Republic of the Philippines
Department of Education
REGION X - NORTHERN MINDANAO
SCHOOLS DIVISION OF EL SALVADOR CITY

August 11, 2026

DIVISION MEMORANDUM
NO. 252, s. 2026

RECOGNITION OF THE RESEARCH PUBLICATION ACHIEVEMENT OF COGON NATIONAL HIGH SCHOOL LEARNERS, TEACHER-COACHES, AND SCHOOL LEADERS

To: Assistant Schools Division Superintendent
Chief Education Supervisors
Education Program Supervisors
Public Secondary and Elementary School Heads
All Others Concerned

1. In recognition of the outstanding research accomplishments of the learners, teacher-coaches, and school leaders of Cogon National High School, this Office hereby acknowledges their successful publication of research papers in the international peer-reviewed journal *Psychology and Education: A Multidisciplinary Journal (PEMJ)* for its 2026 issue.

2. This milestone exemplifies excellence in research and innovation, strengthens the culture of evidence-based practice, and supports the Department of Education's commitment to producing globally competitive, research-oriented learners and educators.

3. The Schools Division Office extends its warmest congratulations and commendations to the following:

Jhairus James M. Abang Shaina Necole O. Mugot Cyril Jane L. Bragat *(Student Researchers)*	Jun Mark Rey O. Nob Liza May D. Nob *(Teacher-Coaches)*	Title: Machine Learning-Based Poverty Risk Analysis for Targeted Government Financial Assistance
Rheil Evans T. Lunio *(Researcher)*	Jun Mark Rey O. Nob Liza May D. Nob *(Co-Authors/ Coaches)*	Title: Modelling Blood Pressure Transitions Using an Integrated Multistate Markov Chain-Logistic Model with a Web-Based Application: Basis for Hypertension Prevention Programs

4. Likewise, the Schools Division Office recognizes the invaluable support and leadership of the school officials in fostering a culture of research and innovation:

   Melanie M. Fabrea - School Principal I
   Phoebe Joy M. Pacut – MT-I/Senior High School Teacher-in-Charge

   May this milestone inspire other schools within the division to actively engage in research, innovation, and scholarly publication in support of quality basic education.

5. This Office adheres to the Equal Opportunity Principle (EOP) in observing all policies and protocols of the said activity. Hence, all actions shall be based solely on guidelines set with no discrimination on the account of age, gender identity, sexual orientation, civil status, disability, religion, ethnicity, or political affiliation.

6. This Office directs the immediate and wide dissemination of this Memorandum.

RANDOLPH B. TORTOLA
Schools Division Superintendent

ATCH.: As stated
Reference:
To be included in the Perpetual Index
under the following subjects:

Research Publication

RE: RECOGNITION OF THE RESEARCH PUBLICATION ACHIEVEMENT OF COGON NATIONAL HIGH SCHOOL LEARNERS, TEACHER-COACHES, AND SCHOOL LEADERS

SGOD/Agf

ATTACHMENT A

Psychology and Education: A Multidisciplinary Journal
INTERNATIONAL JOURNAL PUBLICATION
ISSN: 2822-4353, ISSN National Centre for Turkey

April 18, 2026

PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

ISSN National Centre of Turkey
ISSN: 2822-4353, https://portal.issn.org/resource/ISSN/2822-4353

Manuscript Acceptance Letter

Dear **JHAIRUS JAMES M. ABANG, SHAINA NECOLE O. MUGOT, CYRIL JANE L. BRAGAT, JUN MARK REY O. NOB & LIZA MAY D. NOB,**

We are pleased to inform you that, following a thorough review process, your manuscript entitled **"MACHINE LEARNING-BASED POVERTY RISK ANALYSIS FOR TARGETED GOVERNMENT FINANCIAL ASSISTANCE"** has been accepted for publication in the forthcoming 2026 issue of Psychology and Education: A Multidisciplinary Journal (PEMJ).

This letter serves as the official confirmation of your manuscript's acceptance.

Thank you for choosing PEMJ as the platform for sharing your valuable research. We look forward to your continued contributions to the academic community.

Congratulations on this achievement!

Warm regards,

Dr. Jhosell
Editor-In-Chief, Psychology and Education: A Multidisciplinary Journal (PEMJ)

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Republic of the Philippines
Department of Education
REGION X – NORTHERN MINDANAO
SCHOOLS DIVISION OF EL SALVADOR CITY
COGON NATIONAL HIGH SCHOOL
Cogon, El Salvador City, Misamis Oriental 9017

PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL
SciMatic © Volume 1, Issue 1

Machine Learning-Based Poverty Risk Analysis for Targeted Government Financial Assistance

Jhairus James M. Abang [1], Shaina Necole O. Mugot [2], Cyril Jane L. Bragat [3], Jun Mark Rey O. Nob, PhD [4], Liza May D. Nob [5]
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Abstract

Machine learning has been widely applied to poverty risk analysis at national and regional levels, but its use at the barangay level remains limited, particularly in the Philippine context where data are collected by Barangay Health Workers (BHWs). This study addresses this gap by analyzing data from 973 households in Barangay Cogon, El Salvador City, aiming to identify key poverty determinants and compare the performance of Decision Tree (DT), Random Forest (RF), and Artificial Neural Network (ANN) models. Results show that monthly household income, family size (including number of children and elders), and parental education are the most significant predictors of poverty risk. Across all evaluation settings, RF consistently outperformed DT and ANN, achieving the highest values in all performance metrics. Under an 80% training split, RF achieved an AUC of 0.839, accuracy of 0.793, precision of 0.809, F1-score of 0.800, and recall of 0.791. With a 70% split, RF obtained an AUC of 0.827, accuracy of 0.790, precision of 0.817, F1-score of 0.793, and recall of 0.771. In five-fold cross-validation, RF maintained strong performance with an AUC of 0.833, accuracy of 0.791, precision of 0.807, F1-score of 0.792, and recall of 0.778. These findings highlight the effectiveness of machine learning methods in producing reliable and generalizable predictions. The study recommends adopting RF as a decision-support tool to identify households most in need of financial assistance, thereby reducing inclusion and exclusion errors and improving resource allocation. Future research may incorporate additional factors such as health conditions, access to social protection, and housing quality for a more comprehensive analysis of poverty risk.

Keywords: Decision Tree, Machine Learning, Neural Network, Poverty Risk, Random Forest

ATTACHMENT B

Psychology and Education: A Multidisciplinary Journal
INTERNATIONAL JOURNAL PUBLICATION
ISSN: 2822-4353, ISSN National Centre for Turkey

April 25, 2026

PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

ISSN National Centre of Turkey
ISSN: 2822-4353, https://portal.issn.org/resource/ISSN/2822-4353

Manuscript Acceptance Letter

Dear **RHEIL EVANS T. LUNIO , JUN MARK REY O. NOB & LIZA MAY D. NOB,**

We are pleased to inform you that, following a thorough review process, your manuscript entitled **"MODELING BLOOD PRESSURE TRANSITIONS USING AN INTEGRATED MULTISTATE MARKOV CHAIN–LOGISTIC MODEL WITH A WEB-BASED APPLICATION: BASIS FOR HYPERTENSION PREVENTION PROGRAMS"** has been accepted for publication in the forthcoming 2026 issue of Psychology and Education: A Multidisciplinary Journal (PEMJ).

This letter serves as the official confirmation of your manuscript's acceptance.

Thank you for choosing PEMJ as the platform for sharing your valuable research. We look forward to your continued contributions to the academic community.

Congratulations on this achievement!

Warm regards,

Dr. Jhoselle Tus
Editor-In-Chief, Psychology and Education: A Multidisciplinary Journal (PEMJ)

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PSYCHOLOGY AND EDUCATION: A MULTIDISCIPLINARY JOURNAL

SciMatic © Volume 1, Issue 1

Modeling Blood Pressure Transitions Using an Integrated Multistate Markov Chain–Logistic Model with a Web-Based Application: Basis for Hypertension Prevention Programs

Rheil Evans T. Lunio [1], Jun Mark Rey O. Nob, PhD [2], Liza May D. Nob [3]
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Abstract

This study aimed to model blood pressure transitions among 440 public school teachers in the Division of El Salvador City by integrating Multistate Markov Chain and Multinomial Logistic Regression models. A quantitative longitudinal design was employed using health records collected from 2021 to 2023. Data quality assessment showed that missing values across all demographics, lifestyle, clinical, and blood pressure variables were minimal, with proportions consistently below 5%, and these were effectively addressed using Random Forest imputation, preserving data structure and minimizing bias. Multistate Markov chain modeling was applied to estimate blood pressure state transitions and generate sex specific projections for 2025 to 2027. Results revealed distinct transition patterns by sex: male teachers were projected to remain predominantly in elevated and hypertensive blood pressure states, characterized by low normotensive stability and limited reversibility once hypertension developed, whereas female teachers exhibited greater stability in normal blood pressure and higher probabilities of reverting from elevated states. Across sexes, elevated blood pressure emerged as the central transitional state driving future hypertension risk. Model validation demonstrated adequate predictive accuracy, with no statistically significant differences observed between predicted and actual blood pressure distributions in 2023, indicating that the multistate Markov model effectively captured short term blood pressure dynamics. Ridge penalized multinomial logistic regression identified smoking, medication use, body mass index, and age as significant factors influencing blood pressure state transitions, reflecting the combined influence of behavioral, clinical, and demographic determinants. To enhance practical applicability, the integrated modeling framework was implemented through a web-based blood pressure transition application that enables users to generate personalized projections from 2026 to 2030. Overall, the study provides a robust empirical foundation to support improved hypertension monitoring, early risk identification, and evidence-based prevention strategies among public school teachers.

Keywords: Hypertension, Markov chain, Multinomial logistic regression, Modeling