KWONG Koon Shing

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Singapore Management University (SMU)
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Education

PhD, Temple University, United States of America, 1992

Master of Science, Temple University, United States of America, 1989

Bachelor of Business Administration, University of Louisiana at Monroe, United States of America, 1987

Academic Appointments

Professor of Statistics (Education), School of Economics, SMU, Jul 2012 - Present

Associate Professor of Statistics (Practice), School of Economics, SMU, Jan 2010 - Jun 2012

Practice Associate Professor of Statistics, School of Economics, SMU, Apr 2007 - Dec 2009

Practice Associate Professor of Statistics, School of Economics and Social Sciences, SMU, Jan 2007 - Mar 2007

Academic Administrative Positions

Programme Coordinator, ACS 2nd Major, School of Economics, SMU, Jan 2018 - Present

RESEARCH

Research Interests

Singular Multivariate Normal Distribution, Multiple Comparison Procedures, Non-inferiority Inference, Life Annuity and Pension

Publications

Journal Articles [Refereed]

Redesigning home reversion products to empower retirement for Singapore's public flat owners, by KWONG, Koon Shing; GOH, Jing Rong; LEE, Jordan Jie Xin; CHUA, Ting Lin Collin (2025). *Risks, 13* (2), (Published)

Unpacking Singapore’s Leasehold Relativity Table – An Empirical and Legal Analysis, by KWONG, Koon Shing; GOH, Jing Rong; TI, Edward SW (2025). *International Real Estate Review, 28* (3), (Published)
Enhancing sell-type home reversion products for retirement financing, by KWONG, Koon Shing; GOH, Jing Rong; CHUA, Ting Lin Collin. (2024). *Risks, 12* (2), 1-13. https://doi.org/10.3390/risks12020022 (Published)

Singapore's LIFE program: Actuarial framework, longevity risk and impact of annuity fund return, by KWONG, Koon-Shing; TSE, Yiu Kuen; CHAN, Wai-Sum. (2021). *Singapore Economic Review, 66* (5), 1355-1371. https://doi.org/10.1142/S0217590817500199 (Published)
A hybrid equity release plan for retirement financing, by KWONG, Koon-Shing; TSE, Yiu-Kuen; CHAY, Junxing. (2021). *Asia-Pacific Journal of Risk and Insurance, 15* (1), 1-24. https://doi.org/10.1515/apjri-2019-0028 (Published)
Actuarial modeling and analysis of the Hong Kong Life Annuity Scheme, by KWONG, Koon-Shing, CHAN, Wai-Sum, LI, Johnny Siu-Hang. (2019). *Asia-Pacific Journal of Risk and Insurance, 14* (1), 1-12. https://doi.org/10.1515/apjri-2018-0013 (Published)
Multiple-solution problems in a statistics classroom: An example, by CHU, Chi Wing; CHAN, Kevin L.T.; CHAN, Wai-Sum; KWONG, Koon Shing. (2017). *International Journal of Mathematical Education in Science and Technology, 48* (8), 1249-1261. https://doi.org/10.1080/0020739X.2017.1338770 (Published)
Enhancing Singapore's pension scheme: A blueprint for further flexibility, by KWONG, Koon Shing; TSE, Yiu Kuen; CHAN, Wai Sum. (2017). *Risks, 5* (2), 25-1-17. https://doi.org/10.3390/risks5020025 (Published)
Noninferiority studies with multiple reference treatments, by HUANG, Li-Ching; WEN, Miin-Jye; CHEUNG, Siu Hung; KWONG, Koon Shing. (2017). *Statistical Methods in Medical Research, 26* (3), 1295-1307. https://doi.org/10.1177/0962280215576017 (Published)
Testing of non-inferiority and superiority for three-arm clinical studies with multiple experimental treatments, by ZHONG, JunJiang; KWONG, Koon Shing; CHEUNG, Siu Hung. (2018). *Statistical Methods in Medical Research, 27* (6), http://doi.org/10.1177/0962280216668913 (Published)
Step-up procedures for non-inferiority tests with multiple experimental treatments, by KWONG, Koon Shing; CHEUNG, Siu Hung; HAYTER, Anthony J.. (2016). *Statistical Methods in Medical Research, 25* (4), 1290-1302. http://doi.org/10.1177/0962280213477767 (Published)
Step-up testing procedure for multiple comparisons with a control for a latent variable model with ordered categorical responses, by LIN, Yueqiong; KWONG, Koon Shing; CHEUNG, Siu Hung; POON, Wai-Yin. (2014). *Statistics in Medicine, 33* (21), 3629-3638. https://doi.org/10.1002/sim.6190 (Published)
Optimal design for <i>p</i>-value consistent step-up procedures for multiple comparisons with a control in direction-mixed families, by KWONG, Koon Shing; CHEUNG, Siu Hung. (2012). *Computational Statistics & Data Analysis, 56* (12), 4157-4164. https://doi.org/10.1016/j.csda.2012.05.001 (Published)
Extension of three-arm non-inferiority studies to trials with multiple new treatments, by KWONG, Koon Shing; CHEUNG, Siu Hung; HAYTER, Anthony J.; WEN, Minn-Jye. (2012). *Statistics in Medicine, 31* (24), 2833-2843. https://doi.org/10.1002/sim.5467 (Published)
Sample size determination in step-up testing procedures for multiple comparisons with a control, by KWONG, Koon Shing; CHEUNG, Siu Hung; WEN, Miin-Jye. (2010). *Statistics in Medicine, 29* (26), 2743-2756. https://doi.org/10.1002/sim.4045 (Published)
On the evaluation of the joint distribution of order statistics, by KWONG, Koon Shing; CHAN, Yiu Man. (2008). *Computational Statistics & Data Analysis, 52* (12), 5091-5099. https://doi.org/10.1016/j.csda.2008.05.005 (Published)
Three <i>p</i>-value consistent procedures for multiple comparisons with a control in direction-mixed families, by KWONG, Koon Shing; CHEUNG, Siu Hung; HOLLAND, Burt; WANG, Yanhui. (2007). *Statistics and Computing, 26* (23), 4253-4272. http://dx.doi.org/10.1002/sim.2860 (Published)

Multiple testing to establish superiority/equivalence of a new treatment compared with <i>k</i> standard treatments for unbalanced designs, by KWONG, Koon Shing; CHEUNG, Siu Hung; CHAN, Wai-Sum. (2004). *Biometrics, 60* (2), 491-498. http://doi.org/10.1111/j.0006-341X.2004.00194.x (Published)

Multiple comparisons with a control in families with both one-sided and two-sided hypotheses, by CHEUNG, Siu Hung; KWONG, Koon Shing; CHAN, Wai-Sum; LEUNG, Shun Piu. (2004). *Statistics and Computing, 23* (19), 2975-2988. http://doi.org/10.1002/sim.1883 (Published)

A multiple directional decision procedure for successive comparisons of treatment effects, by LIU, Wei; KWONG, Koon Shing. (2003). *Journal of Statistical Planning and Inference, 116* (1), 49-59. https://doi.org/10.1016/s0378-3758(02)00237-9 (Published)

Solution to Dalal and Mallows conjecture on monotone property of the joint distribution of order statistics, by Bai, Zhidong; KWONG, Koon Shing. (2002). *Statistics and Probability Letters, 59* (1), 29-35. http://dx.doi.org/10.1016/s0167-7152(02)00158-x (Published)

A more powerful step-up procedure for controlling the false discovery rate under independence, by KWONG, Koon Shing; Wong, Ee Hwee. (2002). *Statistics and Probability Letters, 56* (2), 217-225. http://dx.doi.org/10.1016/s0167-7152(01)00196-1 (Published)

A modified Benjamini-Hochberg multiple comparisons procedure for controlling the false discovery rate, by KWONG, Koon Shing; HOLLAND, Burt; Cheung, Siu Hung. (2002). *Journal of Statistical Planning and Inference, 104* (2), 351-362. http://doi.org/10.1016/s0378-3758(01)00252-x (Published)

A modified Dunnett and Tamhane step-up approach for establishing superiority/equivalence of a new treatment compared with <i>k</i> standard treatments, by KWONG, Koon Shing. (2001). *Journal of Statistical Planning and Inference, 97* (2), 359-366. http://dx.doi.org/10.1016/s0378-3758(00)00223-8 (Published)

An algorithm for construction of multiple hypothesis testing, by KWONG, Koon Shing. (2001). *Computational Statistics, 16* (1), 165-171. (Published)

Numerical evaluation of singular multivariate normal distributions, by GENZ, Alan; KWONG, Koon Shing. (2000). *Journal of Statistical Computation and Simulation, 68* (1), 1-21. http://dx.doi.org/10.1080/00949650008812053 (Published)

Calculation of critical values for Dunnett and Tamhane's step-up multiple test procedure, by KWONG, Koon Shing; LIU, Wei. (2000). *Statistics and Probability Letters, 49* (4), 411-416. http://dx.doi.org/10.1016/s0167-7152(00)00076-6 (Published)

On sample size and quick simultaneous confidence interval estimations for multinomial proportions, by KWONG, Koon Shing. (1998). *Journal of Computational and Graphical Statistics, 7* (2), 212-222. (Published)

On singular multivariate normal distribution and its applications, by KWONG, Koon Shing; Boris, Iglewicz. (1996). *Computational Statistics & Data Analysis, 22* (3), 271-285. http://dx.doi.org/10.1016/0167-9473(95)00050-x (Published)

A note on simultaneous confidence intervals for multinomial proportions, by KWONG, Koon Shing. (1996). *Journal of Statistical Computation and Simulation, 55* (1-2), 111-120. http://dx.doi.org/10.1080/00949659608811753 (Published)

Evaluation of One-Sided Percentage Points of the Singular Multivariate Normal Distribution, by KWONG, Koon Shing. (1995). *Journal of Statistical Computation and Simulation, 51* (2-4), 121-135. http://dx.doi.org/10.1080/00949659508811627 (Published)

Research Grants

Singapore Management University

Economic Security and the Ageing Demographic - Centre for Research on the Economics of Ageing, Academic Research Fund (AcRF) Tier 3, Ministry of Education (MOE) , PI (Project Level): YU Jun, Co-PI (Project Level): Peter C. B. PHILLIPS, Denis LEUNG, PHANG Sock Yong, Benedict KOH, TSE Yiu Kuen, 2019, S$2,017,200

Long-Term Equilibrium Forecasting Models for Housing Prices in Singapore, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2025, S$149,150

Sustainable Retirement Funding with Equity Release Products, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, Co-PI (Project Level): GOH Jing Rong, 2022, S$50,000

Fine-Tuning Singapore Pension System, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2017, S$39,961

Pricing Models for Singapore CPF LIFE Scheme, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2014, S$23,244

Sample size determination for a latent variable model with ordered categorical responses, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2012, S$22,235.56

Step-up procedures for non-inferiority tests with multiple experimental treatments, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2011, S$19,530.56

Power study of single-step multiple comparisons procedures in direction-mixed families, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2010, S$20,644.64

Design of p-value consistent procedures for multiple comparisons with a control in direction-mixed families, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2009, S$16,916.67

Sample size determination of step-up procedures, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2008, S$18,074.31

Discussion on the evaluation of the joint distributions of order statistics, SMU Internal Grant, Ministry of Education (MOE) Tier 1, PI (Project Level): KWONG Koon Shing, 2007, S$18,074.31

TEACHING

Teaching Areas

Statistics, Data Science, and Actuarial Science

Courses Taught

Singapore Management University

Undergraduate Programmes:

- Actuarial Science Work-study Elective
- Introductory Statistics
- Financial Mathematics
- Machine Learning with Applications in Economics

Probability Theory and Applications

Statistical Learning with R

Postgraduate Professional Programmes:

Applied Statistics for Data Analysis

Quantitative Methods for Investment Analysis

OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES

Presentation and Talks

Presentations

Redesigning Home Reversion Products to Monetize Public Flats in Singapore. (26 Aug 2025). SAS Singapore Actuarial Conference 2025, Singapore.

How is AI reshaping the industry and changing the way we work? (24-25 Jul 2024). IFoA Asia Conference 2024, Guangzhou, China.

Enhancing Sell-Type Home Reversion Products for Retirement Financing, (11 Jun 2024). *The SOA Asia-Pacific Annual Symposium,* Kuala Lumpur, Malaysia.

Teaching Predictive Modeling with R, (13 Dec 2022). *Asia-Pacific Actuarial Teaching Conference,* Thailand

A hybrid equity release plan for retirement financing, (17 Jul 2019). *The SOA Asia-Pacific Annual Symposium,* Bangkok.

A hybrid equity release plan for retirement financing, (12 Oct 2018). *Health and Retirement Conference 2018,* Singapore.

(25 Apr 2016). *Insurance Risk & Finance Research Conference (IRFRC) 2015,* Singapore

(22 Oct 2015). *The 9th ICSA International Conference,* China

(25 Jun 2015). *Singapore Actuarial Society Health & Retirement Conference 2015,* Singapore

(20 Dec 2013). *Insurance Risk & Research Conference,* NTU. Singapore

(25 Jun 2012). *SKBI Annual Conference on Financial Economics,* Singapore Management University. Singapore

(09 Sep 2011). *Inaugural SKBI Conference on Financial Economics,* Singapore Management University. Singapore

(05 May 2011). *First Singapore Conference in Statistical Science,* NUS. Singapore

(18 Nov 2010). *World Risk & Insurance Economics Congress,* Singapore Management University. Singapore

Invited Seminars, Talks   and Lectures

Modelling Equity Release Products, 16 Aug 2017. CREA Housing Roundtable, Singapore

07 May 2012. SMU’s Inaugural Teaching Innovation Pedagogy Fair, Singapore Management University, Singapore

UNIVERSITY SERVICE

Singapore Management University

Committee Chair, Actuarial Science, Jan 2018 - Present

Committee Chair, Data Science and Analytics, Jan 2019 – July 2020

Committee Member, Teaching Evaluation, Feb 2018 – Present, except 2023

EXTERNAL SERVICE – PROFESSIONAL

Ad Hoc Reviewer, Journal of Biopharmaceutical Statistics

Ad Hoc Reviewer, Communication in Statistics: Theory & Methods

Ad Hoc Reviewer, Statistica Neerlandica

Ad Hoc Reviewer, Journal of Applied Entomology

Ad Hoc Reviewer, Statistics and Probability Letters

Ad Hoc Reviewer, Statistical Methodology

Ad Hoc Reviewer, Journal of Multivariate Analysis

Ad Hoc Reviewer, Journal of Statistical Planning and Inference

Ad Hoc Reviewer, Sankhya

Ad Hoc Reviewer, Journal of the American Statistical Association

Ad Hoc Reviewer, Communication in Statistics: Simulation & Computation

Ad Hoc Reviewer, Pakistan Journal of Statistics

Ad Hoc Reviewer, Journal of Statistical Computation and Simulation

Ad Hoc Reviewer, Statistics in Biopharmaceutical Research

Ad Hoc Reviewer, Journal of Pension Economics and Finance

Corporate advisor, Temasek Trust, 2024 - 2025

Committee Member, Singapore Actuarial Society, 2024 - Present

External Examiner, Hang Seng University of Hong Kong, 2020 - 2023

Reviewer Journal Article, Empirical Economics, 2018

Reviewer Journal Article, Statistics in Medicine, 2018

External Examiner, Hang Seng Management College, 2017 - 2020

External Assessor, Bachelor of Science (Hons) Actuarial Science, Bachelor of Science (Hons) Actuarial Science and Finance, and Master of Science (Actuarial Management), UCSI University, 2016

Invited Lecture, Institute and Faculty of Actuaries' Continuing Professional Development (CPD) event, Institute and Faculty of Actuaries, 2015

External Examiner, Ph.D. dissertation defense, National Cheng Kung University, 2014

External Examiner, Ph.D. dissertation proposal, National Cheng Kung University, 2013

Reviewer, Research Grants Council (Hong Kong), 2010

Member, Local Organizing Committee, 7th Bernoulli Society World Congress and 71st IMS Annual Meeting, 2008

External Assessor, Research Grant Proposal Assessment, City University of Hong Kong, 2008

EXTERNAL SERVICE – PUBLIC SECTOR AND COMMUNITY SERVICE

Committee Member, Organizing Committee of Conference, Society of Actuaries, 2022