

## RESEARCH ARTICLE

# The initial impact of the University of the Philippines College of Medicine new admissions policy: Four years of implementation

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### ABSTRACT

**Background:** The University of the Philippines College of Medicine (UPCM) revised its admissions policy with the goal of leveling the playing field in the selection of students and ensuring the admission of applicants imbued with the dedication and commitment to serve.

**Objective:** The objective of the study was to determine the initial impact of the newly amended policy on the admissions demographics and academic profile of accepted UPCM students in terms of pre-med courses and colleges, admissions category, Latin honors, pre-med General Weighted Average Grade (GWAG), National Medical Admission Test (NMAT) score, and interview scores, during the four years of its implementation.

**Methodology:** This descriptive study compared the yearly applications and admissions, annual distributions of pre-med courses, colleges graduated from, admissions category, Latin honors, and yearly averages of pre-med GWAG, NMATs, and interview scores among the accepted UPCM students and determined the trend of the aforementioned variables, from four years prior to four years after the implementation of the new admissions policy (2013 to 2020).

**Results:** Four years of the implementation of the revised admissions policy observed a reduction in the number of applications but an increase in the overall admissions, ratio reversal of admissions between UP Diliman graduates and UP Manila graduates with the latter recently dominating the admissions, a drastic fall in the admissions of BS Psychology graduates, while a steady rise in the admissions of BS Public Health and BS Pharmacy graduates. Also observed was the significant decrease in the yearly average GWAG, NMATs, and Latin honors among accepted UPCM students. The yearly average interview scores increased while the profile based on admissions category remained generally unchanged.

**Conclusion:** These significant changes and impacts were mainly attributed to the adoption and utilization of the Adjustment Factor in the computation of the GWAG.

**Keywords:** *medical college admission, medical education, policy review*

## Introduction

The review and revision of the admissions policy of the University of the Philippines College of Medicine (UPCM) was a flagship project initiated and undertaken for full implementation by the administration of former Dean Agnes D. Mejia. Believing that the spirit of service should permeate the College's admissions policy, Dean Mejia deemed it necessary that the admissions policy be revised accordingly. Amendments to the policy must be formulated and immediately carried out to attain such policy goal. The

admissions criteria then were perceived to be heavily skewed toward academic credentials and must be redefined and redirected towards selecting medical students who are truly imbued with altruism and commitment to serve the underserved upon graduation [1]. The criteria must be reformulated focusing more on the non-cognitive and non-academic parameters. Such revisions on the admissions policy should be aligned and in accordance with the College Vision and Mission [2].

For more than three decades without revisions and amendments, the new policy brought forth the following changes on the admissions policy: 1) Additional 20 slots in the admissions, 2) Utilization and incorporation of an Adjustment Factor in the computation of the pre-med GWAG (General Weighted Average Grade), 3) Adoption of a New Conversion Scale of UP Grading System, 4) Six slots for International Students, and 5) Modification of the Interview Instruments and Process. These revisions were presented at and approved by the UPCM College Council on October 4, 2016, the UP-Manila University Council on January 16, 2017, and the UP-System Board of Regents on its 1324th meeting on January 26, 2017. These were formalized and made official upon publication in the UP Gazette in January 2017 [3].

The additional 20 slots in the admission were proposed and approved for the purpose of accommodating those in the borderline of the admissions list. Benefitting from this revision are those below the admissions cut-off who would not be included in the list but who are nonetheless highly qualified, with impressive academic credentials and mostly with Latin honors [4,5]. More importantly, these additional slots would most likely be given to those applicants who have shown sincere intention to serve, imbued with empathy, kindness and compassion, and inspired with patriotism.

The formulation and utilization of the Adjustment Factor is a game-changing and innovative amendment to the admissions policy. Incorporated in the computation of pre-med GWAG, the Adjustment Factor aims to level the playing field among the different undergraduate/pre-med courses. Patterned after the derivation of the University Predicted Grade (UPG) [6], the Adjustment Factor recognizes the differences among pre-med courses in terms of grading standards and ease or difficulty of getting good grades.

Relevant literature on the Adjustment Factor cited the merits and necessities in its utilization and application. Young conducted a comprehensive review of several grade adjustment methods used in collegiate admissions process through the past 27 years. The review concluded that these grade adjustment methods, mostly complex and sophisticated multiple regression-based equations led to formulation of indexes that were more reliable and predictive of academic performance than the traditional unadjusted grade *e.g.* GPA (Grade Point Average). Furthermore, these grade adjustment methods also made

grades of different courses more directly comparable [7]. The GWAG is the local counterpart or equivalent of the GPA.

Barry *et al.* advocated the use of grade adjustment procedure and variants to moderate grades in a manner that would be acceptable and could ensure fairness and justifiable outcomes [8]. Moreover, Didier *et al.* asserted that grading standards vary widely across undergraduate institutions and if during the medical school admissions process, GPA is considered alone without reference to the institution attended, it will disadvantage applicants from undergraduate institutions employing rigorous grading standards [9]. The study examined the validity of applying regression-derived GPA institutional equating method based on historical MCAT (Medical College Admission Test) and GPA information. The validity of the adjustment method was tested by comparing the unadjusted and adjusted GPAs' correlation with the USMLE (United States Medical Licensing Examination) performance and the medical college grades. The conclusion drawn was that the institutional adjustment is consequential in the selection process as it enhances the validity of GPA in predicting academic preparedness and performance as well as in the licensure exam (USMLE).

Similarly, the unadjusted GPA was proven to be less predictive of USMLE outcome compared to the MCAT, which necessitates the use of an adjustment method. The MCAT stood as a better indicator of academic performance than the unadjusted GPA [10].

Although the adjustment factor does not intend to put judgment on the course per se, it mainly recognizes and adjusts accordingly the individual courses' idiosyncratic and distinct system of grading. The framers of the Adjustment Factor were cognizant of and took into consideration grade inflation and coursework deflation, which has become pervasive in some courses and colleges, both here and abroad [11-14].

The new conversion scale, on the other hand, pertains to the rescaling of the 1-5 of UP Grading System when converting this to percentage equivalent. For example, the minimum passing grade of 3.0 in UP used to be pegged at 50% in the old conversion scheme, is upgraded to 60% in the new conversion scale. The adoption of the new conversion scale intends to equalize or minimize the advantage of applicants from non-UP colleges, whose grading systems are inflated and had pegged 75% as the minimum passing grade.

Additional six slots for international students were also approved as an amendment to the admissions policy [3].

This is inclusive of the 2 slots for children of UPCM alumni residing abroad. This provision in the policy was granted in recognition of the participation and collaboration of the University to the ASEAN Integration Program goal and the ASEAN University Network (AUN) which provide for an easy and unrestricted access of member countries to our education system and institutes of higher learning like UP [15]. Likewise, this amendment is in line with the UPCM objective of establishing and promoting international linkages, cooperation, and networking among learning institutions towards the development of globally competitive and socially conscious medical graduates [16].

Lastly, the approved revisions of the admissions policy provide for the modification of the interview instrument and process. These modifications were undertaken through a complete updating and revision of the interview questionnaires, redirecting and refocusing interview domain on certain applicants' attributes, overall shift of interview approach (from Structured to Free-form, conversational in style), and a change in the interview scoring system and scale [17].

After four years of implementation, this study investigated the impact and changes of the revised policy on the overall admissions demographics, academic profile, and trend. It is of interest to know, how this entirely new policy affected the chances of acceptance of applicants coming from different pre-med courses, schools, and UP units.

The main objective of this study is to determine the initial impact of the revised admissions policy, four years of its implementation. The study's specific objectives include: (1) to compare the admissions demographics and academic profile, namely, pre-med courses and colleges distributions, admissions category distribution, Latin honors, Average PMGAWG (Pre-Med GWAG), NMAT (National Medical Admission Test), and interview score four years prior and four years of the implementation of the new admissions policy for Academic Years 2013 to 2020; (2) to determine the trend of the above variables, four years prior to four years of the implementation of the new admissions policy Academic Years 2013 to 2020; and (3) to enumerate which variables were greatly affected by the new admissions policy and to provide plausible explanation/s therewith.

## Methodology

This research work is part of an ongoing review and formative evaluation of the new admissions policy of the

University of the Philippines College of Medicine, which is currently in its fourth year of implementation. This study had a descriptive design utilizing records and documentary review. The research investigators included all students accepted into the college as lateral entrants for the period covering the academic years 2013 to 2020 and involving students from Class 2018 to Class 2025. This period spanned the duration from four years prior to four years of the new admission policy implementation. As it involved the entire student population of UPCM, no sampling was performed.

Records pertaining to applications data of the study subjects were retrieved from the Admissions Office, reviewed and encoded. These data included the admissions category through which the study subject was accepted, the school or university unit from which the student graduated, and his/her pre-med course. Also included were their pre-med GWAGs (PMGWAG) and Latin honors obtained. Pre-med GWAGs were computed by the Admissions Office while the Latin honors were verified by their official commencement exercise programme.

Data pertaining to the admissions screening process such as NMAT scores and interview scores of the students were also obtained and encoded ensuring absolute anonymity and strict confidentiality.

All collated data were processed for descriptive and time-series analysis which included linear forecast, trend, two-point moving averages, and univariate linear regression (with R-squared value).

Yearly computed and course-specific Adjustment Factors were also retrieved. These are numerical coefficients that are incorporated in the computation of pre-med GWAG. The Adjustment Factors aim to standardize and make comparable the different grading scales and systems of the different pre-med courses, different schools and university units/colleges. The Specific Adjustment Factor uses as the numerator the NMAT performances of previous batches of a particular course, of a particular college within a given time frame (5-years). It factors in the average GWAGs obtained by the same batches within 5 years as the denominator. The square root of this ratio is the Adjustment Factor and is used to standardize or normalize the grading system of the said course. The formula of the Adjustment factor is given below (Equation 1):

**Adjustment Factor (AF):** Equation 1.

where:

$$AF = \sqrt{\frac{NMAT_i}{\%PMGWAG_i}}$$

**NMAT<sub>i</sub>**: is the mean NMAT score of the applicants coming from a particular course and school, from the last five years.

**%PMGWAG<sub>i</sub>**: is the mean Pre-med GWAG (in percentage) of the applicants coming from a particular course and school, from the last five years.

The Adjustment Factor is incorporated with and adjusts the individual GWAG. The Adjustment Factor has a value near 1. The adjusted GWAG is then used to compute the Admission Index (AI) based on the formula below (Equation 2). The Admission Index is primarily the basis of the applicant's ranking and the final determinant of admission.

**Admission Index (AI):** Equation 2.

$$AI = 0.60 \times AF \times \%PMGWAG + 0.30 \times NMAT + 0.10 \times IS$$

Where:

**IS**: is the interview score of the applicant

**%PMGWAG**: is the applicant's Pre-med General Weighted Average in percentage

**NMAT**: is the applicant's NMAT score in percentile

All information from gathered data also formed part of the annual admissions reports submitted to the office of the Dean and presented at the College Council meeting.

*Ethical Consideration*

Official permission from the Office of the UPCM Dean was obtained to access archival documents and records from the Student Records Office and the Admissions Office. The purpose, the design, as well as the mechanics of the study were explained to the Dean and the staff of the above-mentioned offices.

The confidentiality of records and documents retrieved and reviewed and the anonymity of the identity of the students relative to these records and documents were strictly maintained. The privacy of the individuals to whom these records and documents pertain was always protected.

To ensure the confidentiality of information and protect the privacy of the record owners, anonymization and de-identification were implemented through complete encoding of the identities and information. Instead of names, numbers were assigned to each and every record obtained. At no given instance were names or identifiers appeared on any record/data encoded. The principal investigator, being familiar with some of the record owners, was not involved in the encoding of the identifications and data nor had access to the decoded information. The principal investigator was totally blinded on the ownership of the record and data.

Furthermore, only the research assistant did the encoding of identity and information. The research assistant was recruited based on, among other things, computer literacy. It was absolutely required that the said research assistant shall not be from the medical community, not from the college, nor from the UP System to ensure unfamiliarity with any of the record/data owners. The research assistant was required to sign a confidentiality/non-disclosure agreement.

Individual consent was deemed unnecessary and was not obtained as this study was a retrospective analysis of archival records and documents in anonymity. Neither identity nor identification was attached to the records and documents used in the study.

Furthermore, most of the owners of these records and documents had long graduated from the college, perhaps some are already out of the country and thus cannot be accessed easily. Locating them all and securing individual consent shall not only be very expensive, time-consuming, and exhausting but next to impossible.

Lastly, as a mandatory requirement for all research studies in this institution and for the purpose of future publication, the author of this undertaking personally worked for and had obtained a waiver of consent, technical and ethical approval from the Research Implementation and Development Office (RIDO), and the University of the Philippines Manila Review Ethics Board (UPMREB).

**Results**

Table 1 is the summary of the comprehensive yearly admissions censuses that cover the academic years 2013 to 2019 [18]. The new admissions policy was implemented in the academic year 2017. The table shows the yearly admissions and applications, profiles of admissions categories,

schools/colleges/university units applicants graduated from, pre-med courses, and pre-admission academic performance of the accepted LU 3 students. The table also shows the yearly average GWAGs, NMATs, and interview scores. The data are in frequencies and percentages within the parenthesis. The sex/gender ratio of the accepted students was not included as the new policy retains the equal proportion of males and females in the admissions. The female to male ratio has remained one is to one.

Figures 1 and 2 describe the trend of the yearly number of applications and admissions. It can be noted that in the initial year (2017) of implementation of the new admissions

policy, there was a dip in the number of applicants. From previous averages of around 700 applications annually, it dropped down to only 446 in 2017 (Figure 1). The trend line (dotted blue line) of the curve was likewise downward. This occurred despite the increase in the admissions slots by 20 as prescribed by the new policy (Figure 2).

Figure 1-A is the time series analysis of the yearly number of applications from 2013 to 2020. Superimposed on the graph were the Linear Forecast, Two-Period Moving Averages, Linear Regression Model, and the R-squared value. The downtrend in the Linear Forecast line and the negative regression coefficient on the model are both

**Table 1. Annual Admissions Report: Academic Year 2013-2020**

	2013	2014	2015	2016	2017	2018	2019	2020
<b>Applicants</b>	657	753	756	601	446	664	695	526
<b>Admissions</b>	122	125	121	122	142	142	142	140
<b>CATEGORY (%)</b>								
Academic	91 (74.6)	92(73.6)	88 (72.7)	89 (80.0)	115 (81.0)	112 (78.3)	109 (76.8)	109 (77.9)
RP/IP	17 (13.9)	17(13.6)	17 (14.0)	13 (10.7)	17 (12.0)	17 (11.9)	17 (12)	17(12)
Faculty/Employee	11 (9.0)	12(9.6)	12 (9.9)	12 (9.8)	4 (2.8)	9 (6.3)	12 (8.45)	9(6.4)
UPMAS	3 (2.46)	4 (3.2)	4 (3.3)	4 (3.3)	4 (2.8)	4 (2.8)	4 (2.8)	4(2.8)
UPMASA	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (1.4)	1 (0.7)	0 (0)	1(0.7)
<b>SCHOOL</b>								
UPD	68	59	53	52	51	54	44	44
UPM	29	46	42	32	63	58	67	55
UPLB	9	9	7	9	8	11	10	16
Other UP Unit	5	3	8	9	9	8	5	10
Non-UP	11	8	11	20	11	11	16	15
<b>COURSE (%)</b>								
BS Biology	43 (35.2)	35 (28.0)	47 (38.8)	39 (32)	43 (30.3)	60 (42.0)	46 (32.4)	39(27.9)
BS Psychology	25 (20.5)	30 (24.0)	22 (18.2)	23 (18.9)	17 (12)	10 (7.0)	9 (6.3)	11(7.9)
BS Public Health	10 (8.2)	13 (10.4)	10 (8.3)	11 (9.0)	29 (20.4)	19 (13.3)	21 (14.8)	13(9.3)
BS MBB	4 (3.2)	3 (2.4)	10 (8.3)	10 (9.0)	5 (3.5)	6 (4.2)	3 (2.1)	2(1.4)
BS Biochemistry	2 (1.6)	5 (4.0)	10 (8.3)	6 (4.9)	7 (4.9)	4 (2.8)	9 (6.3)	2(1.4)
BS Chemistry	5 (4.1)	3 (2.4)	0 (0.0)	3 (2.5)	7 (4.9)	4 (2.8)	6 (4.2)	11(7.9)
BS Pharmacy	0 (0.0)	0 (0.0)	0 (0.0)	1 (0.8)	5 (3.5)	8 (5.6)	9 (6.3)	13(9.3)
Others	33 (27.0)	36 (28.8)	22 (18.2)	29 (23.8)	29 (20.4)	32 (22.4)	24 (16.9)	49(35)
<b>LATIN HONOR (%)</b>								
Summa Cum Laude	8 (7.4)	8 (6.4)	12 (9.9)	4 (3.28)	8 (5.6)	0	6 (4.2)	3(2.1)
Magna Cum Laude	35 (28.7)	42 (33.6)	35 (28.9)	53 (43.4)	30 (21.1)	46 (32.2)	32 (22.5)	20(14.3)
Cum Laude	54 (44.3)	49 (39.2)	55 (45.4)	40 (32.8)	77 (54.2)	71 (49.7)	73 (51.4)	75(53.6)
None	25 (20.5)	26 (20.8)	19 (15.7)	25 (20.5)	26 (19)	26 (18.2)	31 (21.8)	42(30.0)
<b>NMAT (%)</b>								
95-100	105 (86.1)	115 (92.0)	110 (90.9)	109 (89.3)	119 (83.8)	124 (86.7)	120 (84.5)	121(86.4)
90-94	17 (13.9)	10 (8.0)	11 (9.1)	13 (10.7)	23 (16.2)	19 (13.3)	22 (15.5)	19(13.6)
<b>ACADEMIC</b>								
GWAG	1.44	1.43	1.40	1.44	1.54	1.51	1.55	1.64
NMAT	94.86	99.14	98.84	98.90	97.87	98.14	98.26	98.1
Interview Score	8.84	8.72	8.91	8.42	8.64	8.85	9.02	8.84

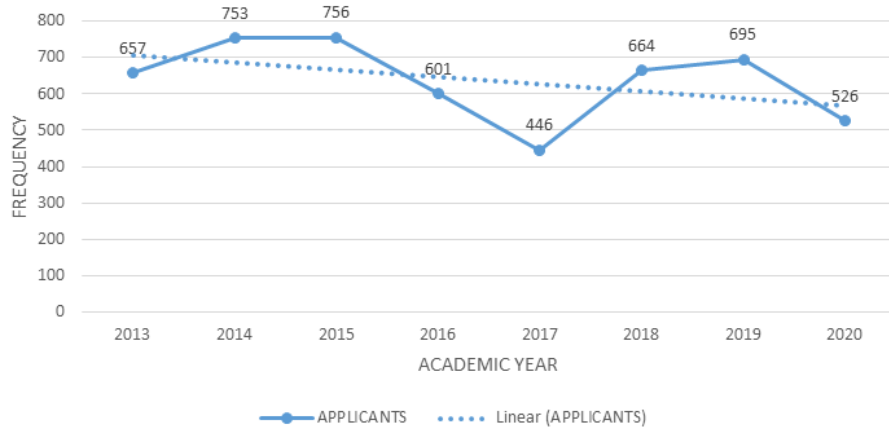


Figure 1. Yearly Applications

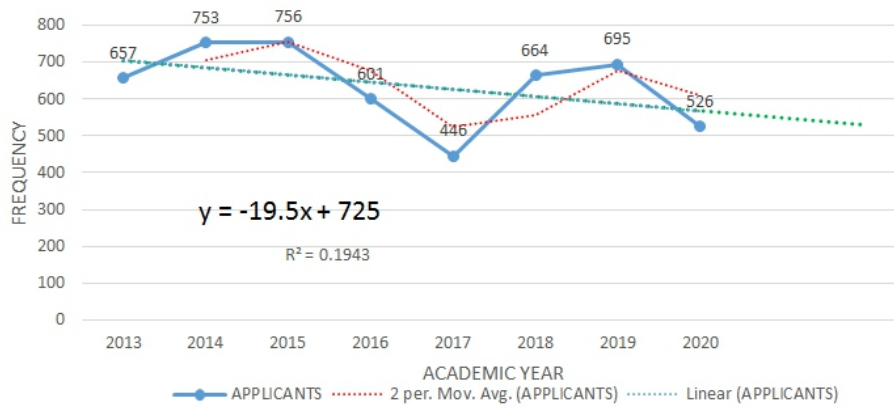


Figure 1-A. Yearly Applications with Linear Forecast, Two-Period Moving Average, Univariate Linear Regression Model, and R-squared value.

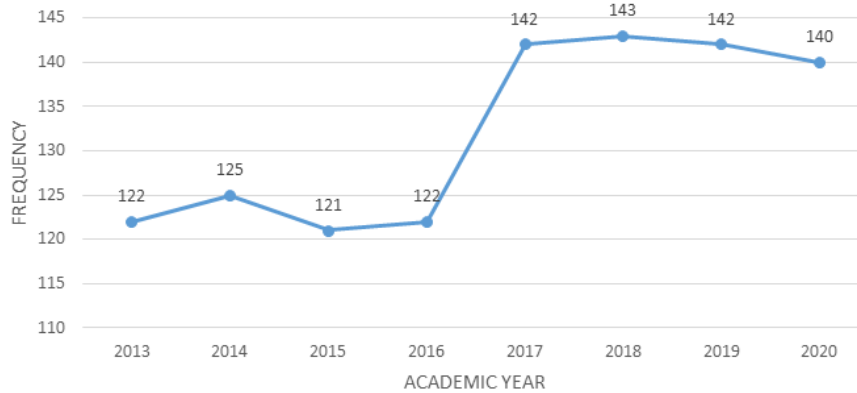


Figure 2. Annual Admissions

indicative of a decreasing number of applications in the future. Using the derived regression model, it is projected that the next year (2021) applicants would be 550. However, its R-squared value of 0.1943 is indicative of a low effect size or the said linear regression model weakly fit the given data.

Since the implementation of the new admissions policy in 2017, the profile based on admissions category has remained almost the same, except for the increase in the Academic Category (Figure 3), where most of the additional 20 admissions went. As there were no mandated additional slots for the other categories, admissions for Regionalization Program/Indigenous People (RP/IP), children of UP Faculty/Employees, children of Alumni of UP Medical Alumni Association (UPMAS), and UP Medical Alumni Association in America (UPMASA) remained within their respective slot allotment, except for those academic years when these special categories were not able to fill their allotted slots. These unfilled slots were mostly due to the last-minute withdrawals during the registration periods. These unoccupied slots were reverted to the Academic Category.

The annual distribution of schools or university units where the accepted medical students graduated from is shown in Figure 4. It can be noted that effective the

implementation of the new policy, there was an abrupt and sustained rise in the number of accepted students coming from UP Manila. In fact, there was a reversal, from the previous years where graduates from UP Diliman consistently predominated the admissions to UPCM. In the last four years, UP Diliman placed only second to UP Manila in terms of number of admissions to UPCM.

Time series analysis of the same data (Figure 4-A) reveals an upward linear forecast and a positive regression coefficient ( $r = 4.3571$ ) for UPM univariate linear regression model. This indicates a projected increase in the admission among UPM applicants. In fact, the projected admissions for UPM graduates based on the model for the year 2021 will be 69, the highest ever. The R-squared value of UPM model of 0.5761 suggests a moderate effect size or the model fits the UPM admission data, moderately.

On the other hand, UP Diliman admissions to UPCM data show an opposite trend based on the time-series analysis (Figure 4-A). The linear forecast shows a downtrend with a negative r-coefficient ( $-2.869$ ) on the regression model. The projected admissions on 2021 for UP Diliman will be 40, much lower than that of UPM and the lowest ever admissions for UP Diliman. The UP Diliman regression

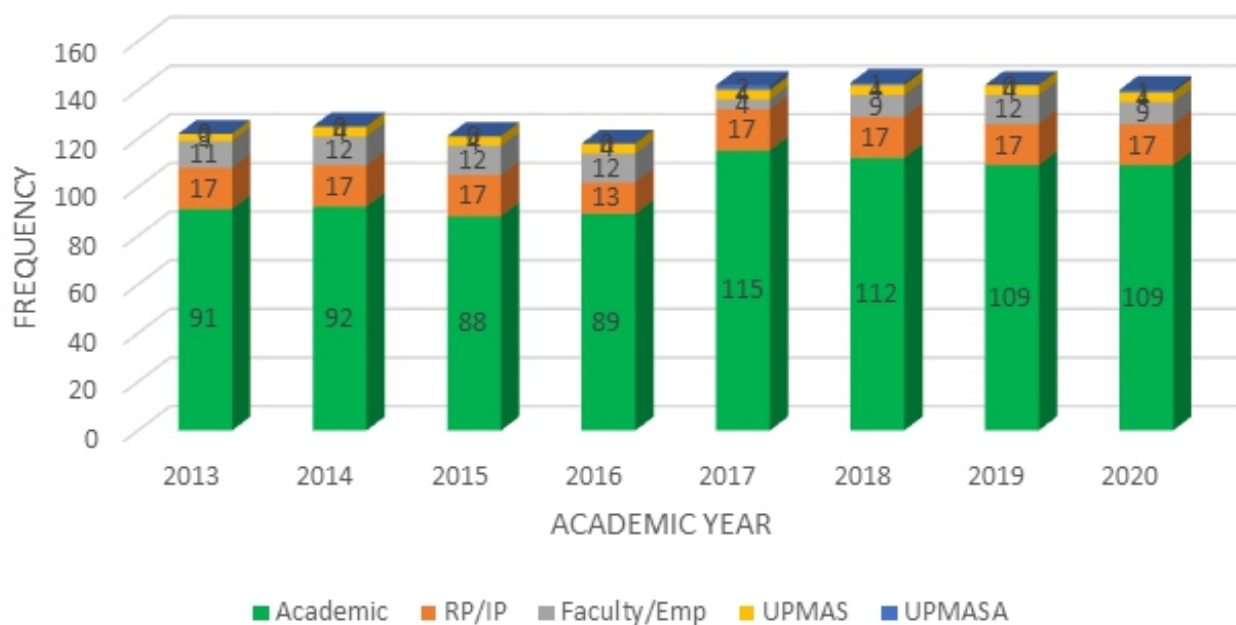


Figure 3. Yearly Admissions based on Category

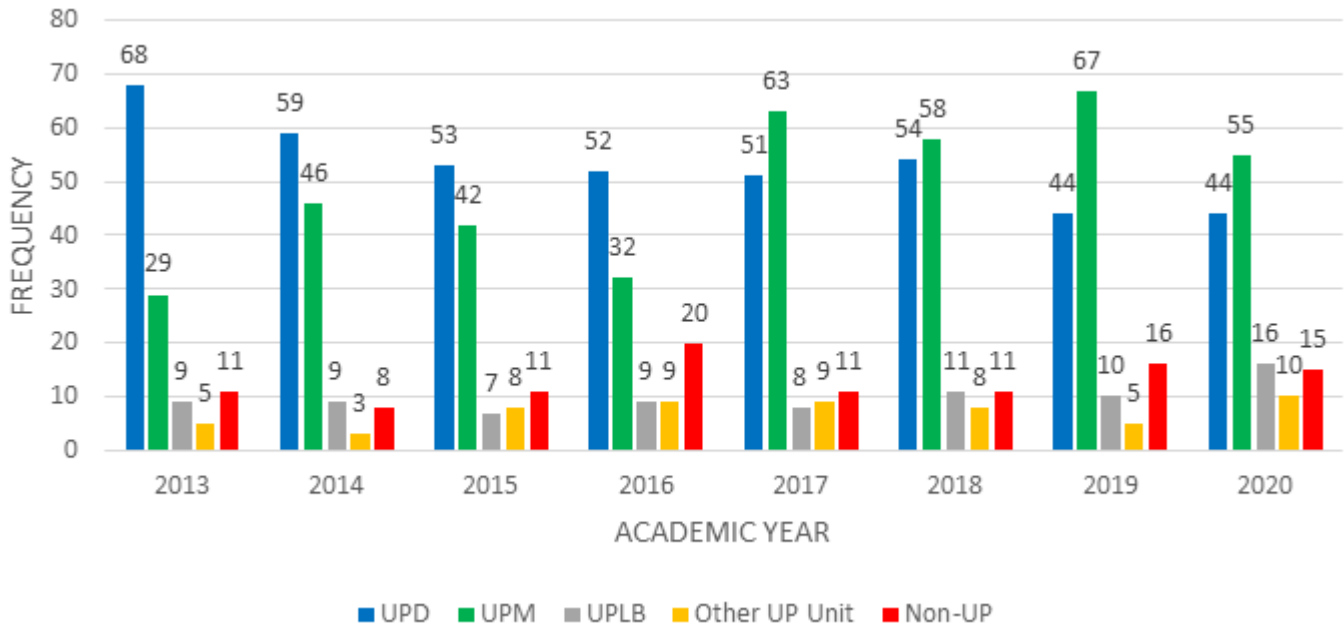


Figure 4. Annual Schools / University Units Distribution on Admission

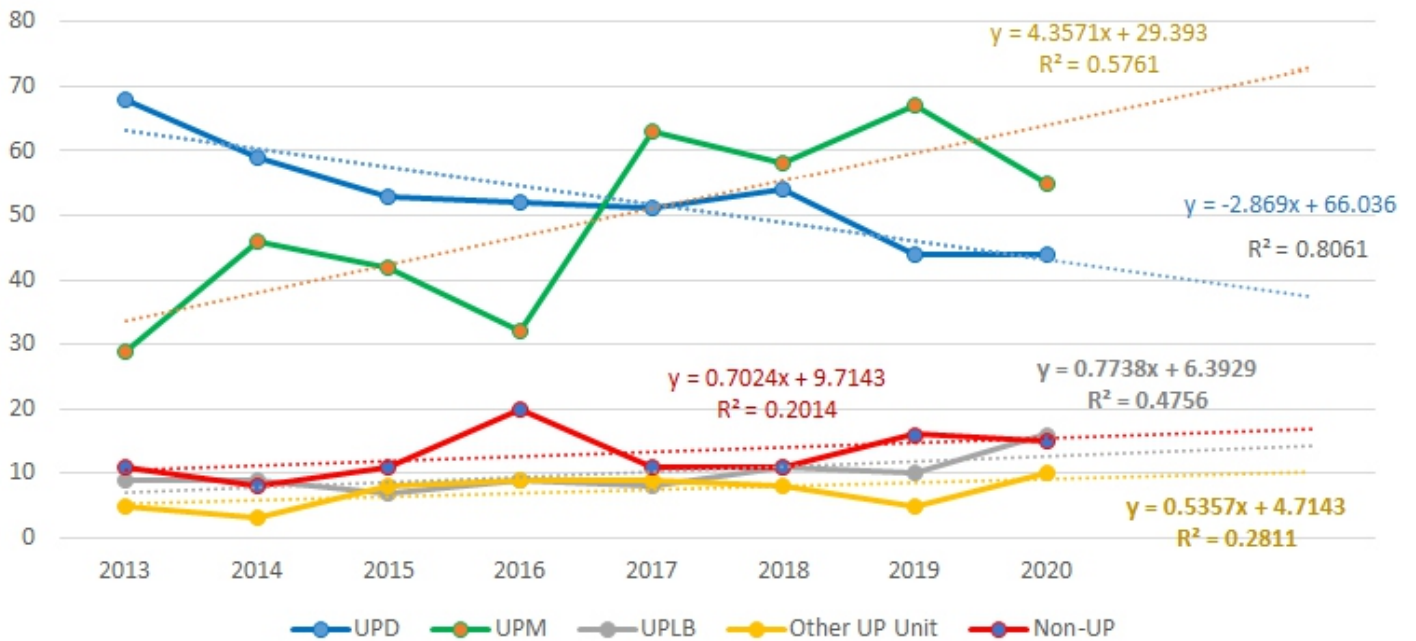


Figure 4-A. Annual Schools / University Units Distribution on Admission with Linear Forecast, Univariate Linear Regression Models and R-squared Values.



model has an R-squared of 0.8061, indicative of a very strong effect size and a very good fit for the model.

The admissions among the graduates of UPLB, other UP units, and non-UP schools, reveal a relatively stable, almost plateau trend on time-series analysis (Figure 4-A). Although their respective r-coefficients (0.7738, 0.5357, and 0.7024 respectively) were all positive, all were less than 1. The yearly increase in their admissions was small compared to that of UPM or UP Diliman.

In terms of pre-med courses among the accepted medical students for UPCM, there was a significant and continuous decline in the number and percentage of BS Psychology graduates in UPCM since 2017 (Figures 5 and 6: <https://bit.ly/3wC8K36>). On the other hand, there was an increase in the admissions for BS Biology graduates and UP Manila-based BS Public Health and BS Pharmacy graduates. More striking was the sudden rise in the admission among BS Pharmacy graduates, wherein the admission prior to 2017 was almost zero.

On time series analysis (Figure 5-A; <https://bit.ly/3wC8K36>), BS Psychology manifested the greatest decline in yearly admission in the UPCM. With a high negative regression-coefficient of -2.917 in, it shows a steep downward trend in the linear forecast. It is projected from the regression model that in 2021, only 5 from BS Psychology would be accepted at UPCM. The model itself shows a strong size effect with R-squared value of 0.835, which connotes that 83.5% of the data fit the model. On the other hand, the yearly admission for BS Pharmacy shows an abrupt upward trend in the linear forecast, with a regression-coefficient of positive 1.9524, with a projected admission of 13 in 2021, the highest in its history. The model has a very high R-squared value of 0.8994 which implies a very good fit of the model to the observed data or simply put, 90% of the observed data can be explained by the model.

The time series pattern (Figure 5-A) for the yearly admissions of BS Biology and BS Public Health remains steadily upward in their linear forecast, both with positive regression coefficients (0.8333 and 1.2619, respectively) however, both with weak effect size based on R-squared values (0.0726 and 0.2106, respectively).

The admission of graduates with Latin honors also shows some significant changes after the implementation of the new admissions policy in 2017. Figures 7 and 7-A (<https://bit.ly/3wC8K36>) show that since 2017, the number of graduates with *magna cum laude* who were admitted to UPCM drastically dropped. This, however, was concomitant

with the increase in those with *cum laude*. The number of *summa cum laude* among accepted LU3 students likewise went down slightly.

On time-series analysis of yearly Latin honor (Figure 7-B: <https://bit.ly/3wC8K36>), the admission of *summa cum laude* is expected to further go down as the linear forecast is downtrend with a negative regression coefficient (-0.9167). It is projected that in 2021, only two (2) *summa cum laude* would be accepted. However, this is based on the linear regression model with weak effect size (R-squared = 0.3600). Likewise, admission of those with *magna cum laude* honors is predicted to decline further as shown by its linear forecast line and negative regression coefficient (-1.7262). Based on projection for next year, only 29 *magna cum laudes* would be accepted at UPCM.

Reversed trends (Figure 7-B) were seen in the admission of *cum laudes* and those without Latin honors. There would be a significant increase in admission of *cum laudes* and those without Latin honors in the background of a decrease in the acceptance of *summa cum laudes* and *magna cum laudes* as projected. It is projected that at least 81 *cum laudes* and 36 without latin honors would be accepted in 2021. These are based on models with moderate effect size or moderately good fitness to observed data (R-squared = 0.5417, 0.5224 respectively).

In terms of pre-admissions academic performance, the effectivity of the new admission policy saw a significant decline in the yearly average %GWAG of the accepted batch (Figures 8 and 8-A: <https://bit.ly/3wC8K36>). From an average %GWAG of 1.43 (91.4%), it went down to 1.64 (87.2%). The trend line (dotted blue line) moved towards a downward direction (Figure 8-A).

Time-series analysis (Figure 8-B: <https://bit.ly/3wC8K36>) also projected a downtrend on the yearly average %GWAG based on the linear forecast and on regression coefficient which is negative (-0.5786). The projected average %GWAG for the next academic year would be 87.5%, based on regression model with a strong effect size (R-squared = 0.771).

The same trend was also seen with the yearly average NMAT. Since 2017, the yearly average NMAT of the accepted batch of LU3 students of UPCM, slightly went down by one percentile (Figure 9: <https://bit.ly/3wC8K36>). However, the overall linear forecast on time-series analysis (Figure 9-A: <https://bit.ly/3wC8K36>) still projects a slight upward trend with a predicted average NMAT for 2021 at 98.8 percentile.

This prediction is based on a regression model with weak effect size with R-squared of 0.1068.

The effect of the newly implemented admissions policy on the average NMAT can be clearly seen in (Figure 10: <https://bit.ly/3wC8K36>). Since the implementation of this policy in 2017, there has been an observed increase in the number of those who belong to the lower NMAT bracket, 90-94 percentile (red bar). The linear forecast (Figure 10-A) for those belonging to the lower NMAT bracket is upward and projected to increase in 2021 to 15% based on its regression model. While those in the higher NMAT bracket (95-99+ percentile) are projected to decrease in the same year to 85%.

On the other hand, the average interview score shows a steady rise starting 2017 (Figure 11: <https://bit.ly/3wC8K36>) but a slight drop for academic year 2020. This coincided with the use of a new interview instrument, assessment scale, and a modified interview approach and technique. Time-series analysis (Figure 11-A) predicts a slight increase on linear the forecast and projects an average interview score of 8.86 in 2021, however, this is based on a model that has a very low effect size (R-squared = 0.0590).

## Discussion

There is no plausible reason to explain the sudden decrease in the number of applicants (Figure 1) from the outset of the new admissions policy implementation. This reduction ironically coincided with the additional 20 slots (Figure 2) in the admission. The drop could be attributed to the uncertainties and anxiety among the applicants of being subjected to a new, untested, never-applied policy. The new policy could have discouraged potential applicants in 2017. Nevertheless, it was observed thereafter, the number of applicants had recovered and rebounded back, approaching near the usual number (approximately 700). However, the general trend in the yearly number of applicants is still downward as projected in the time-series analysis (Figure 1-A).

A noticeable change observed immediately after the implementation of the new admission policy in 2017, was the sudden increase of UP Manila graduates in the accepted list (Figure 4). Up to the most recent screening process, UP Manila still dominated the admissions. This was a glaring reversal as UP Diliman graduates who, historically, consistently and irrefutably topped UPCM admissions in number for decades, now ranked second to UP Manila. In fact, for 24 years from Class 1990 to Class 2013, among its 2,624

students, 61.4% were from UP Diliman, while those from UP Manila constituted only 25.1% [19]. This notable reversal of ranks between UP Manila and UP Diliman in terms of the frequency of admissions to UPCM was also evident in the time-series analysis' forecast trend and model projection (Figure 4-A).

The above significant changes were not similarly observed in other medical institutions, as cited in the literature [20], wherein new admission policy and practices did not drastically lead to changes in the students' population, proportions, and demographics. The outcome minimally changed as these new selection practices remained focus on the students' academic data such as the (unadjusted) GPAs (GWAG counterpart), MCAT (NMAT equivalent), and interview/recommendations as the main factors that determine admissions [21]. Only through adjusting the GPA can the demographic and academic profiles of accepted students be significantly altered. A similar trend can also be seen in instances where affirmative actions were undertaken to ensure socio-economic equality and justice, diversified and equitable distribution of and wided access to higher educational opportunities and privileges [22-24].

The observed reversal of the demographic and academic profiles in this study in the recent years can be attributed to the institution of Adjustment Factors as prescribed by the new policy. Most pre-med courses in UP Manila benefitted significantly from their calculated Adjustment Factors of above 1, while those pre-med courses in UP Diliman mostly had lower computed Adjustment Factors. In fact, in the last three years, the top five pre-med courses with the highest computed Adjustment Factors were all from UP Manila [25]. Thus, this alone put considerable advantage on the UP Manila graduates over those of UP Diliman's in terms of chances of being accepted. This explains why UP Manila graduates now dominate admissions at the UPCM.

The Adjustment Factor is a numerical coefficient that is incorporated in the computation of pre-med GWAG that aims to standardize and make comparable the different grading scales and systems, as well as the different curricula of the different pre-med courses, different schools, and university units/colleges. As the Adjustment Factor does not intend to put judgment on the curricular quality of the pre-med course, it aims to level the playing field across different courses, schools, and university units/colleges. For years, the use of grade adjustment for predicting future academic performance has been practiced in the admissions process of many institutions of higher learning. The formulation and development of grade adjustment methods, mostly

regression-derived, have evolved considerably and have become more sophisticated. Likewise, adjusted grades were proven to be very reliable predictors of academic performance [26,27].

It is a popular notion that as there are courses and colleges known for giving high grades, there are also courses and colleges known for rating their students low. Thus, if grades of student-applicants coming from different pre-med courses and colleges are being used to gauge their cognitive skills and predict future academic performance as basis of admission, then equivalence of measures becomes a problem. In this regard, the introduction of the Adjustment Factors seems appropriate and timely, especially in the light of the fact that grade inflation and coursework deflation are now pervasive in many learning institutions, here and abroad [11-14].

The concept and utilization of an Adjustment Factor was adopted from the University of the Philippines system-wide admission process. UP uses a particular adjustment factor that standardizes the grades of high school graduate-applicants who came from a heterogeneous variety of secondary schools [6]. Thus, the adjustment factor equalizes the chances of every applicant regardless of the grading standard of the school where he/she graduated from. The University Predicted Grade (UPG) is based on the UP Admission Index (UPAI), which is the main criterion for admission to the University of the Philippines and incorporates the applicant's UPCAT (University of the Philippines College Admission Test) score and his/her high school grade point average (HSWA). The adjustment factor is applied to the latter (high school grade point average) as this is the number that is not standardized and not directly comparable. Furthermore, to democratize the UP-selection process, and as part of its affirmative action, UP incorporates plus and minus factors ("Palugit" and "Pabigat" Points System) in its Admission Index. These plus and minus factors consider the applicants' socio-economic status, geographic domicile, and cultural minority affiliation [28,29].

Since the imposition of the Adjustment Factor in 2017, the pre-med courses profile in the admissions manifested abrupt and sustained changes (Figures 5, 6). Time-series study and regression models likewise projected similar forecasts and sustained trends (Figure 5-A). Academic year 2017 saw a sudden reduction in the admission of BS Psychology graduates, almost all from UP Diliman. The graduates of BS Psychology used to rank high and consistently in the UPCM admissions, second only to the graduates of BS Biology.

Because of this fall in admission since 2017, BS Psychology now ranks only third in the UPCM acceptance list. And this plummet persisted steadily until in the most recent academic year 2020 when it ranked fourth as it was overtaken and outranked by BS Pharmacy. On the regression model, it is projected that for the next admissions season (2021), 13 candidates from BS Pharmacy while only five from BS Psychology would successfully enter UPCM (Figure 5-A). Simultaneous to this trend were the drastic rise in admission of BS Public Health graduates and the steady ascent in acceptance of the graduates of BS Pharmacy in UPCM.

Graduates of BS Public Health and BS Pharmacy are both from UP Manila and consistently benefitted from favorable adjustment factors since the implementation of the new admissions policy. Their Adjustment Factors respectively were 1.04 and 1.07 in 2017, 1.05 and 1.11 (the highest) in 2018, 1.05 and 1.11 (the highest) in 2019, and 1.06 and 1.10 (the highest) in 2020. Both pre-med courses had above 1 Adjustment Factor and BS Pharmacy consistently had the highest Adjustment factor for four consecutive years. The graduates of BS Psychology from UP Diliman continuously suffered drawbacks for having a consistently below 1 Adjustment Factor, such as 0.97 in 2017, 0.96 in 2018, 0.96 in 2019, and 0.95 in 2020 [25].

Not only did the Adjustment Factor and new admissions policy brought forth a major impact on the distribution of university units/schools/college and pre-med courses at UPCM, but also made changes in the academic credentials of the students accepted at UPCM. Since 2017, the total number of yearly *summa cum laudes* and *magna cum laudes* has been significantly going down and shifting instead to an increase in the yearly *cum laudes* (Figures 7, 7-A, 7-B). There was also an observed increase in the admission of students without Latin honors. From a certain perspective, this could be viewed as a downgrading or worse, lowering down the bar of the UPCM admission standard. But it could always be argued that this trend could be just corrective of a supposed defective/inaccurate grading system or grade inflation observed in some pre-med courses.

The imposition of Adjustment Factors favors more the admissions of those with relatively lower GWAGs by affixing an above 1 Adjustment Factor while those with higher GWAGs were usually given below 1. In most cases, because of this "corrective" adjustment, those with a lower GWAG will have an increase in their Admission Index (Equation 2), while those with a high GWAG will be adjusted toward a lower Admission Index.

conversational in character [27]. The new instrument utilizes a 138-point evaluation scale.

The application of this modified interview instrument and approach led to a steady rise in the yearly average interview score (Figure 11). The regression model projects a further increase (Figure 11-A). These interview scores were likewise very high and almost approaching a perfect score, indicating that those accepted since 2017 would probably possess those attributes that UPCM is looking for. This could be a realization of the intention of framers of the new admission policy of infusing this policy with the spirit of service and dedication. This is a redirection of the policy and afar from the previous one that is so focused on academic performance, credentials, and cognitive prowess of applicants.

Although different medical schools, both domestic and abroad, adopt different interview instruments, format, and approach in the conduct of the interview as well as weight allocation in the selection criteria, they are all geared toward assessing the non-academic attributes of applicants [34]. Most review studies have shown the weak predictive validity interview on academic performance [35]. Although some would recommend a certain interview approach (*i.e.*, Multiple Mini Interview approach) for better predictive validity on future academic performance [36], all interview approaches nonetheless are evaluations of the suitability of the applicant's personality in pursuing a medical career.

The adoption of a new conversion scale in the UP grading system to percentage base did not make much impact on the admission process. No changes can be seen that can be attributed to this policy revision.

The conversion to percentage is utilized during the computation of the Admission Index wherein the GWAG, NMAT, and the interview score must all be on the same percentage scale (100-unit pts). Conversion is needed because the grading system of UP is on the 1.0 to 5.0 scale, wherein the highest is 1.0 while 5.0 is a failing grade. The previous policy prescribed a conversion wherein the UP grade of 3 is 50% while the amended policy transmutes the grade of 3 to 60%.

The new grade conversion has upgraded the UP-grading system and gave an edge to UP applicants from over non-UP applicants in terms of GWAG conversion. Thus, with this new grade conversion, we should expect the trend on yearly average GWAG to be increasing as well. However, both scenario, did not occur. The reasons are mainly as follows:

- a. UP applicants are not competing with non-UP

applicants. UP applicants have their own admissions category with a fixed number of slots (at least 120 slots). Non-UP applicants have their own exclusive 4 admissions slots. UP applicants compete with UP applicants only while non-UP compete with non-UP. So basically, there is no advantage or edge for UP applicants over non-UP applicants in terms of grade conversion.

- b. The increase in GWAG upon the (new) conversion of the UP grade has either been diluted or negated by the decrease brought about by the Adjustment Factor. Thus, no increasing trend was observed in the yearly average %GWAG (Figure 8-A); neither was it projected on time-series study (Figure 8-B). On the contrary, the reverse was observed.

- c. The effect of the new conversion decreases as grades are getting high (Figure 12). Since all applicants do have high grades, the effect of the new conversion is therefore minimized.

The implementation of the admission of six international students as provided in the new policy was deferred. Since 2017, the said policy provision is yet to be carried out. The delay in its execution was brought about by a myriad of complex issues and impediments that need to be addressed accordingly. To enumerate a few as follows:

- a. The long process of formulating the Implementing Rules and Regulations (IRR) and obtaining approval from the UPCM College Council

- b. The numerous and complex requirements/requisites a foreign student must comply with. (*i.e.*, Filipino Cultural and Language Proficiency, TOEFL, Clearances, etc.)

- c. The Return Service Obligation Program for international students: how, where, and when to implement.

- d. The infrastructural issue: Deferment of admission until full completion of the Medical Science Building.

This deferment of the implementation of the policy provision for the admission of international students has led to an additional six admission slots allocated back to local applicants mostly in the Academic Category (Figure 3).

## Conclusion

The implementation of the new admission policy in 2017 brought forth changes in the demographic and academic profile of the accepted LU 3 students at UPCM. Some changes were major and drastic and have created a substantial and substantive impact. Some changes were subtle and barely noticeable resulting in almost minuscule or no impact at all.

Take note that the formula for the computation of the Adjustment Factor, the GWAGs are placed as the denominators (Equation 1). Thus, historical data for GWAGs of the previous batches (5-year frame) of a particular pre-med course, college/campus, if proven to be high will ironically carry the burden of a lower Adjustment Factor. Those pre-med courses with historically well-performing graduates in terms of having high GWAGs will suffer a setback by having lower computed Adjustment Factors. They will be disadvantaged in the selection process of UPCM.

The derivation of the Adjustment Factor formula is grounded on the assumption that high historical averages of GWAGs of a particular course or campus/college always indicate grade inflation. Thus “corrective” adjustment must be made toward negating the effects of the grade inflation. This where the bone of contention lies, as one could easily argue that the high GWAGs were mainly not due to grade inflation but due to the inherently well-performing students accepted in those courses. If the latter is true and the assumption, which is the very basis of the Adjustment Factor computation is wrong, then injustice is committed.

If one peruses the table of Adjustment Factors [25] and the list of the top 4 pre-med courses admissions in UPCM since 2017 [18], one can easily observe that majority of these courses were from UPM and were all given an above 1 Adjustment Factor. Those courses given a below 1 Adjustment Factor hardly made it to the list of accepted medical students even with a high GWAG. Since the implementation of the new admissions policy, there are reported instances wherein several *magna cum laudes* and even *summa cum laudes* were not accepted. Those with a below 1 Adjustment Factor could only be successful in entering UPCM if they have an extremely high GWAG.

The Adjustment Factor for the past four years ranges from a high 1.15 to a low 0.85 [25]. Simply put, this means that an Adjustment Factor of 1.15 will have a plus 15% to the GWAG (as converted to percentage scale) while an Adjustment Factor of 0.85 will obtain a 15% deduction in the computation of the adjusted GWAG. The spread between the two Adjustment Factors on the same GWAG is translated to 30% computational difference.

As expected, the overall effect is the lowering of the GWAGs of those accepted in UPCM. This is because the adjustment is tilted towards increasing the chances of accepting those with a lower GWAG but with a high Adjustment Factor while lowering the chances of admitting those with high GWAG but low Adjustment Factor. Take note further that the formula

(Equation 1) for the Adjustment Factor placed GWAGs for a particular course and college for a given period as the denominator, thus the Adjustment Factor is mathematically not favorable for high GWAGs. It made an outright assumption that high GWAG always mean grade inflation.

True enough, the trend on the yearly average GWAG (Fig 8 and 8-A) was observed to have been steadily going downward since 2017. From a *magna cum laude* level (1.40) prior 2017 the yearly average GWAG was downgraded to a *cum laude* level (1.53) upon the implementation of the new admission policy. The regression model likewise supports this observation (Figure 8-B). As previously explained, this trend can be attributed to the effect of the Adjustment Factor which makes possible the admission of those with lower GWAGs.

Likewise, there was a slight reduction in the yearly average NMAT as soon as the new admission policy was implemented in 2017 (Figure 9). An approximately one percentile decrease was observed. This downgrade was also supported by an increase in the number of accepted students with a lower NMAT bracket of 90 to 94 percentile (Figure 10) which is projected to further increase as shown by regression model and linear forecast (Figure 10-A). This occurrence is ironic or contrary to the expected corrective effects of the Adjustment Factor. Take note that the Adjustment Factor, having NMAT as a variable is in the numerator and as such the incorporation of it should favor those from pre-med courses with good performances in the NMAT. Thus, it is expected that the yearly NMAT would increase but ironically it did not.

It is unfortunate that this downtrend in the yearly GWAG and NMAT averages might have a bearing on or affect the future performance of UPCM in the Physician Licensure Examination (PLE). This apprehension is grounded on studies [30-32] that have established the predictive validity of GWAG and NMAT on PLE performance. Internationally similar correlation and predictive validity of nationally administered standardized tests, like MCAT with Licensure Examination like USMLE were likewise observed [33].

On the other hand, the new modified interview instrument and approach were formulated to elicit the non-cognitive attributes of the applicants that are deemed necessary to become competent and compleat physicians. These attributes mainly consist of empathy, compassion, patriotism, kindness, and dedication to service. In contrast to previous interview instrument which was a structured, specific questionnaire form, the new interview approach is in free form and

The policy revision that gave rise to drastic changes relates specifically to the utilization and incorporation of the Adjustment Factors. The Adjustment Factors had the biggest impact as these significantly altered the school/college/UP unit and pre-med course distribution profile of accepted first year students at UPCM. The Adjustment Factor was particularly instrumental in the reversal of the predominance in UPCM admission of UP Diliman applicants over UP Manila applicants. Since 2017, the graduates of UP Manila has been dominating admissions in UPCM because of the administration of Adjustment Factors.

Furthermore, the Adjustment Factor led to the abrupt decline in the admission of graduates of BS Psychology from UP Diliman in UPCM, while significantly increasing the admission of graduates of BS Public Health and BS Pharmacy, both from UP Manila.

Similarly, the Adjustment Factor remarkably resulted in the decline in the yearly average GWAG, lower NMAT bracket, and number of *magna cum laude* among the accepted applicants in UPCM.

The modified interview instrument and interview style cannot be connected to any significant changes in the admission parameters except that they had led to a steady rise in the yearly average interview scores. Likewise, the effect of the new conversion scale for the UP grading system did not lead to any substantial impact, as its effects were negated by the Adjustment Factors, by the high GWAGs, and by the fact that a great majority of applicants competing for admission were predominantly from UP.

The additional 20 admissions slots provided by the new policy cannot be associated with any changes in the admissions profile and demographics except that it simply increased the admissions at UPCM, particularly in the Academic category. The deferment of the admissions of six international students secured additional slots for local applicants.

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