

# Mathematics

Our department has an interest in mathematical modeling to several kinds of natural and social phenomenon.

Associate Professor  
**Ken-ichi Kamo**, Ph.D

Interests:  
Mathematics,

Cancer epidemiology,  
Environmental assessment

## 1. Mathematical theory

We update several kind of mathematical theory. Especially we note the bias correction of information criteria for model selection in the regression analysis (1-2).

## 2. Application for mathematics

a) Cancer epidemiology. We handle the data for cancer information from two main interests. One is for cancer registry estimate and the other is longitudinal behavior of cancer risk factors (3-5).

b) Environmental assessment. We evaluate the effect of forest stand from the environmental aspect. The two main targets are risk assessment and growth analysis for optimal forest management scheme (6-9).

c) Collaboration research with other topics. We contribute to the several topics in medical fields which need the mathematical modeling and/or statistical inference (10-15).

## List of Main Publications from 2004 to 2009

- 1) K.Kamo, H.Yanagihara, K.Satoh. Bias-corrected AIC for selecting variables in Poisson regression models. *Commun Stat Theory Methods* 2013;42:1911-1921.
- 2) H.Yanagihara, K.Kamo, et al. A study on the bias-correction effect of the AIC for selecting variables in normal multivariate linear regression models under model misspecification. *REVSTAT-Statistical Journal*, 15 (3), 299-332, 2017.
- 3) K.Katanoda, K.Kamo, et al. Short-term projection of cancer incidence in Japan using an age-period interaction model with spline smoothing. *Jpn J Clin Oncol* 2014;44(1):36-41.
- 4) T.Tonda, K.Satoh, K.Kamo. Detecting a local cohort effect for cancer mortality data using a varying coefficient model. *J Epidemiol* 2015;25(10):639-646.
- 5) K.Katanoda, K.Kamo, S.Tsugane. Quantification of the increase in thyroid cancer prevalence in Fukushima after the nuclear disaster in 2011 - a potential overdiagnosis?. *Jpn J Clin Oncol* 2016;46(3):284-286.
- 6) K.Kamo, A.Yoshimoto. Comparative analysis of growth functions based on Mallows' Cp type criterion. *FORMATH* 2013;12:133-147.
- 7) K.Kamo, A.Yoshimoto. Comparative analysis on selecting growth function. *Journal of Forest Science and Technology* 2013;9(2):65-71.
- 8) K.Kamo, et al. Statistical analysis of tree-forest damage by snow and wind: logistic regression model for tree damage and Cox regression for tree survival. *FORMATH* 2016;15:44-55.
- 9) K.Kamo, T.Tonda, K.Satoh. Growth analysis using nuisance baseline. *FORMATH* 2017;16:1-10.
- 10) Y.Fujii, S.Kaneko, S.M.Mzou, M.Mwau, S.M.Njenga, C.Tanigawa, J.Kimotho, A.W.Mwangi, I.Kiche, S.Matsumoto, M.Niki, M.Osada-Oka, Y.Ichinose, M.Inoue, M.Itoh, H.Tachibana, K.Ishii, T.Tsuboi, L.M.Yoshida, D.Mondal, R.Haque, S.Hamano, M.Changoma, T.Hoshi, K.Kamo, M.Karama, M.Miura, K.Hirayama. Serological surveillance development for tropical infectious diseases using simultaneous microsphere-based multiplex assays and finite mixture models. *PLOS Negl Trop Dis* 2014;8(7):1-15.
- 11) M.Onodera, N.Yama, M.Hashimoto, T.Shonai, K.Aratan, K.Kamo, et al. The signal intensity ratio of the optic nerve to ipsilateral frontal white matter is of value in the diagnosis of acute optic neuritis. *Eur Radiol* 2016;26(8):2640-2645.
- 12) C.Tan, Y.Sasagawa, K.Kamo, et al. Evaluation of the Japanese Metabolic syndrome risk score (JAMRISK): a newly developed questionnaire used as a screening tool for diagnosing and insulin resistance in Japan. *Environ Health Prev Med* 2016;21(6):470-479.
- 13) K.Iesato, T.Hori, Y.Yoto, M.Yamamoto, N.Inazawa, K.Kamo, et al. Long-term prognosis of patients with HHV-6 reactivation following allogeneic HSCT. *Pediatrics International*, 60, 547-552, 2018.
- 14) K.Tanaka, S.Endo, K.Tateoka, O.Asanuma, K.Kamo, et al. Measurement of the strength of iodine-125 seed moving at unknown speed during implantation in brachytherapy. *J Radiat Res* 2014;55:162-167.
- 15) K.Tanaka, K.Tateoka, O.Asanuma, K.Kamo, et al. Benchmark of EGS5 for 125I brachytherapy. *Progress in Nuclear Science and Technology* 2014;4:888-890.