## Regression

### 1-Functional-Coefficient Quantile Regression for Panel Data with Latent Group Structure

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**(provided by Clarivate) Source JOURNAL OF BUSINESS & ECONOMIC STATISTICS Volume 42 Issue 3 Page 1026-1040 DOI 10.1080/07350015.2023.2277172 Published JUL 2 2024 Early Access DEC 2023 Indexed 2023-12-30 Document Type Article**

**Abstract**

This article considers estimating functional-coefficient models in panel quantile regression with individual effects, allowing the cross-sectional and temporal dependence for large panel observations. A latent group structure is imposed on the heterogeneous quantile regression models so that the number of nonparametric functional coefficients to be estimated can be reduced considerably. With the preliminary local linear quantile estimates of the subject-specific functional coefficients, a classic agglomerative clustering algorithm is used to estimate the unknown group structure and an easy-to-implement ratio criterion is proposed to determine the group number. The estimated group number and structure are shown to be consistent. Furthermore, a post-grouping local linear smoothing method is introduced to estimate the group-specific functional coefficients, and the relevant asymptotic normal distribution theory is derived with a normalization rate comparable to that in the literature. The developed methodologies and theory are verified through a simulation study and showcased with an application to house price data from U.K. local authority districts, which reveals different homogeneity structures at different quantile levels.

**Keywords**
**Author Keywords**
Cluster analysisFunctional-coefficient modelsIncidental parameterLatent groupsLocal linear estimationPanel dataQuantile regression

**Keywords Plus**
VARIABLE SELECTIONINFERENCESERIESMODELSNUMBER

## Regression

**2- Powerful-IoU: More straightforward and faster bounding box regression loss with a nonmonotonic focusing mechanism**

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**By Liu, C (Liu, Can) [1] , [2] ; Wang, KG (Wang, Kaige) [3] ; Li, Q (Li, Qing) [1] ; Zhao, FZ (Zhao, Fazhan) [1] ; Zhao, K (Zhao, Kun) [4] ; Ma, HT (Ma, Hongtu) [4] (provided by Clarivate)** **Source NEURAL NETWORKS Volume 170 Page 276-284 DOI 10.1016/j.neunet.2023.11.041 Published FEB 2024 Early Access NOV 2023 Indexed 2024-01-03 Document Type Article**

**Abstract**

Bounding box regression (BBR) is one of the core tasks in object detection, and the BBR loss function significantly impacts its performance. However, we have observed that existing IoU-based loss functions suffer from unreasonable penalty factors, leading to anchor boxes expanding during regression and significantly slowing down convergence. To address this issue, we intensively analyzed the reasons for anchor box enlargement. In response, we propose a Powerful-IoU (PIoU) loss function, which combines a target size-adaptive penalty factor and a gradient-adjusting function based on anchor box quality. The PIoU loss guides anchor boxes to regress along efficient paths, resulting in faster convergence than existing IoU-based losses. Additionally, we investigate the focusing mechanism and introduce a non-monotonic attention layer that was combined with PIoU to obtain a new loss function PIoU v2. PIoU v2 loss enhances the capability to focus on anchor boxes of medium quality. By incorporating PIoU v2 into popular object detectors such as YOLOv8 and DINO, we achieved an increase in average precision (AP) and improved performance compared to their original loss functions on the MS COCO and PASCAL VOC datasets, thus validating the effectiveness of our proposed improvement strategies.

**Keywords**
**Author Keywords**
Object detectionBounding box regressionLoss function designFocusing mechanism

**Keywords Plus**
OBJECT DETECTION

## Regression

**3-A study on influencing factors of port cargo throughput based on multi-scale geographically weighted regression**

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**By Guo, RT (Guo, Ruitong) [1] ; Xiao, GN (Xiao, Guangnian) [1] ; Zhang, CQ (Zhang, Chunqin) [2] ; Li, QJ (Li, Qingjun) [3] (provided by Clarivate)** **Source FRONTIERS IN MARINE SCIENCE Volume 12 DOI 10.3389/fmars.2025.1637660 Article Number 1637660 Published JUL 30 2025 Indexed 2025-08-17 Document Type Article**

**Abstract**

Port cargo throughput plays a pivotal role in driving national economic growth, facilitating trade activities, and promoting urban development. This study employs a Multi-scale Geographically Weighted Regression (MGWR) model to analyse the influencing factors of port cargo throughput, with regional Gross Domestic Product (GDP), highway construction investment, waterway construction investment, total import and export volume of goods, total retail sales of consumer goods, number of port berths, and urban residents' consumption expenditure as independent variables. Based on data collected from 43 ports across China, the research reveals the magnitude and spatial distribution characteristics of these variables' impacts on port cargo throughput. By comparing the fitting results of the global regression model with those of local regression models, the study demonstrates that the MGWR model achieves superior local regression fitting compared to the fixed-bandwidth Geographically Weighted Regression (GWR) model. This research provides theoretical support for understanding the spatial heterogeneity of factors influencing port cargo throughput and offers actionable insights for policy formulation and port planning.

**Keywords**
**Author Keywords**
portheterogeneitythroughputinfluencing factorsmulti-scale geographically weighted regression

**Keywords Plus**
ECONOMIC-GROWTHPANEL EVIDENCEINVESTMENT

**4-Extension of the glmm.hp package to zero-inflated generalized linear mixed models and multiple regression**

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**By Lai, JS (Lai, Jiangshan) [1] , [2] ; Zhu, WJ (Zhu, Weijie) [1] , [2] ; Cui, DF (Cui, ongfang) [1] , [2] ; Mao, LF (Mao, Lingfeng) [1] , [2] (provided by Clarivate)** **Source JOURNAL OF PLANT ECOLOGY Volume 16 Issue 6 DOI 10.1093/jpe/rtad038 Article Number rtad038 Published DEC 1 2023 Early Access DEC 2023 Indexed 2024-01-09 Document Type Article**

**Abstract**

glmm.hp is an R package designed to evaluate the relative importance of collinear predictors within generalized linear mixed models (GLMMs). Since its initial release in January 2022, it has been rapidly gained recognition and popularity among ecologists. However, the previous glmm.hp package was limited to work GLMMs derived exclusively from the lme4 and nlme packages. The latest glmm.hp package has extended its functions. It has integrated results obtained from the glmmTMB package, thus enabling it to handle zero-inflated generalized linear mixed models (ZIGLMMs) effectively. Furthermore, it has introduced the new functionalities of commonality analysis and hierarchical partitioning for multiple linear regression models by considering both unadjusted R2 and adjusted R2. This paper will serve as a demonstration for the applications of these new functionalities, making them more accessible to users.

**Keywords**

**Author Keywords**

commonality analysisGLMMshierarchical partitioningmarginal R2multiple regressionrelative importancevariance partitioningzero-Inflated model

**Keywords Plus**

RELATIVE IMPORTANCEPREDICTORSECOLOGYGROWTH

## Regression

# 5-TRIPOD plus AI statement: updated guidance for reporting clinical prediction models that use regression or machine learning methods

**By Collins, GS (Collins, Gary S.) [1] ; Moons, KGM (Moons, Karel G. M.) [2] ; Dhiman, P (Dhiman, Paula) [1] ; Riley, R (Riley, Richard) [3] , [4] ; Beam, AL (Beam, Andrew L.) [5] ; Van Calster, B (Van Calster, Ben) [6] , [7] ; Ghassemi, M (Ghassemi, Marzyeh) [8] ; Liu, XX (Liu, Xiaoxuan) [9] , [10] ; Reitsma, JB (Reitsma, Johannes B.) [2] ; van Smeden, M (van Smeden, Maarten) [2] ;** **(provided by Clarivate) Source BMJ-BRITISH MEDICAL JOURNAL Volume 385 DOI 10.1136/bmj-2023-078378 Article Number e078378 Published APR 16 2024 Indexed 2024-05-30 Document Type Article**

**Abstract**

The TRIPOD (Transparent Reporting of a multivariable prediction model for Individual Prognosis Or Diagnosis) statement was published in 2015 to provide the minimum reporting recommendations for studies developing or evaluating the performance of a prediction model. Methodological advances in the field of prediction have since included the widespread use of artificial intelligence (AI) powered by machine learning methods to develop prediction models. An update to the TRIPOD statement is thus needed. TRIPOD+AI provides harmonised guidance for reporting prediction model studies, irrespective of whether regression modelling or machine learning methods have been used. The new checklist supersedes the TRIPOD 2015 checklist, which should no longer be used. This article describes the development of TRIPOD+AI and presents the expanded 27 item checklist with more detailed explanation of each reporting recommendation, and the TRIPOD+AI for Abstracts checklist. TRIPOD+AI aims to promote the complete, accurate, and transparent reporting of studies that develop a prediction model or evaluate its performance. Complete reporting will facilitate study appraisal, model evaluation, and model implementation.

**Keywords**

**Keywords Plus**

HEALTH-CARERISKAPPLICABILITYGUIDELINEDIAGNOSISONCOLOGYPROBASTBIASTOOL

## Regression

**6-Outcomes in people with eating disorders: a transdiagnostic and disorder-specific systematic review, meta-analysis and multivariable meta-regression analysis**

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**By Solmi, M (Solmi, Marco) [1] , [2] , [3] , [4] , [5] ; Monaco, F (Monaco, Francesco) [6] , [7] , [8] ; Hojlund, M (Hojlund, Mikkel) [9] ; Monteleone, AM (Monteleone, Alessio M.) [10] ; Trott, M (Trott, Mike) [11] , [12] ; Firth, J (Firth, Joseph) [13] ; Carfagno, M (Carfagno, Marco) [10] ; Eaton, M (Eaton, Melissa) [14] , [15] , [16] ; De Toffol, M (De Toffol, Marco) [17] ; Vergine, M (Vergine, Mariantonietta) [17] ;** **(provided by Clarivate) Source WORLD PSYCHIATRY Volume 23 Issue 1 Page 124-138 DOI 10.1002/wps.21182 Published FEB 2024 Indexed 2024-02-08 Document Type Article**

### Abstract

Eating disorders (EDs) are known to be associated with high mortality and often chronic and severe course, but a recent comprehensive systematic review of their outcomes is currently missing. In the present systematic review and meta-analysis, we examined cohort studies and clinical trials published between 1980 and 2021 that reported, for DSM/ICD-defined EDs, overall, ED outcomes (i.e., recovery, improvement and relapse, all-cause and ED-related hospitalization, and chronicity); the same outcomes related to purging, binge eating and body weight status; as well as mortality. We included 415 studies (N=88,372, mean age: 25.7 +/- 6.9 years, females: 72.4%, mean follow-up: 38.3 +/- 76.5 months), conducted in persons with anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), other specified feeding and eating disorders (OSFED), and/or mixed EDs, from all continents except Africa. In all EDs pooled together, overall recovery occurred in 46% of patients (95% CI: 44-49, n=283, mean follow-up: 44.9 +/- 62.8 months, no significant ED-group difference). The recovery rate was 42% at <2 years, 43% at 2 to <4 years, 54% at 4 to <6 years, 59% at 6 to <8 years, 64% at 8 to <10 years, and 67% at >= 10 years. Overall chronicity occurred in 25% of patients (95% CI: 23-29, n=170, mean follow-up: 59.3 +/- 71.2 months, no significant ED-group difference). The chronicity rate was 33% at <2 years, 40% at 2 to <4 years, 23% at 4 to <6 years, 25% at 6 to <8 years, 12% at 8 to <10 years, and 18% at >= 10 years. Mortality occurred in 0.4% of patients (95% CI: 0.2-0.7, n=214, mean follow-up: 72.2 +/- 117.7 months, no significant ED-group difference). Considering observational studies, the mortality rate was 5.2 deaths/1,000 person-years (95% CI: 4.4-6.1, n=167, mean follow-up: 88.7 +/- 120.5 months; significant difference among EDs: p<0.01, range: from 8.2 for mixed ED to 3.4 for BN). Hospitalization occurred in 26% of patients (95% CI: 18-36, n=18, mean follow-up: 43.2 +/- 41.6 months; significant difference among EDs: p<0.001, range: from 32% for AN to 4% for BN). Regarding diagnostic migration, 8% of patients with AN migrated to BN and 16% to OSFED; 2% of patients with BN migrated to AN, 5% to BED, and 19% to OSFED; 9% of patients with BED migrated to BN and 19% to OSFED; 7% of patients with OSFED migrated to AN and 10% to BN. Children/adolescents had more favorable outcomes across and within EDs than adults. Self-injurious behaviors were associated with lower recovery rates in pooled EDs. A higher socio-demographic index moderated lower recovery and higher chronicity in AN across countries. Specific treatments associated with higher recovery rates were family-based therapy, cognitive-behavioral therapy (CBT), psychodynamic therapy, and nutritional interventions for AN; self-help, CBT, dialectical behavioral therapy (DBT),

psychodynamic therapy, nutritional and pharmacological treatments for BN; CBT, nutritional and pharmacological interventions, and DBT for BED; and CBT and psychodynamic therapy for OSFED. In AN, pharmacological treatment was associated with lower recovery, and waiting list with higher mortality. These results should inform future research, clinical practice and health service organization for persons with EDs.

**Keywords**
**Author Keywords**
Eating disordersanorexia nervosabulimia nervosabinge eating disorderrecoverychronicitymortalityhospitalizationdiagnostic migrationcognitive-behavioral therapyfamily-based therapynutritional interventions

**Keywords Plus**
ANOREXIA-NERVOSAMENTAL-DISORDERSBULIMIA-NERVOSAPREVALENCECOMORBIDITYEPIDEMIOLOGYPSYCHIATRYMORTALITYTHERAPYHEALTH

## Regression

**7-M-quantile regression shrinkage and selection via the Lasso and Elastic Net to assess the effect of meteorology and traffic on air quality**

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**By Ranalli, MG (Ranalli, M. Giovanna) [1] ; Salvati, N (Salvati, Nicola) [2] ; Petrella, L (Petrella, Lea) [3] ; Pantalone, F (Pantalone, Francesco) [4]** **(provided by Clarivate) Source BIOMETRICAL JOURNAL Volume 65 Issue 8 DOI 10.1002/bimj.202100355 Published DEC 2023 Early Access SEP 2023 Indexed 2023-10-12 Document Type Article**

**Abstract**

In this work, we intersect data on size-selected particulate matter (PM) with vehicular traffic counts and a comprehensive set of meteorological covariates to study the effect of traffic on air quality. To this end, we develop an M-quantile regression model with Lasso and Elastic Net penalizations. This allows (i) to identify the best proxy for vehicular traffic via model selection, (ii) to investigate the relationship between fine PM concentration and the covariates at different M-quantiles of the conditional response distribution, and (iii) to be robust to the presence of outliers. Heterogeneity in the data is accounted by fitting a B-spline on the effect of the day of the year. Analytic and bootstrap-based variance estimates of the regression coefficients are provided, together with a numerical evaluation of the proposed estimation procedure. Empirical results show that atmospheric stability is responsible for the most significant effect on fine PM concentration: this effect changes at different levels of the conditional response distribution and is relatively weaker on the tails. On the other hand, model selection allows to identify the best proxy for vehicular traffic whose effect remains essentially the same at different levels of the conditional response distribution.

**Keywords**
**Author Keywords**
additive modelsB-splinescross-validationinfluence functionrobust regression

**Keywords Plus**
VARIABLE SELECTIONMODELSHETEROGENEITYSPLINES