

## **2012 Annual Report of the U.P. School of Statistics**

The School of Statistics will celebrate the 60<sup>th</sup> Anniversary of its founding in December 2013. 2012 has been a very productive year. The research output of the faculty has never been this extensive. Two faculty members were appointed UP Scientist for 2012-2014. Several international collaborations are in place and some activities are already initiated. The architectural and engineering design of the new building has been completed and construction of Phase 1 of the building is already awarded to a contractor and expected to be completed in 1 year.

### **Academic Programs**

The programs are catching up quickly 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. Similar elective courses are offered at 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.

Progress of PhD students is closely monitored by the program director and the advisers, hoping to increase graduation within a reasonable period. The colloquia series comprise varied topics delivered not only by graduate students and faculty of the School but also of visitors coming from various universities abroad. This exposes the students to a wide variety of topics/problems in statistics that enriches research.

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.

### **Enrolment in and Graduation from the Academic Programs**

Enrolment and graduation rate in all programs are starting to stabilize, although there is a slight increase in the intake of new undergraduate students. 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. 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.

Furthermore, the soon to be established UP Professional Schools in Taguig City will facilitate the offering of MS and MOS programs to cater to the demand in Makati and south of Metro Manila areas. This will generate more enrollees in the graduate program and hopefully adding to the very lean number of statisticians with advanced training in statistics.

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

Academic Year	Enrolled (Average per Semester)				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	85	4	7	0
2011-2012	385	73	44	18	70	4	8	0
2012-2013	429	69	41	17				

## Faculty

There are twenty eight (28) faculty items allocated to the School of Statistics. Because of the increasing number of students, the faculty-student ratio is again very high at 1:20. There is a pending request for additional faculty and once the three faculty members who are currently pursuing their PhD, the ratio can go down. Dr. Cristina Remedios Sotto is continuing with her teaching post at Hasselt University in Belgium, but will be involved in mentoring of the junior faculty and graduate students. Detailed faculty profile is given in the table below:

Rank	Number	Percentage
Professor	4	14%
Associate Professor	4	14%
Assistant Professor	16	58%
Instructor	4	14%
Total	28	100%
Educational Attainment		

Ph.D.	9	32%
M.S.	15	54%
B.S.	4	14%
Total	28	100%
<b>Status of Appointment</b>		
Permanent	20	71%
Temporary	8	29%
Total	28	100%

Prof. Lisa Grace S. Bersales continue to serve as Vice President for Planning and Finance of the UP System.

### **Research, Publications, Conferences**

In December 2012, two faculty members were recognized for their excellent research productivity. Dr. Dennis Mapa was appointed UP Scientist I for 2012-2014 for his research on population and economic growth. Prof. Erniel Barrios was promoted as UP Scientist III (from UP Scientist I, 2009-2011) for 2012-2014 for his work on computational and nonparametric statistics.

Also for 2012, Prof. Barrios received the UP Centennial Chair while Prof. Bersales received the UP Centennial Faculty Grant. Prof. Tabunda is the BSP Sterling Professor for Government and Official Statistics, Dr. Magadia is BSP Centennial Professor of Statistics, Prof. Rey is UP Statistical Center Research Foundation Inc. Professor of Statistics, Dr. Patungan is PSA Professor of Statistics, and Assoc. Prof. Sarte is Rosario Chew Assoc. Professor of Market Research.

There are more publications in ISI-Listed journals namely:

- R. Li, **J. Magadia**, S. Fein, and L. Grummer-Strawn, (2012), Risk of Bottle-Feeding for Rapid Weight Gain During the First Year of Life, ***Archives of Pediatrics and Adolescent Medicine***, 166(5):431-436.
- M. Mancenido and **E. Barrios**, (2012), An AR-Sieve Bootstrap Control Chart for Autocorrelated Process Data, ***Quality and Reliability Engineering International***, 28:387-395.
- **E. Santos** and **E. Barrios**, (2012), Nonparametric Decomposition of Time Series Data with Inputs, ***Communications in Statistics-Simulation and Computing***, 41(9):1693-1710.

- M. Tumanan and **J. Lansangan**, (2012), More than just a cuppa coffee: A Multi-dimensional Approach towards Analyzing the Factors that Define Place Attachment, *International Journal of Hospitality Management*, 31(2):529-534.

The following papers were published in refereed journals:

- **E. Barrios** and **J. Lansangan**, (2012), Forecasting Customer Lifetime Value: A Statistical Approach, *Philippine Management Review*, 19: 23-34
- **Daquis, J.**, Laus, M., Supnet, N., (2012), Assessing Strength of Seasonality Through Sample Entropy: A Simulation Study, *The Philippine Statistician*, 61(1): 21-34.
- **Gauran, I.**, Poblador, M., (2012), Classification of Congenital Hypothyroidism in Newborn Screening using Self-Organizing Maps, *The Philippine Statistician*, 61(1):55-68.
- Alberto, A., **Bersales, L.**, (2012), Econometric Modeling of Panel Data on the Saving Patterns of Philippine Agricultural Households, *The Philippine Statistician*, 61(1): 69-86
- Poblador, M., **Gauran, I.**, (2012), Sampling with Probability Proportional to Aggregate Size using Nonparametric Bootstrap in Estimating Total Production Area of Top Cereals and Root Crops Across Philippine Regions, *The Philippine Statistician*, 61(1): 87-108
- **Santos, K.**, Castillo, C., de Jesus, R., Telan, N., Vidal, C., (2012), Nonparametric Bootstrap Estimation of the Population Ratio Using Ranked Set Sampling, *The Philippine Statistician*, 61(2): 53-66.
- **Campano, W.**, (2012), Robust Methods in Time Series Models with Volatility, *The Philippine Statistician*, 61(2): 83-102.
- **Santos, K.**, (2012), Ranked Set Sampling, *The Philippine Statistician*, 61(1):123-128 (Teacher's Corner).
- **Tejada, J.**, **Punzalan, J.**, (2012), On the Misuse of Slovin's Formula, *The Philippine Statistician*, 61(1): 129-136 (Teacher's Corner).
- **Cayton, P.**, (2012), Statistical Models for Extreme Values, *The Philippine Statistician*, 61(1):137-142 (Teacher's Corner).
- **Barrios, E.**, (2012), Sampling from a Skewed Population: The Sampling Design of the 2011 Survey of Enterprises in the Philippines, *The Philippine Statistician*, 61(2): 103-110 (Teacher's Corner).
- **D. Mapa, M. Albis**, and **M. Lucagbo**, (2012), The Link between Extreme Poverty and Young Dependents in the Philippines: Evidence from Household Surveys, *Transactions of the National Academy of Science and Technology (NAST)*, 34(1).
- **D. Mapa, M. Lucagbo** and H. Garcia, (2012), The Link between Agricultural Output and the States of Poverty in the Philippines: Evidence from Self-Rated Poverty Data, *The Philippine Review of Economics*, XLIX (2): 51-74.
- **D. Mapa, L. Bersales, M. Albis** and **J. Daquis**, (2012), Determinants of Poverty in Elderly-Headed Households in the Philippines, *The Philippine Population Review*, December 2012.

The following works are included as book chapters:

- R. Navarro, **J. Magadia**, and E. Paringit, (2012), Estimation of the Separable MGMRF Parameters for Thematic Classification, in B. Escalante-Ramirez, ed., **Remote Sensing - Advanced Techniques and Platforms** ISBN 978-953-51-0652-4, InTech, June 6, 2012.
- **E. Barrios**, Z. Albacea, J. Guarte, (2012), The Statistical Science: Local and Global Directions, in V. Miralao and J. Agbisit, **Philippine Social Sciences: Capacities, Directions, and Challenges**, Quezon City: Philippine Social Science Council.

The colloquium series were able to mount lectures not only by the faculty and graduate students but also of visiting professor and practicing professionals. The list of lectures delivered in 2012 follows:

- P. Cayton, Time-Varying Conditional Johnson SU Density in Value-at-Risk (VaR) Methodology.
- A. Maranon (Lund University), Customer Retention Model: Comparison of Two Estimation Methods (Maximum Likelihood and Minimum Function).
- M. Albis, Bayesian Averaging of Classical Estimates (BACE) on Asymmetric Vector Autoregressive (AVAR) Models.
- B. Nandram (Worcester Polytechnic University), Bayesian Predictive Inference for Benchmarking Small Area Estimates.
- P. Cayton and D. Mapa, Time-Varying Methods in Value-at-Risk Estimation.
- I. Gauran and E. Barrios, Nonparametric Modeling of Clustered Survival Data.
- M. Lucagbo, D. Mapa, M. Albis, The Link Between Extreme Poverty and Young Dependents in the Philippines: Evidence from Household Survey.
- N. Osorio (Philippine Statistical Association), The Reorganization of the Philippine Statistical System.
- J. Tejada, An Iterative Binning Algorithm for Credit Scorecard Development.
- K. Santos and E. Barrios, Predictive Accuracy of Fitted Logistics Regression Model Using Ranked Set Samples.
- B. Sinha (University of Maryland Baltimore Country), Privacy Protection and Quantile Estimation from Noise Multiplied Data.
- W. Campano, Testing Robust Estimation of Time Series Models with Volatility.
- D. Mapa, S. Dineros, K. Flores, C. Japlit, Is the Job Misery Index Mr. President: Determinants of Net Satisfaction Rating.
- W. Patungan, Modeling Overdispersion and Autocorrelation in Count Data.
- R. Rey, On Interest Rate Products.
- G. Sarte, Some Issues on the Use of Projective Techniques in Market Research.

Several faculty members presented papers in international conferences. M. Lucagbo with D. Mapa and M. Albis presented with paper *"The Link Between Subsistence Poor and Young Dependents: Evidence from Household Surveys"* in the **Second Asian Population Association Conference**, Bangkok, Thailand, August 26-29, 2012. I. Gauran with E. Barrios presented *"Nonparametric Modeling of Clustered Survival Data"* during

the **20<sup>th</sup> International Conference on Computational Statistics**, Limassol, Cyprus, August 27-31, 2012. The paper *“Time-Varying Methods in Value-at-Risk Estimation”* of P. Cayton and D. Mapa was presented in the **Bachelier Finance Society 2012 World Congress**, Sydney, Australia, June 19-22, 2012. K. Santos with E. Barrios presented *“Prediction Accuracy of Fitted Logistic Regression Model Using Ranked Set Samples”* in the **International Conference on Methods for Surveying and Enumerating Hard-to-Reach Populations** in Louisiana, USA last October 31 to November 3, 2012. D. Mapa with N. Fuwa, A. Balisacan, S. Piza and C. Abad-Santos presented *“Sectoral Growth Linkages and the Role of Infrastructure Development: Revisiting the Sources of Nonfarm Development in the Rural Philippines”* at the **28th Triennial Conference of the International Association of Agricultural Economists (IAAE)** in Brazil from August 18 to 24, 2012. The travel of the faculty is funded through the UP Research Dissemination Grant, UP Faculty Development Grant, CHED International Conference Grant, PSSC Travel Grant, and the UP Statistical Center Research Foundation, Inc.

The faculty also presented papers in conferences organized by the Philippine Statistical Association and the Philippine Economic Society. D. Mapa, M. Lucagbo, and H. Garcia presented the paper *“The Link between Agricultural Output and the States of Poverty in the Philippines: Evidence from Self-Rated Poverty Data”* in the PSA Annual Conference in August 17 to 17 in Davao City. D. Mapa, A. Balisacan, N. Fuwa, S. Piza and C. Abad-Santos also presented *“Uncovering the Channels Linking Agricultural Growth and Poverty Reduction in the Philippines”* in the PSA Annual Conference. Furthermore, D. Mapa, A. Balisacan, S. Piza and J. Corpuz presented *“Towards the Goldilocks Period: Accelerating the Demographic Transition in the Philippines”* during the 50<sup>th</sup> Annual Conference of the Philippine Economic Society (PES), 27 November 2012, Manila.

UP School of Statistics in collaboration with UPLB Institute of Statistics and the Statistical Research and Training Center organized the 13<sup>th</sup> Faculty-Student Conference on the Statistical Science. The conference aimed to develop the culture of disseminating results of researches by faculty and students.

The discussion paper series published in the website continues to provide a venue to disseminate initial results of the research that is eventually presented in conferences and/or published in journals. The following discussion papers were uploaded in the website:

- Peter Julian A. Cayton and Dennis S. Mapa, Time-Varying Conditional Johnson SU Density in Value-at-Risk (VaR) Methodology.
- Kevin Carl P. Santos and Erniel B. Barrios, Predictive Accuracy of Fitted Logistic Regression Model Using Ranked Set Samples.
- Peter Julian A. Cayton and Lisa Grace S. Bersales, Median-Based Seasonal Adjustment in the Presence of Seasonal Volatility
- Rolan Paul Veron K. Cruz and Erniel B. Barrios, Estimation Procedure for a Multiple Time Series Model

- Iris Ivy M. Gauran and Erniel B. Barrios, Nonparametric Modeling of Clustered Customer Survival Data.
- Dennis S. Mapa, Michael Daniel C. Lucagbo, Arsenio M. Balisacan, Jose Rowell T. Corpuz and Czarina Lei S. Ignacio, Is Income Growth Enough to Reduce Total Fertility Rate in the Philippines? Empirical Evidence from Regional Panel Data
- Dennis S. Mapa, Michael Daniel C. Lucagbo and Heavenly Joy P. Garcia, The Link between Agricultural Output and the States of Poverty in the Philippines: Evidence from Self-Rated Poverty Data
- Dennis S. Mapa, Manuel Leonard F. Albis and Michael Daniel C. Lucagbo, The Link between Extreme Poverty and Young Dependents in the Philippines: Evidence from Household Surveys

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*, and has been invited as reviewer of international journals.

### **Institutional Activities**

Prof. Erniel Barrios will be the Dean until August 2014. Other college officials are: Asst. Prof. Almeda (College Secretary); Assoc. Prof. Magadia (Dir. For Graduate Studies); Assoc. Prof. Sarte (Dir. For Undergraduate Studies); Assoc. Prof. Mapa (Dir. For Research); Asst. Prof. Nalica (Dir. For Extension Services); Asst. Prof. Lansangan (Dir. For Statistical Computing); and Asst. Prof. Albis (Faculty Assistant for Statistical Computing).

The School also offered some modules of the training programs in statistics during the summer and semestral breaks, targeting practicing statisticians in market research, banks and financial institutions, pharmaceutical companies, and other agencies doing research and development.

Collaboration with University of Maryland (USA) and Dongguk University (South Korea) continued. The collaboration (faculty and student exchange) with Karlstad University (Sweden) has been finalized and faculty exchange will start in 2013. A new collaboration is being explored with Rutgers University and University of Calgary.

Prof. Barrios continue to Chair the Technical Committee of CHED 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 faculty are also engaged in the limited practice of profession to render consulting work in the government and the industry. They also sit as chair or members of technical committees in the Philippine Statistical System.

## **Infrastructure**

After nine years in the old CSWCD building, the School of Statistics will soon have its new building. The new site for the School of Statistics building will be beside NISMED, opposite the OUR/OA Building. The four-storey building will be constructed in two Phases. Phase 1 will include 10 classrooms, 2 computer laboratories, library, faculty rooms, and administrative offices. The classrooms will be equipped with modern teaching facilities, the computer laboratories with state-of-the-art computing facilities, and the library will enable the students to access on-line resources. Construction of Phase 1 will start as soon as the contracting activity is completed, construction takes one year to be completed. Phase 2 will include additional classrooms, two 150-seater lecture halls, a 400-seater auditorium, student area, seminar rooms, discussion rooms, and other research support facilities. The new building will provide ample space for the growing student population and the increasing research activities of the faculty and the graduate students.