pp. 2360–2372, 2021.
- [44] T. Pham, T. Tran, D. Phung, and S. Venkatesh, "Predicting healthcare trajectories from medical records: A deep learning approach," *J. Biomed. Inform.*, vol. 69, pp. 218–229, May 2017.
- [45] A. S. W. Chan, J. M. C. Ho, H. L. Tam, W. L. Hsu, and P. M. K. Tang, "COVID-19, SARS, and MERS: the risk factor associated with depression and its impact on psychological well-being among sexual moralities," 2022.
- [46] S. Purushotham, C. Meng, Z. Che, and Y. Liu, "Benchmarking deep learning models on large healthcare datasets," *J. Biomed. Inform.*, vol. 83, pp. 112–134, Jul. 2018.
- [47] P. Uyyala, "Secure Channel Free Certificate-Based Searchable Encryption Withstanding Outside and Inside Keyword Guessing Attacks," *The International journal of analytical and experimental modal analysis*, vol. 13, no. 2, pp. 2467–2474, 2021.
- [48] R. Miotto, F. Wang, S. Wang, X. Jiang, and J. T. Dudley, "Deep learning for healthcare: review, opportunities and challenges," *Brief. Bioinform.*, vol. 19, no. 6, pp. 1236–1246, Nov. 2018.
- [49] P. Uyyala, "Delegated Authorization Framework for EHR Services using Attribute Based Encryption," *The International journal of analytical and experimental modal analysis*, vol. 13, no. 3, pp. 2447–2451, 2021.
- [50] P. Uyyala, "SIGN LANGUAGE RECOGNITION USING CONVOLUTIONAL NEURAL NETWORKS," *Journal of interdisciplinary cycle research*, vol. 14, no. 1, pp. 1198–1207, 2022.
- [51] Y. W. Chen and L. C. Jain, *Deep learning in healthcare: Paradigms and applications*, 1st ed. Cham, Switzerland: Springer Nature, 2019.
- [52] M. G. Poirot, P. Vepakomma, K. Chang, J. Kalpathy-Cramer, R. Gupta, and R. Raskar, "Split Learning for collaborative deep learning in healthcare," *arXiv [cs.LG]*, 27-Dec-2019.
- [53] P. Uyyala, "Credit Card Transactions Data Adversarial Augmentation in the Frequency Domain," *The International journal of analytical and experimental modal analysis*, vol. 13, no. 5, pp. 2712–2718, 2021.
- [54] J. E. McDonough, *Inside National Health Reform*. University of California Press, 2011.
- [55] P. Uyyala, "Privacy-aware Personal Data Storage (P-PDS): Learning how to Protect User Privacy from External Applications," *The International journal of analytical and experimental modal analysis*, vol. 13, no. 6, pp. 3257–3273, 2021.
- [56] P. Uyyala, "PREDICTING RAINFALL USING MACHINE LEARNING TECHNIQUES," *J. Interdiscipl. Cycle Res.*, vol. 14, no. 2, pp. 1284–1292, 2022.
- [57] P. Bhattacharya, S. Tanwar, U. Bodkhe, S. Tyagi, and N. Kumar, "BinDaaS: Blockchain-based deep-learning as-a-service in healthcare 4.0 applications," *IEEE Trans. Netw. Sci. Eng.*, vol. 8, no. 2, pp. 1242–1255, Apr. 2021.
- [58] P. Uyyala, "DETECTION OF CYBER ATTACK IN NETWORK USING MACHINE LEARNING TECHNIQUES," *Journal of interdisciplinary cycle research*, vol. 14, no. 3, pp. 1903–1913, 2022.
- [59] H. Alemdar and C. Ersoy, "Wireless sensor networks for healthcare: A survey," *Computer Networks*, vol. 54, no. 15, pp. 2688–2710, Oct. 2010.

- [60] P. Uyyala, "DETECTING AND CHARACTERIZING EXTREMIST REVIEWER GROUPS IN ONLINE PRODUCT REVIEWS," *Journal of interdisciplinary cycle research*, vol. 14, no. 4, pp. 1689–1699, 2022.
- [61] O. Stephen, M. Sain, U. J. Maduh, and D.-U. Jeong, "An Efficient Deep Learning Approach to Pneumonia Classification in Healthcare," *J. Healthc. Eng.*, vol. 2019, p. 4180949, Mar. 2019.
- [62] M. Rana and M. Bhushan, "Advancements in healthcare services using deep learning techniques," *2022 International Mobile and*, 2022.
- [63] N. J. Schork, "Artificial Intelligence and Personalized Medicine," *Cancer Treat. Res.*, vol. 178, pp. 265–283, 2019.
- [64] P. Uyyala, "AUTOMATIC DETECTION OF GENETIC DISEASES IN PEDIATRIC AGE USING PUPILLOMETRY," *Journal of interdisciplinary cycle research*, vol. 14, no. 5, pp. 1748–1760, 2022.
- [65] D. Kaul, H. Raju, and B. K. Tripathy, "Deep Learning in Healthcare," in *Deep Learning in Data Analytics: Recent Techniques, Practices and Applications*, D. P. Acharjya, A. Mitra, and N. Zaman, Eds. Cham: Springer International Publishing, 2022, pp. 97–115.
- [66] J. A. Stankovic, Q. Cao, T. Doan, L. Fang, and Z. He, "Wireless sensor networks for in-home healthcare: Potential and challenges," *device software and ...*, 2005.
- [67] P. Uyyala, "SECURE CRYPTO-BIOMETRIC SYSTEM FOR CLOUD COMPUTING," *Journal of interdisciplinary cycle research*, vol. 14, no. 6, pp. 2344–2352, 2022.
- [68] A. Alyass, M. Turcotte, and D. Meyre, "From big data analysis to personalized medicine for all: challenges and opportunities," *BMC Med. Genomics*, vol. 8, no. 1, pp. 1–12, Jun. 2015.
- [69] H. M. Gomes, J. P. Barddal, F. Enembreck, and A. Bifet, "A Survey on Ensemble Learning for Data Stream Classification," *ACM Comput. Surv.*, vol. 50, no. 2, pp. 1–36, Mar. 2017.
- [70] Y. Lv, Y. Duan, W. Kang, Z. Li, and F.-Y. Wang, "Traffic Flow Prediction With Big Data: A Deep Learning Approach," *IEEE Trans. Intell. Transp. Syst.*, vol. 16, no. 2, pp. 865–873, Apr. 2015.
- [71] H. Meng, X. Wang, and X. Wang, "Expressway Crash Prediction based on Traffic Big Data," in *Proceedings of the 2018 International Conference on Signal Processing and Machine Learning*, Shanghai, China, 2018, pp. 11–16.
- [72] M. S. Mahdavinejad, M. Rezvan, M. Barekatin, P. Adibi, P. Barnaghi, and A. P. Sheth, "Machine learning for internet of things data analysis: a survey," *Digital Communications and Networks*, vol. 4, no. 3, pp. 161–175, Aug. 2018.