

# Democratizing Data, from Data to Decisions

— Data Science and  
Explainable AI  
Conference for  
Public Policy

27–28 October 2025

8AM–5PM

via Zoom

**PROCEEDINGS 2026-33**

Data Science For Public Policy Program

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Data Science and Explainable  
AI Conference for Public Policy

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27-28 October 2025

Zoom

*Compiled by Lilian Jimenez-Marfil*

*DSPPP Research Analyst*



UNIVERSITY OF THE PHILIPPINES  
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Data Mining Analysis



# About the Proceedings

The Data Science for Public Policy Program (DSPPP) of the UP Center for Integrative and Development Studies (UP CIDS) conducted its 2025 Annual DSPPP Week Celebration with a two-day virtual conference and an exhibit of research abstracts on policies related to the use of data science at the UP Student Union Building. Research fellows and book authors presented their research outputs during the 2-day Conference entitled: "Democratizing Data, from Data to Decisions: Data Science and Explainable AI Conference for Public Policy." This virtual conference was attended by 204 participants and garnered excellent feedback from 174 respondents.



# Democratizing Data, from Data to Decisions

## Data Science and Explainable AI Conference for Public Policy

### Keynote Address

*Dr. Fidel Nemenzo*

*Institute of Mathematics, UP Diliman*

First Program Convenor and Founder of the DSPPP in 2017, Dr. Fidel Nemenzo, Professor at the Institute of Mathematics and former Chancellor of the University of the Philippines, Diliman rendered the keynote address. In his address, he reiterated that:

1. Data must serve the public good. Data is power. It can empower or exclude. The task is to make it work for everyone, not just the few.
2. Policy needs evidence, not anecdotes. Too many decisions are made without data.
3. Our problems are complex. We need evidence-based policy to address our nation's problems, which are complex and interconnected. The solutions will require collaboration across disciplines, not siloed [sic] ways of thinking.
4. Democratize data. Open, participatory, trustworthy data and science— so citizens can question, verify, and co-create solutions. A pitch for Open Data and Open Science
5. Universities as ethical stewards. Independent, interdisciplinary, public-minded institutions must lead—training people to translate analysis into accountable policy, and to ask not just can we, but should we, and for whom?
6. Human responsibility and agency. When we do data science and AI, we do not decide—people do. We need transparency, accountability, and equity at every step.

# Local Wisdom, Global Templates: Crafting a Culture-Responsive AI Law for Indonesia

*Dr. Wishnu Agung Baroto*

*Directorate General of Taxes, Ministry of Finance*

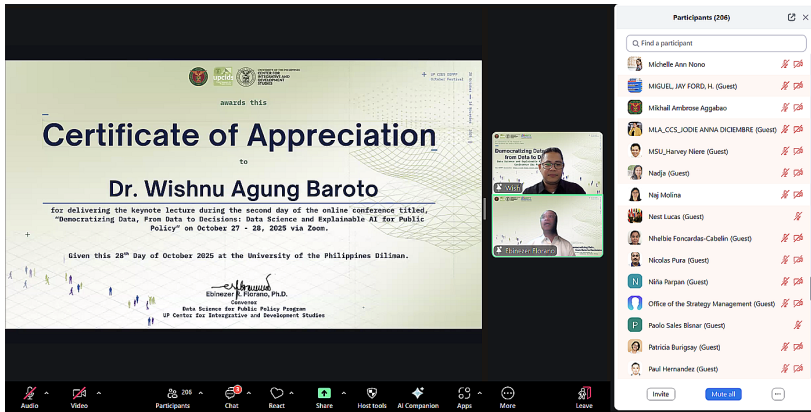
Dr. Baroto, tax auditor at Indonesia's Directorate General of Taxes at the Ministry of Finance and doctoral researcher at the Institute of Science, Tokyo presented his paper entitled, "Local Wisdom, Global Templates: Crafting a Culture-Responsive AI Law for Indonesia." His study is focused on collaborative privacy protection and digital forensics in cyber investigation. His presentation provides us ideas on how to craft our own artificial intelligence (AI) Law as his aim is to do a comparative study of AI policymaking with the Philippines. His work on data analytics and AI seeks to enhance forensic intelligence and regulatory decision making, reinforcing trust, transparency, and cross-border cooperation in the digital public sector. Dr. Baroto contended that the "one size fits all" saying is not applicable to the Indonesian and Filipino contexts, hence, copy-pasting from the EU AI policy is not commendable.

1. AI systems encode the moral logics of their designers.
2. Imported laws risk losing meaning when applied in different moral ecosystems.
3. Cultural fit is not ornamental—it is a precondition for enforceable AI ethics. Indonesia can evolve from regulatory latecomer to regional exemplar of culture-responsive AI governance.

## *Open Forum*

Dr. Florano, DSPPP Convenor opened the forum by posing this question to the audience: What do you think is the governance pattern fitting for the Philippines that will be effective versus graft and corruption? (a) state-steered, (b) ex-ante risk management, or (c) moral-harmony integration?

Some responses elicited from the participants such as Sittie Haina T. Maruhom opined that a hybrid governance approach that is primarily rooted in (a) hybrid governance approach, (b) ex-ante risk management and reinforced by (c) moral-harmony integration is applicable. Meanwhile, Michelle Ann Nono stated



that moral-harmony integration seems like the most appropriate but hard to achieve due to the political climate in the Philippines (especially due to partisan politics and almost a cult-like following of masses to certain politicians). Lastly, Pompeyo III Adamos mentioned that there could be a state-steered approach, going to ex-ante risk management, then a moral-harmony integration approach.

## Estimating the Cost-Effectiveness Threshold for the Philippines: A Supply-side Approach

*Dr. Mac Ardy J. Gloria, RPh*

*Associate Professor and Dean, College of Pharmacy, University of the Philippines Manila*

Dr. Gloria contended that to realize the implementation of Republic Act no. 11223 or the “Universal Health Care Act of 2019,” the government must efficiently allocate limited resources. There should be increased recognition of evidence from cost-effectiveness analyses (CEA) as the type of economic evaluation that can be used to compare costs and outcomes of alternative technologies computed as follows:

$$\text{INCREMENTAL COST EFFECTIVENESS RATIO} = \frac{\text{DIFFERENCE IN COSTS}}{\text{DIFFERENCE IN OUTCOMES}} = \frac{C_1 - C_0}{O_1 - O_2}$$

Cost effectiveness threshold (CET) represents a cut-off point for activity allocation in a budget-constraint context. It refers to a critical ratio between monetary costs and measure of health gains, which provides an external

criterion to determine whether an alternative is cost-effective or not. In the Philippines, there is no explicit CET by which decisions of cost-effectiveness can be made. Consequently, this opens the opportunity to develop a supply-side approach that anchors CET on the health system's budget and capacity to deliver services, making resource allocation more aligned with what the system can sustainably afford.

A study by Pichon-Riviere et al. (2023) revealed that the relationship between the incremental cost effectiveness ratio (ICER) of new interventions and the rate of increase in health expenditure per capita and life expectancy at the country level or health-care-system level is the basis for our estimation of cost-effectiveness thresholds.

**FORMULA TO COMPUTE FOR ICER**  
(Pichon-Riviere et al., 2023)

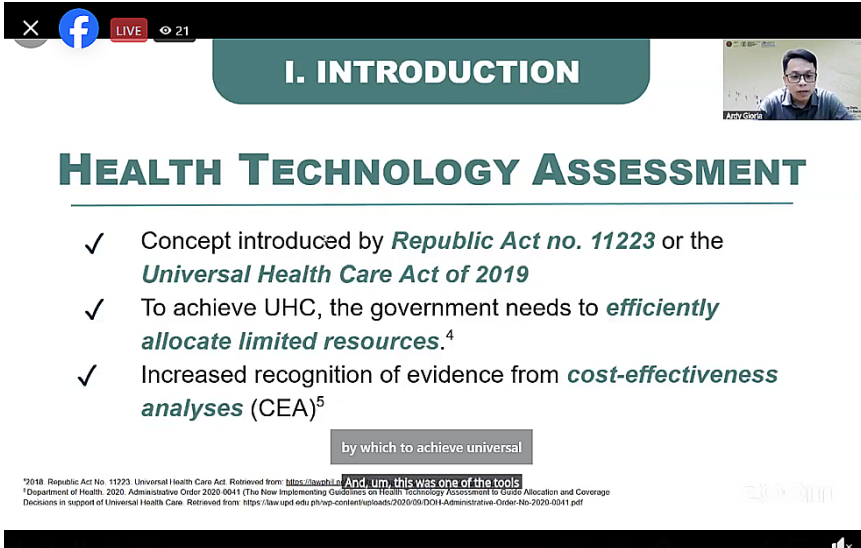
$$CET_{LY}(ICER) = \frac{\% \Delta h \times HEpc \times (LE + \Delta LE)}{\Delta LE}$$

The identified **target increase in HEpc** and **in population LE** (% $\Delta h$  and  $\Delta LE$ ) of a country or health system for a given period can be used to compute for *an average ICER value* that would *ensure that the influence of adopting a new health intervention be consistent with the expected vector of influence*

To compute the cost-effectiveness threshold for combined metrics of healthy life, the study incorporated the ratio between the health-adjusted life expectancy and the life expectancy at birth at the population level.

Data collection was made by requesting country-specific information from the Philippine Statistics Authority (PSA). Health expenditure per capita and gross domestic product from 2010 to 2024 were extracted from the data given by the Macroeconomic Accounts Service department. The expected annual increase in life expectancy was statistically derived from the information released by the National Statistics Office and the PSA.

Life expectancy was reported in five-year intervals. Because of this, the annual factsheet for women and men of the Philippines was considered to derive an annual measure of life expectancy. The five-year forecasted life expectancy weighted by the population projections from the report was used as an estimate to cover the years of interest, 2010 to 2024. Data was analyzed using frequency statistics and presented through a narrative summary of the evidence in both text and tabular forms.



I. INTRODUCTION

## HEALTH TECHNOLOGY ASSESSMENT

- ✓ Concept introduced by *Republic Act no. 11223* or the *Universal Health Care Act of 2019*
- ✓ To achieve UHC, the government needs to *efficiently allocate limited resources*.<sup>4</sup>
- ✓ Increased recognition of evidence from *cost-effectiveness analyses* (CEA)<sup>5</sup>

by which to achieve universal

\*2018 Republic Act No. 11223 Universal Health Care Act. Retrieved from: [https://lawphil.net/And\\_um/this\\_was\\_one\\_of\\_the\\_tools](https://lawphil.net/And_um/this_was_one_of_the_tools)  
 †Department of Health. 2020. Administrative Order 2020-0041 (The New Implementing Guidelines on Health Technology Assessment to Guide Allocation and Coverage Decisions in support of Universal Health Care. Retrieved from: <https://law.upd.edu/np-content/uploads/2020/05/DOH-Administrative-Order-No-2020-0041.pdf>

The study concluded that most of the ICER values from the scoping review (83 percent) and the computed CET using country-specific data was lower than the World Health Organization' recommended benchmark of one to three times a country's GDP per capita.

This commonly used CET of one to three GDP per capita seems to be too high for all countries, but especially low-to-middle-income countries where the potential health losses from misallocation of the same money are greater. This highlights the importance of aligning CET values with actual costing and outcome data within a specific healthcare setting rather than relying on generalized global benchmarks.

- Published studies were heterogeneous and did not generally follow a standardized guideline nor a formal healthcare economic evaluation (HEE) process;
- But still, it is important to note that the Department of Health (DOH) health technology assessment HTA Council and HTA Unit recently published the HTA Methods Guide that included the prescribed national guidelines on how to assess the economic implications of HTA and how to produce standard HTA reports for health decision-makers and other target audiences in the health system. However, a methods guide still did not indicate an explicit threshold.

Vallejo-Torres et al. (2023) published their critique of Pichon-Riviere's method. They primarily question the appropriateness of Pichon-Riviere's recommendation of using the historical median evolution of countries with similar income categories in computing CET values. Additionally, both life expectancy and health expenditure may be distorted by economic or health crises. This introduces confounding and reverse causality between health and health spending since it does not account for situations that may affect these parameters. It is important for causes and directions of changes in health-care needs be incorporated in estimating health opportunity costs. Not doing so may over- or underestimate the computed CET value and lead to a counterintuitive CET.

The policy recommendation made was that the Department of Science and Technology (DOST)-HTA should consider the use of a CET value that considers the government's capacity to pay as influenced by health expenditure per capita to ensure the appropriateness of their decisions and recommendations regarding health technology assessments. Further research and regular updates to the CET are encouraged to ensure that it remains responsive to changes in the health system and economic conditions.

### ***Open Forum***

Kennedy Cuya recalled Motorola, once a tech giant that faded from the spotlight because they resisted market trends and prioritized their own agenda over innovation. According to Cuya, today's rapidly evolving landscape, especially with the rise of AI, ignoring transformative technologies could lead us down the same path. He stated that if we do not embrace AI, we will be left behind.

Marvin Tejada emphasized that the topic on universal health care in the Philippines should be vigorously discussed. According to him, it is a hapless state that citizens are deprived of quality public health care; whereby, 44.4 percent of out-of-pocket expense on health care is a big gap that needs to be acted on by policy makers. He further lamented that in the state of our health care, poor Filipinos are resigned to dying without getting proper medical intervention, since they do not have the means to pay. Worse, hospitalization and medical bills are amounting to hundreds of thousands of pesos, if not more than a million. He further observed the limited access to medical treatment and health care in emergency cases. Tejada further noted that in the country where he is stationed, residents do not have to shell out a fortune to access health care.

# Using Microsoft Power BI for Data Visualization and Analytics: A Project on Pharmaceutical Workforce and Education in the Philippines

*Dr. Margarita M. Gutierrez, RPh, MHPEd*

*Associate Professor and Chairperson, Department of Clinical, Social, and Administrative Pharmacy, University of the Philippines Manila*

Dr. Gutierrez' study presented the following premises:

- Explanation of the development process behind the Pharmacy Education and Practice Roadmap, including key stakeholders and methodologies involved;
- Demonstration of how the researcher leveraged Microsoft Power BI to generate data-driven insights that informed strategic recommendations within the roadmap; and
- Description of policy recommendations outlined in the roadmap to understand their potential impact on pharmacy education and practice in the Philippines.

The study methodology used was an explanatory sequential mixed-methods design with two phases: (1) quantitative data collection and (2) qualitative data collection. The quantitative data collection involved a compilation and analysis of pharmacy workforce and education data (2010–2024) using Power BI dashboards to identify supply–demand trends and policy gaps. A comprehensive literature review of laws, policies, standards, and guidelines (LPSGs) were collated from online sources and turned into a repository to establish a foundational understanding of existing policies.

The qualitative data collection was guided by the insights from Power BI that was carried out to add contextual depth to the study. This involved ten focused group discussions (FGDs) conducted across varying regions in the country, through capturing multifaceted viewpoints, and more so, ensuring the inclusion of rural perspectives in pharmacy education. This was complemented by four stakeholder consultations led by trained facilitators to consolidate the findings per region.

This study resulted with the following actionable recommendations:

- Upgrade the salary grade of government-employed pharmacists to be competitive with other health professionals, recognizing the complexity and critical nature of their responsibilities.
- Establish plantilla positions for pharmacists in all relevant government agencies and healthcare facilities to ensure job security, professional recognition, and long-term workforce stability.
- Implement a tiered salary system that reflects increasing levels of professional qualifications, certifications, and continuing education achievements.
- Strengthen the role of pharmacists in the public sector to attract talent and encourage competition with private sector opportunities, ensuring equitable access to pharmaceutical care across all regions.
- Establish comprehensive incentive packages for pharmaceutical professionals in Geographically Isolated and Disadvantaged Areas (GIDAs) to bridge the urban-rural divide in pharmaceutical care.

In conclusion, despite the comprehensive scope of Republic Act No. 10918, which aims to advance pharmaceutical care in the Philippines, persistent gaps remained, hindering its full implementation. Addressing these gaps require strategic policy interventions guided by the pharmacy roadmap to strengthen pharmacy education, workforce development, and public health service delivery.

This study advocates for the following policy recommendations:

- Policy Recommendation 1: Institutionalize a Power BI–Based National Dashboard for pharmacy workforce monitoring and strategic planning. This will enable evidence-based decision-making and improve transparency across government agencies.
- Policy Recommendation 2: Amend CHED Memorandum Order No. 25, S. 2021 to update the Policies, Standards, and Guidelines (PSGs) for the Bachelor of Science in Pharmacy Program, ensuring alignment with evolving industry demands and global best practices.
- Policy Recommendation 3: Enact a Supplementary Law to Republic Act No. 10918 to expand its provisions and operationalize emerging needs in pharmaceutical care, including tele-pharmacy, sub-professional roles, and rural incentives.

## *Open Forum*

Marvin Tejada affirmed that the study highlighted the challenges that can be encountered at the local government unit (LGU)-level and can be augmented by telehealth care services. Following this, he asked whether Dr. Gutierrez' research considered the emergent dispensation of medicines intended for disaster-induced occurrences, knowing that the Philippines is a disaster-prone archipelagic island nation.

Dr. Gutierrez replied that in the roadmap, one of the key priorities is enhancing disaster response and emergency preparedness as a core competency for Filipino pharmacists. She emphasized that pharmacists should play an active role within the Health Emergency and Disaster Risk Management (HEDRM) framework, in alignment with the Philippine Disaster Risk Reduction and Management Act of 2010 (R.A. No. 10121). This means being involved in emergency pharmaceutical logistics, promoting rational medicine use, and ensuring uninterrupted pharmaceutical services during crises. Part of her advocacy is proposing that all first- to third-class municipalities have registered plantilla pharmacists. These pharmacists would also oversee pharmaceutical services in fourth- to sixth-class municipalities, as satellite areas. This networked structure fosters a more coordinated and efficient approach to medicines management at the local level. It also strengthens disaster preparedness by ensuring that all communities benefit from professional oversight, building a more responsive, equitable, and resilient pharmaceutical system nationwide.

Christina Michaela Cambiado followed up with a question: "If the UP Manila College of Pharmacy adopts a ladderized education framework, how is the Return Service Agreement (RSA) integrated into this system?" She further asked: "Would RSA obligations apply proportionally across each level, or only upon completion of the final degree? Has there been any consideration or discussions on how the RSA obligations would apply?"

Dr. Gutierrez emphasized that she is also the RSA Coordinator for the College of Pharmacy. To put RSA in context in accordance with R.A. No. 10918, it is a signed contract between the graduate students and the College of Pharmacy that requires the graduated, registered, or licensed pharmacist to serve the Philippines for two years within the five years period after graduation or a total of 4,000 hours. Within that two-year period, working as a researcher or teaching assistant before they become fully licensed pharmacist is considered part of their service.

# Data for Good: Advancing an AI-Powered One Health Approach to Rabies Elimination in the Philippines

*Prof. DJ Darwin R. Bandoy, DVM, Ph.D*

*Associate Professor of Epidemiology, College of Veterinary Medicine  
University of the Philippines Los Baños*

Dr. Bandoy reported that rabies in the Philippines continue to cause preventable deaths each year, despite the availability of effective disease control measures. Global partners have committed to eliminate dog mediated human rabies by 2030 and emphasize vaccination of at least 70 percent of dogs as the central strategy. Population estimates vary dramatically by denominator at a 1:10 ratio, with estimated dogs at around 11 million. This rises to around 22–30 million at 1:3.7 - 1:5 denominator. Accurate denominators are the foundation for planning vaccination campaigns. If 3 million dogs are vaccinated, coverage ranges from 27 percent (1:10) down to 10 percent (1:3.7). Low coverage prolongs transmission and undermines elimination timelines. Achieving 70 percent requires scaling vaccination along with accurate population estimates.

Dr. Bandoy demonstrated a rigorous and auditable workflow that uses two large language artificial intelligence models to accelerate data and policy analysis. He used to compare OpenAI ChatGPT 5 used with Deep Research and Anthropic Claude Sonnet 4.5 using a standard prompt header. Outputs were assessed on factual grounding, numerical fidelity, traceability, policy specificity, handling of ambiguity, and supervision effort. Low case counts often reflect detection failure rather than disease absence. Most provinces lack rabies diagnostic labs; only roughly 2 percent of infections are confirmed. Philippine Animal Health Information System (PhilAHIS) and NaRIS operate in siloes with less than 20 percent of LGUs reporting with no interlink. Real-time integration of animal and human bite data is essential for One Health surveillance.

## **Results**

- Denominator Insight and Mathematical Impossibility: Even vaccinating every dog counted using the 1:10 ratio yields only about 25–35 percent true coverage. Regions like Davao reported 80.6 percent coverage, but continue to see human deaths, with true coverage around 30 percent. This

means that policy and procurement decisions built on flawed denominators cannot succeed.

- **Institutional Orphaning:** Dogs are excluded from major agricultural development funds and human health research priorities. This fosters chronic underfunding as well as dependency on donor grants and episodic executive orders. Structural reform is needed to recognize dogs as critical to human health and to allocate sustainable resources.
- **The Detection Illusion:** Zero reported cases often reflect limited surveillance rather than elimination success. Passive surveillance confirms less than 2 percent of infections; many provinces lack laboratories and sample transport funds. Rabies declarations must be grounded in diagnostic capacity, not absence of reported cases.

### ***Policy Implications***

- **Update Planning Denominators:** Replace the 1:10 ratio with locally validated ratios (1:3–1:5) and adopt dynamic estimates for annual planning.
- **Create Dedicated Funding Streams:** Amend legislation to include dogs in agricultural funds and allocate sustained budgets for canine vaccination and surveillance.
- **Integrate Data Systems:** Unify animal and human surveillance platforms such as the Phillippine Animal Health Information System and the Rabies Data Share System (PhilAHIS/RaDSS) and mandate regular reporting by all LGUs.

### ***Recommendations and Action Plan***

- Recalculate vaccination coverage using realistic dog: human ratios (1:3–1:5);
- Align budgets to per-dog cost metrics and scale both canine vaccination and human post-exposure prophylaxis (PEP).
- Map workforce, pound capacity, and cold chain needs at municipal levels.
- Assign clear program owners and legal mandates across all action items.
- Implement unique pet IDs and link municipal registries to PhilAHIS/RaDSS.

- Combine parenteral and oral rabies vaccination with spay/neuter and enforce dog meat bans.

### *Limitations and QA Protocols*

Limitations	Quality Assurance
Data gaps at municipal level; dog census last conducted in 2018.	Mandatory triangulation across at least two primary sources for every statistic.
Budget execution data often unavailable; disbursements may lag appropriations.	Expert review of AI outputs for factual and contextual accuracy.
Diagnostic coverage limited; language barriers for local reports.	Archived prompts, model versions and extraction sheets ensure reproducibility.

### *Conclusion and Future Work*

Dr. Bandy concluded by highlighting how large language models (LLMs) shorten the evidence-to-policy cycle and expose systemic contradictions. Furthermore, he added that realistic denominators, integrated data systems, and dedicated funding are prerequisites for rabies elimination. Dr. Bandy also emphasized that future work should explore multi-model AI architecture, integrate Filipino language sources, and continuously update estimates. Lastly, he underscored that partnership among veterinarians, epidemiologists, AI practitioners, and policymakers are keys to success.

### *Open Forum*

Marvin Tejada posted the following questions: “Do we have ready vaccines stored in each LGU for rabies-related, snake bites, etc. incidents? Are there enough vaccines on stock to cover these incidences?”

Adding to this, a participant from DepEd Laguna stated that there are provisions in municipalities for vaccines in animal bite centers (ABCs). Indigents bitten by dogs need not avail of these PHP 650-700 worth of vaccine fees in commercial ABCs. However, those free ABCs are also limited. In some municipalities, anti-rabies vaccine dispensations are scheduled once a year, however most of the time these are not sustained. The participant also highlighted that in UPLB, a program for dogs within the campus and pets within the UPLB housing areas are vaccinated yearly, with vaccination cards

issued. The participant contrasted this with the Provincial Agriculture Office, wherein anti-rabies vaccinations are available, albeit without vaccine cards, meaning the non-existence of digitalization of records.

Marvin Tejada followed up by asking how AI capability can be validated for healthcare use as to detect disinformation along with hallucination. According to him, this is sensitive since people rely on medical information with correct diagnoses and dispensation of right medicines and treatment.

The participant from DepEd Laguna complemented Dr. Bandyoy for highlighting the cost-effectiveness of vaccinating the dogs instead of people bitten by dogs. Based on experience, humans need four to six vaccines, depending on the severity of the scratch or bite. Further adding to the cost is the distance that some patients travel just to avail of the treatment.

Michelle Ann Nono added that another reason to impose regulations for vaccination aside from its cost-effectiveness is the increase in mortality cases due to late testing and diagnosis. She opined that households with pet dogs or cats usually have children who would not report that they have been bitten or scratched by their pets. She emphasized that vaccination should really be strictly imposed.

The participant from DepEd Laguna asked what could be the possible policy that LGUs can adopt to better account for the dog population in relation to the 70 percent target for anti-rabies vaccination, which may be an unrealistic estimation. The participant further inquired on how to integrate an ordinance for pet owners to be more responsible in registering their pets.

Joining the discussion, Leizle Arlando mentioned that in government offices, only the LGUs are allowed by law to cover payment of premiums for HMOs of their employees (plantilla). The reason that it is not generally allowed is because employees have PhilHealth.

Christina Michaela Cambiado asked: “Given the fragmented responsibilities in rabies prevention, where no single national government agency fully owns the vaccination mandate, how can a hybrid approach be implemented to strengthen LGU capacity to ensure dog vaccination, while fostering a whole-of-government response that integrates the roles of national agencies such as the Department of Agriculture, Department of Health, Department of the Interior and Local Government, and Department of Science and Technology for coordinated funding, technical support, and monitoring?”

Dr. Bandy responded to the reactions, stating that the challenge is that there is an already existing framework, that is, the “One Health Coordinating Agency.” However, it is yet to see a whole of government approach because of institutional siloes. The DOH will have its own piece of the rabies pie, as well as, the Bureau of Animal Industry and the LGU. However, the Bureau of Animal Industry does not have direct power over LGU veterinarians. This highlights how fragmented the institutional setup is. According to Dr. Bandy, “the simplest version to address this is to at least have a municipal resolution during pandemic where you have an interagency task force that coordinates data flow from animals to humans.” He underscored how the Philippines do not have a Center for Disease Control (CDC) similar to other countries that would trace the cases from animals to humans and vice-versa. There must be laws to create the formal infrastructure for the CDC-Philippines.

Leizle Arlando added that the GAMOT program seems promising. However, she noted that it is also too good to be true. Based on her inquiry with hospitals/accredited facilities, they cannot implement it yet as they are waiting for a mechanism or system from the DOH for its implementation. Only doctors accredited by the DOH for Yakap Clinic can prescribe medicines that can be availed through the GAMOT app. This means that prescriptions from a doctor need an accredited doctor that will prescribe meds.

Dr. Gutierrez mentioned that GAMOT is the guaranteed access to medicine for outpatient treatment. There are already 75 medicines covered under this package that can be availed thru PhilHealth with a budget of PHP 20,000 per patient each year. One requirement to setup a “botika” or pharmacy is to be a GAMOT provider under PhilHealth and they should have a registered pharmacist. Dr. Gutierrez encouraged all LGUs to setup their own pharmacy to provide GAMOT access to their constituents. Botika ng Bayan has a different framework from GAMOT which is funded by PhilHealth, which means all of us paying PhilHealth should make use of our hard-earned money to avail of the PhilHealth’s GAMOT package.

# Validating the Analytics-Based Model of *Pakikipagkapwa*

**Dr. Vladimer Kobayashi**

*University of the Philippines Mindanao*

**Prof. Cristabel Tiangco, Dr. Purisima Panlilio, Prof. Remi De Leon, Engr. Angela Carreon, and Dr. Maria Margarita Lavides**

*UP Diliman Extension Program in Pampanga*

Dr. Maria Margarita Lavides presented this article written by the Culturomic's team. *Pakikipagkapwa* was simply defined as treating others as fellow human being. The introduction of social media in the Philippines, provides the opportunity to study *pakikipagkapwa* using social media data. However, few have explored the use of internet data and even fewer have applied a data science approach.

Their study aimed to unravel answers to the following research questions:

- First, how is *pakikipagkapwa* expressed in online platforms (e.g., YouTube, Twitter, PinoyExchange, Facebook, and Reddit)?
- Second, how does the online expression of *pakikipagkapwa* compare with the findings of earlier studies on *pakikipagkapwa*?
- And finally, what recommendations can be drawn from the findings to develop policies which would promote *pakikipagkapwa*?

The team collected the data through web scraping, employing technologies and tools to automate the data collection and data organization using programming languages (e.g., R or Python) and software libraries (e.g., Selenium, BeautifulSoup, snsrape, etc.).

Data Source	Number of Scraped Comments
Youtube	54,749
Subreddit Philippines	51,500

Data Source	Number of Scraped Comments
Twitter (now X)	359,898
Philippine expat forum	295
Skyscraper city	171,446
Pinoy Exchange	3,766
Expat.com	73
Total	641,727

Before text analytics techniques were applied, they first preprocessed the text. The resulting preprocessed text retains most of the semantically relevant words, and hence, did not substantially change the original meaning of the text. Then separate topic models for each source were applied. After obtaining the topics, each topic was labeled whether it was about *pakikipagkapwa* or not. The labeling was done based on keywords as they relate to the concept of *pakikipagkapwa* as well as the labeler's personal knowledge about the concept.

In total, there were 20 topics from PinoyEx that are relevant to *pakikipagkapwa*. For the other sources: there were 6 topics from Philex, 73 from Twitter, 3 from Skyscraper, and 3 from Reddit. Hence the total number of topics labeled positively is 105. Each of the 105 topics was further labeled according to what aspect or dimension of *pakikipagkapwa* is expressed.

A survey administered both online and offline was conducted that obtained 329 respondents who were predominantly female (61.3 percent) and male pegged at 34.8 percent. Remaining portion came from non-binary genders and those who preferred not to reveal their genders. Majority of the respondents were students (56.1 percent); followed by private sector employees (18.2 percent); and government employees (12.2 percent); while the rest of the respondents were teachers, self-employed, and unemployed individuals.

The study concluded that: 1) culture is a viable lens for understanding reality; 2) the use of data science methods can offer a broader perspective on cultural phenomena; and 3) culture-based studies can provide insights to support policymaking.

## Open Forum

Dr. Florano opened the forum for questions by asking whether *pakikipagkapwa* could be a medicine or a poison for good governance in the Philippines?

Dr. Lavidés responded that *kapwa* is a world view dating back to precolonial times. It stems from *damayan* which have two main concepts: equality and interconnectedness. Equality is always at the heart of every policy meaning non-discrimination. If there is interconnectedness, people in government are more likely to consult the citizens and have compassion. The concept of *pakikipagkapwa* is to treat others as *kapwa* with “*dangal*” or seeing the other person’s dignity. If the manner of governance among government employees embodies *pakikipagkapwa*, then we will have a government that is more human-centered, compassionate, with less corruption, and better governance. Dr. Lavidés further added that the precolonial Philippines was largely an egalitarian society. Noting other similar cases, she highlighted Japan’s sense of collectivism that would avoid inconveniencing others.

Paolo Sales Bisnar added that *pakikipagkapwa* is part of the culture. Enculturation begins at home, and early education. However, he noted that most who started as *bantay-bayan* eventually became *bantay-salakay*.

Relly Bernardo stressed that “it takes a village to raise a child.” This means that it is everybody’s responsibility starting from home, school, government, community.

Dr. Lavidés stated that the concept of *pakikipagkapwa* is broad and it involves the concept of “*bayanihan*” which is a form of *pakikipagkapwa*. She highlighted that when they started the study by data scraping the internet, there were 600,000 comments on the topic, some are positive and others are discriminatory. When you use data science it provides a phenomenon while using qualitative research gives you a worldview. According to Dr. Lavidés, studying *pakikipagkapwa* showed the cultural phenomenon on a worldview platform. *Bantay-bayan* is also a form of *pakikipagkapwa* taken positively as “*malasakit*” or compassion for others. While *bantay-salakay* has a negative dimension and is not *pakikipagkapwa*.

Dr. Bandoy asked if political collusion can be considered as a form of *pakikipagkapwa* between and among congressmen. The participant from DepEd Laguna added that, for them “*pakikisama* to the extent that the complicit turns a blind eye to corruption” is corruption. Marvin Tejada

responded to the prior comment, emphasizing that “*dangal*” is the word to avoid complicity. Dr. Lavidés stressed that “*dangal*” is in the center of *pakikipagkapwa*. There must be interconnectedness, equality, and honor.

Lorienel Madeloso asked Dr. Lavidés if *pakikipagkapwa* can be the key to breaking the cycle of *rido* in the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM)? Dr. Lavidés stated that “if *rido* violates the dignity of other persons” and both equality and interconnectedness are absent, then that is not *pakikipagkapwa*. Harvey Niere introduced the use of game theory, where *dangal* and *pakikipagkapwa* can be modelled as a repeated “Prisoner’s Dilemma game.” If *dangal* is low, the Nash Equilibrium is to become selfish.



# **Center for Integrative and Development Studies**

Established in 1985 by University of the Philippines (UP) President Edgardo J. Angara, the UP Center for Integrative and Development Studies (UP CIDS) is the policy research unit of the University that connects disciplines and scholars across the several units of the UP System. It is mandated to encourage collaborative and rigorous research addressing issues of national significance by supporting scholars and securing funding, enabling them to produce outputs and recommendations for public policy.

The UP CIDS currently has twelve research programs that are clustered under the areas of education and capacity building, development, and social, political, and cultural studies. It publishes policy briefs, monographs, webinar/conference/forum proceedings, and the Philippine Journal for Public Policy, all of which can be downloaded free from the UP CIDS website.

## **The Program**

The Program on Data Science for Public Policy (DSPPP) aims to build the data science knowledge and capacities of academics, researchers, and policymakers, as well as, decision-makers from various sectoral stakeholders, and apply this learned skill to public policy and governance. DSPPP strives to engage a community of researchers within the university and encourage the pursuit of interdisciplinary problem-oriented research using high-level quantitative analysis. It seeks to convene multidisciplinary teams of social scientists, humanists, and scientists to research issues in the public sector.

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