

2013 Annual Report of the U.P. School of Statistics

The 60th year of The School of Statistics is capped with remarkable events. In July 10, 2013, groundbreaking of the new building was led by UP President Alfredo E. Pascual and UPD Chancellor Caesar A. Saloma. Construction is on-going and Phase 1 is expected to be completed within 2014. Iris Ivy M. Gauran and Ma Sofia Criselda A. Poblador won the 2013 Jan Tinbergen awards of the International Statistical Institute. The research competition is participated by over 1,000 young researchers in statistics worldwide. They won for a graduate paper they wrote while taking MS Statistics at the School (where they also earned BS Statistics). Ms. Gauran is a faculty member of the School of Statistics, while Ms. Poblador is a faculty member of UP Manila. Finally on the programs, the Self-Assessment Report was completed in preparation for the possible accreditation of the BS Statistics program in the ASEAN University Network.

Academic Programs

The School continued to be the only CHED Center of Excellence in Statistics in the country. The programs are up-to-date with recent advances in the statistical science. The students of the Master of Statistics (MOS) and Master of Science (MS) programs may opt to focus on areas like Computational Statistics, Industrial Statistics, Mathematical Statistics, Risk Assessment Methods, and Social Statistics. Elective courses are developed for the undergraduate level and taught by faculty who practices statistical consulting in the industry. Almost all faculty members are exposed to the problems in the industry, thus bridging the gap between the academe and the industry and further contributing in the expansion of the applications of statistics.

All the programs of the School (BS, MOS, MS, and PhD) comprise a balance of theory, applications, and computing for a more versatile statistician in the academe and the industry.

In the last quarter of 2013, the School went through an internal assessment of the BS Statistics program in preparation for the ASEAN University Network (AUN) accreditation review in January 13-15, 2014. Once accredited, students among AUN-accredited universities can move freely within the network, courses taken will be credited to their mother university.

The Students

Enrolment and graduation rate in all programs are increasing. However, these numbers are still lower compared to the increasing demand for workforce with professional training in statistics (basic and advanced levels). It is necessary to catch up with the ever increasing demand for statisticians in various sectors like banks and financial institutions, fast moving consumer goods (FMCG), knowledge process outsourcing (KPO), among others. The newly reorganized Philippine Statistical System to be called Philippine Statistics Authority will be needing more professionally-trained statisticians in its research and development efforts for a more efficient and accurate generation of official statistics. Efforts to attract more students specially at the undergraduate level (supplies the graduate program) are in place.

With the completion of the new building, the School can further expand the number of students accommodated in various programs. This will be complemented with continuing education programs (trainings) to introduce recent advances in the statistical science to those who are already in the workplace. More graduates of the graduate programs are expected at the end of AY 2013-2014.

The distribution of enrollment and graduation by academic programs in recent years are given below:

AY	Enrolled				Number of Graduates			
	B.S.	MOS	MS	Ph.D.	B.S.	MOS	MS	Ph.D.
2008-2009	368	67	64	22	80	7	10	1
2009-2010	360	68	52	22	94	3	12	1
2010-2011	373	70	45	19	69	4	11	0
2011-2012	385	73	44	18	71	5	5	0
2012-2013	420	69	41	17	70	4	2	0
2013-2014	440	74	52	17				

George Ringo S. Manapat placed second in the 22nd Philippine Statistics Quiz-NCR Finals. Two of the top ten teams in Stock X Challenge Series 3 (an on-line stock trading competition) were students of the School of Statistics. The team of Biannca Baysa placed second while Millete Santos and Mark Frederick Herrera placed ninth. The competition aimed to promote financial education among the young generation.

Faculty

Two faculty items were added, the total number of faculty members is now at 30. The faculty-student ratio is still very high at 1:20 since the student population is also increasing. Dr. Cristina Remedios Sotto is continuing with her teaching post at Hasselt University in Belgium, but will be involved in mentoring some junior faculty and graduate students. Prof. Barrios served as Visiting Professor in Karlstad University in Sweden. On the other hand, Leif Ruckman of Karlstad University and Alexander De Leon of University of Calgary visited the School of Statistics. Detailed faculty profile is given in the table below:

Rank	Number	Percentage
Professor	4	13%
Associate Professor	4	13%
Assistant Professor	14	47%
Instructor	8	27%
Total	30	100%

Educational Attainment		
Ph.D.	8	27%
M.S.	14	47%
B.S.	8	27%
Total	30	100%
Status of Appointment		
Permanent	21	70%
Temporary	9	30%
Total	30	100%

Prof. Lisa Grace S. Bersales continue to serve as Vice President for Planning and Finance of the UP System. Francisco Delos Reyes and John Carlo Daquis continue with their PhD Program here at the School, Kevin Carl Santos just started his PhD program also in the School. Iris Ivy Gauran started a PhD program in University of Maryland Baltimore County. In the meantime, Genelyn Sarte, Joseph Ryan Lansangan, and Wendell Campano are completing their PhD dissertation to earn the degree within 2014.

Research, Publications, Conferences

For 2013, Profs. Barrios, Bersales, and Magadia received the UP Centennial Professorial Chair. Prof. Tabunda is the BSP Sterling Professor for Government and Official Statistics, Prof. Rey is BSP Centennial Professor of Statistics, Dr. Tejada is UP Statistical Center Research Foundation Inc. Assoc. Professor of Statistics, Dr. Patungan is PSA Asst. Professor of Statistics, and Asst. Prof. Labina is Rosario Chew Asst. Professor of Market Research.

Students (undergraduate and graduate levels) are also involved in research activities. Iris Ivy M. Gauran and Ma Sofia Criselda A. Poblador won the 2013 Jan Tinbergen awards of the International Statistical Institute last August in Hongkong. The research competition is participated by over 1,000 young researchers in statistics worldwide. They won for a graduate paper they wrote while taking MS Statistics at the School (where they also earned BS Statistics). Ms. Cherry Balasta-Orpia (MOS graduate) along with Assoc. Prof. Dennis Mapa (adviser) won the Best Paper Award during the BIMP-EAGA Conference in 2013.

Publications from ISI-Listed journals follows:

- Veron Cruz, R., **Barrios, E.**, Estimation Procedure for a Multiple Time Series Model, forthcoming in ***Communications in Statistics-Simulation and Computing***.
- Umali, J., **Barrios, E.**, Nonparametric Principal Components Regression, forthcoming in ***Communications in Statistics-Simulation and Computing***.
- Guarte, J., **Barrios, E.**, (2013), Nonparametric Hypothesis Testing in a Spatial-Temporal Model: A Simulation Study, ***Communications in Statistics-Simulation and Computing***, 42(1):153-170.

Prof. Barrios edited a book entitled "Computational Statistics Methods in Spatial-Temporal Models" and is currently reviewed for Springer-Verlag. The book is a compilation of 8 chapters mostly from the MS thesis of his students.

The following papers were published in other refereed journals:

- C. Cruz and **D. Mapa**, (2013), An Early Warning System for Inflation in the Philippines Using Markov-Switching and Logistic Regression Models, ***Theoretical and Practical Research in Economic Fields***, 4(2): December 2013.
- **Gauran, I.**, Poblador, S., (2013), Classification of Congenital Hypothyroidism using Artificial Neural Networks, ***The Philippine Statistician***, 62(2): 1-11.
- **Daquis, J.**, Castaneda, A., Sy, N., Abgona, J., (2013), Profitability and Growth Topology Analysis of Unilevel-Type of Network Marketing Structure, ***The Philippine Statistician***, 62(2): 13-29.
- **Lucagbo, M.**, Cobrador, K., de Mesa, N., Ferrera, R., Marasigan, J., (2013), Effects of Education on Climate Risk Vulnerability in the Philippines: Evidence from Regional Panel Data, ***The Philippine Statistician***, 62(2): 53-69.
- **Campano, W.**, Tadas, R., (2013), Visual Exploration of Climate Variability, ***The Philippine Statistician***, 62(2): 101-111.
- **Daquis, J.**, (2013), Nonparametric Transfer Function Models with Localized Temporal Effect, ***The Philippine Statistician***, 62(1): 1-14.
- **Magadia, J.**, (2013), Value-at-Risk Measures for the PSA Index Using Hidden Markov Model, ***The Philippine Statistician***, 62(1): 21-32.
- **Lansangan, J.**, (2013), Sparse Principal Component Regression, ***The Philippine Statistician***, 62(1): 33-50.
- **De Leon, A., Punzalan, J.**, (2013), An Elementary Proof of Independence of Least Squares Estimation of Regression Coefficients and of Variance in Linear Regression, ***The Philippine Statistician***, 62(1): 77-82.
- **Mapa, D.**, Sandoval, M., Yap, D., (2010), Investigating the Presence of Regional Economic Growth Convergence in the Philippines Using Kalman Filters, ***The Philippine Journal of Development***, 37: 1-20.
- **Mapa, D.**, Han, F., Estrada, K., (2013), Hunger Incidence in the Philippines: Facts, Determinants and Challenges, ***NAST Monograph Series No. 19 Vol. 2***, 55-76.

The colloquium series were able to mount lectures not only by the faculty and graduate students but also of visiting professors and practicing professionals. The list of lectures delivered in 2013 follows:

- Stat 250 and 143 Class of Prof. Labina, **The No Plastic Policy: Perception, Reception, and Compliance of Bgy. Concepcion Uno, Marikina Households.**
- Stat 192.1 Class, **Aerodynamics: An Exploratory Analysis on the Airline Industry of the Philippines.**
- A. Legazpi (Department of Trade and Industry), **An Overview of the ASEAN Economic Community 2015 and the Philippines Free Trade Agreements.**
- I. Gauran (UP Diliman) and S. Poblador (UP Manila), **Classification of Congenital Hypothyroidism using Artificial Neural Network.**

- A. De Leon (University of Calgary), **Gaussian Copula Mixed Models for Correlated Non-Gaussian Outcomes.**
- J. Daquis (UP Diliman), **A Robust Data Preparation Procedure on High Dimensional Data.**
- M. Martinez (University of Manchester), **Effect of Consanguinity on a Holstein Dairyheard's Fertility of Central Chile: A Bayesian Generalized Linear and Mixed Models Approach.**
- J. Park (Chonnam University), **Spatial Modeling of the Highest Daily Maximum Temperature in Korea via Max-Stable Processes.**

Special colloquium in Honor of Dir. Gervacio Selda Jr of Statistical Research and Training Center (SRTC) was also organized, the following papers were presented:

- E. Barrios (UP Diliman), **The Contribution of the ICT Industry.**
- M. Albis (UP Diliman), **Forecasting Models for Philippines Export Using Vector Autoregressive (VAR) Model.**
- C. Cruz (Bangko Sentral ng Pilipinas), **Assessing Inflation Vulnerability: An Early Warning System for Inflation in the Philippines.**
- G. Selda (Statistical Research and Training Center), **The Philippine Statistics Authority (PSA): Its Implications to the Future of the Philippine Statistical System (PSS).**

Some faculty member presented in international conferences:

- S. Poblador, **E. Barrios (London, UK)** A Control Chart Design for Monitoring Autocorrelated Processes with Multiple Exogenous Inputs Under Model Uncertainty, **6th International Conference of the ERCIM WG On Computational and Methodological Statistics.**
- E. De Vera, **E. Barrios (Hongkong, SAR)** Semiparametric Poisson Regression Models in Clustered Data, **59th World Statistics Congress of the International Statistical Institute.**
- **K. Santos, E. Barrios (Hongkong, SAR)** Using principal component scores as stratification variable: An alternative to multiple frame sampling methodology, **59th World Statistics Congress of the International Statistical Institute.**
- **A. Nalica, I. Gauran, E. Barrios (Hongkong, SAR)** Modelling clustered survival data with cured fraction, **59th World Statistics Congress of the International Statistical Institute.**
- **E. Barrios, G. Sarte (Hongkong, SAR)** Dynamics of development in rural communities, **59th World Statistics Congress of the International Statistical Institute.**

The Philippine Statistical System headed by the National Statistical Coordination Board organize a triennial conference, the National Convention in Statistics. This year, many papers by faculty and students of UP School Statistics were presented including:

- Analyzing and Forecasting Movements of the Philippine Economy using the Dynamic Factor Models (DFM), **D. Mapa, M. Simbulan.**

- Development of Forecast Models of Export Merchandise and Services through Statistical Capacity Building for the Bureau of Export Trade Promotion, **D. Mapa, M. Albis, T. Cadiben, M. Magtulis.**
- The Link between Education and Climate Risk Vulnerability in the Philippines: Evidence from a Regional Panel, **M. Lucagbo, K. Cobrador, N. de Mesa, R. Ferrera, J. Marasigan.**
- Modeling clustered survival data with cured fraction, **E. Barrios, I. Gauran, A. Nalica.**
- Using Principal Component Scores as Stratification Variable: An Alternative to Multiple Frame Sampling Methodology, **K. Santos, E. Barrios.**
- Sparse Nonparametric Discrete Choice Model for High Dimensional Data, **M. Torres, E. Barrios.**
- Outlier Detection in High Dimensional Data in the Context of Clustering, **J. Salagubang, E. Barrios.**
- Spatial Analysis of Income Growth in the Philippines: Evidence from Intra-Country Data (1988 to 2009), **D. Mapa, M. Albis, D. Comandante, J. Cura, M. Ladao.**
- Effects of Household Use of Biomass Fuel and Maternal Smoking on Birth Weight of Babies in the Philippines, **M. Lucagbo.**
- Ar-Sieve-Based Prediction Interval For Sustainable Development Index, **J. Dimapilis, E. Barrios.**
- Assessment of Typhoon Affected Communities in Metro Manila, **J. Almeda, M. Albis.**
- Value-at-Risk Estimates from a SETAR Model, **J. Magadia.**
- Conditional, Stochastic and Realized: which volatility model to use?, **D. Mapa, J. Jose.**
- Assessing The Impact of Short-Term Shocks to Inflation Forecasts, **E. Barrios, G. Lavina.**
- The Link between Job Misery Index and the Net Satisfaction Rating of the President: Evidence from Household Surveys, **D. Mapa, S. Dineros, K. Flores, C. Japlit.**
- Measuring the Philippine ICT Industry, **P. Abejo, E. Barrios.**
- Competency of Graduating Students and Entry Level Workers in IT-BPO Industry, **E. Barrios, I. Gauran, J. Lansangan, A. Nalica, K. Santos, G. Sarte.**
- Monitoring TV Ratings Using Multivariate Control Charts for Time Series Data, **G. Sarte, J. Tamargo.**

UP School of Statistics in collaboration with UPLB Institute of Statistics and the Statistical Research and Training Center organized the 14th Faculty-Student Conference on the Statistical Science. The conference aimed to develop the culture of disseminating results of researches by faculty and students. The following papers were presented by the faculty and students of the School of Statistics:

- J. Guntan, J. Padua, M. Supranes, The Comeback of Cronbach: An Investigative Study on the Estimation Properties of the Usual and Adjusted Estimators of Cronbach's Alpha Under Indirect Range Restriction and Varying Scale Levels.
- K. Cobrador, R. Ferrera, C. Rivera, P. Cayton, Factors Affecting Young Adults' Suicide Incidence: Evidence from the National Capital Region.
- C. Japlit, I. Sarmiento, K. Flores, P. Cayton, An Analysis on the Road Accidents in the Most Accident-Prone Areas in Metro Manila Using Loglinear Models.

- K. Lentija, M. Peralta, G. Lorica, V. Sanchez, P. Cayton, Determinants of a Team's Participation in the Championship Game of a Philippine Basketball Association Season.
- J. Guntan, J. Padua, M. Supranes, P. Cayton, On Family Planning Preferences in the Philippines: A Logistic Regression Approach.
- G. Alcaraz, A. Balinas, R. Celimen, Export Performance in the Philippines: Facts, Determinants and Challenges (1994-2012).
- C. Bacsid, M. Maines, N. Mendoza, Defining Regimes: Prediction of Sovereign Debt Crisis in the Philippines.
- M. Enriquez, M. Melendrez, D. Tan, S. Villejo, P. Cayton, Determinants of Income Class in the Philippine Households: Evidence from the Family Income and Expenditure Survey 2009.
- M. Juachon, J. Madamba, J. Rosales, M. Supena, Regional Integration of Selected ASEAN Export-Led Economic Growth Countries.
- J. Barbasa, M. Frios, J. Sabuito, Dayuhang Kaunlaran: The Determinants of Foreign Direct Investments in the Philippines.
- M. Agbay, M. Lugto, B. Rask, Expect the Unexpected: Prediction of Philippine Key Economic Indicators Using Expectation Surveys.
- K. Baligala, D. Clemenias, D. Fagel, Capturing Market Movements Using Time-Varying Weighted Average PSE Sectoral Indices.
- J. Claveria, K. Cruz, T. Literatus, The Philippine Economy in Terms of Small Market Capitalization: Creating Index for Small Capital Companies.
- D. Dela Cruz, K. Francisco, H. Unidad, Merging Technical Indicators and Statistical Models in Measuring Stock Market Volatility.
- L. Lutaog, L. Mariano, Determinants of House Prices in the Philippines:1996-2013.

Dr. Barrios continued to serve as Editor of *The Philippine Statistician* (official journal of The Philippine Statistical Association), in the Editorial Board of *Open Journal of Statistics*, *Statistics Research Letters*, *Statistics Optimization and Information Computing*, and has been invited as reviewer of international journals.

Institutional Activities

Through the UPSCRFI, the following modules were offered as public trainings: Basic Statistics with EDA, Applied Statistical Forecasting, and Statistics for Market Segmentation and Predictive Modeling. The faculty also conducted mentoring sessions on the application of statistics in business, industry, and in the generation of official statistics.

Collaboration with University of Maryland (USA) and Dongguk University (South Korea) continued. The collaboration (faculty and student exchange) with Karlstad University (Sweden) started with faculty exchange in 2013. A memorandum of agreement has been signed with Rutgers University.

Prof. Barrios continue to Chair the Technical Committee for Statistics and a member of the Technical Panel in Science and Mathematics of CHED. The committee and the panel aim to provide directions in the programs on science and mathematics for higher education. The draft policy standards guidelines for BS Statistics has been completed awaiting the approval

of the commission before it will be used in evaluating BS Statistics program offered by Higher Education Institutions.

Infrastructure

In July 10, 2013, the groundbreaking ceremony for the new building was led by President Pascual and Chancellor Saloma. The 4-storey complex will be constructed in two phases. Phase 1 will accommodate classrooms, library, computer laboratories, conference rooms, and faculty rooms. Phase 2 will include additional classrooms, training rooms, discussion rooms (for graduate students and study groups), research support facilities, two 150-seater lecture halls, 400-seater auditorium, student area, and cafeteria. The new building is under construction beside the National Institute for Science and Mathematics Education (NISMED) opposite the University Registrar/Office of Admissions. The School hopes to transfer in its new building by First Semester AY 2014-2015.