

COVID PULSE PH

How might we innovate data collection to analyze the impacts of COVID-19 among vulnerable populations?

PHASE 1: INSTRUMENTATION

April 16-May 19



The Situation

- The **Coronavirus Disease 19 (COVID-19) pandemic** is causing negative impacts on health systems and economies around the world.
- The entire Luzon was placed under “**enhanced community quarantine**” (**ECQ**) from 16 March until 15 May 2020 to restrict movement and promote physical distancing in order to arrest the rate of infection. This was followed by some local governments in Visayas and Mindanao which imposed localized lockdowns, affecting the movement of goods in the process.
- Understanding the psychosocial, health, and socioeconomic impact of the COVID19 pandemic to the most vulnerable groups — the elderly, chronically ill, immuno-compromised, and especially those in extreme poverty who are most at risk due to limited assets to be resilient — is critical in **programming an inclusive response**.

The Challenge

- **Data for inclusive response:** Lack of timely and reliable data in assessing and measuring the socioeconomic impact of the COVID19 pandemic to vulnerable groups poses a challenge to the government and development actors in defining appropriate responses.
- **Limited means of collecting data due to quarantine:** With the country on enhanced community quarantine, regular survey methods such as face-to-face interviews cannot be done. Alternatives such as phone interviews are costly and time consuming, while online surveys are easy to deploy but the reach is very limited-- less ideal when the target population are poor and vulnerable sectors who have less access to the internet.

The Innovation

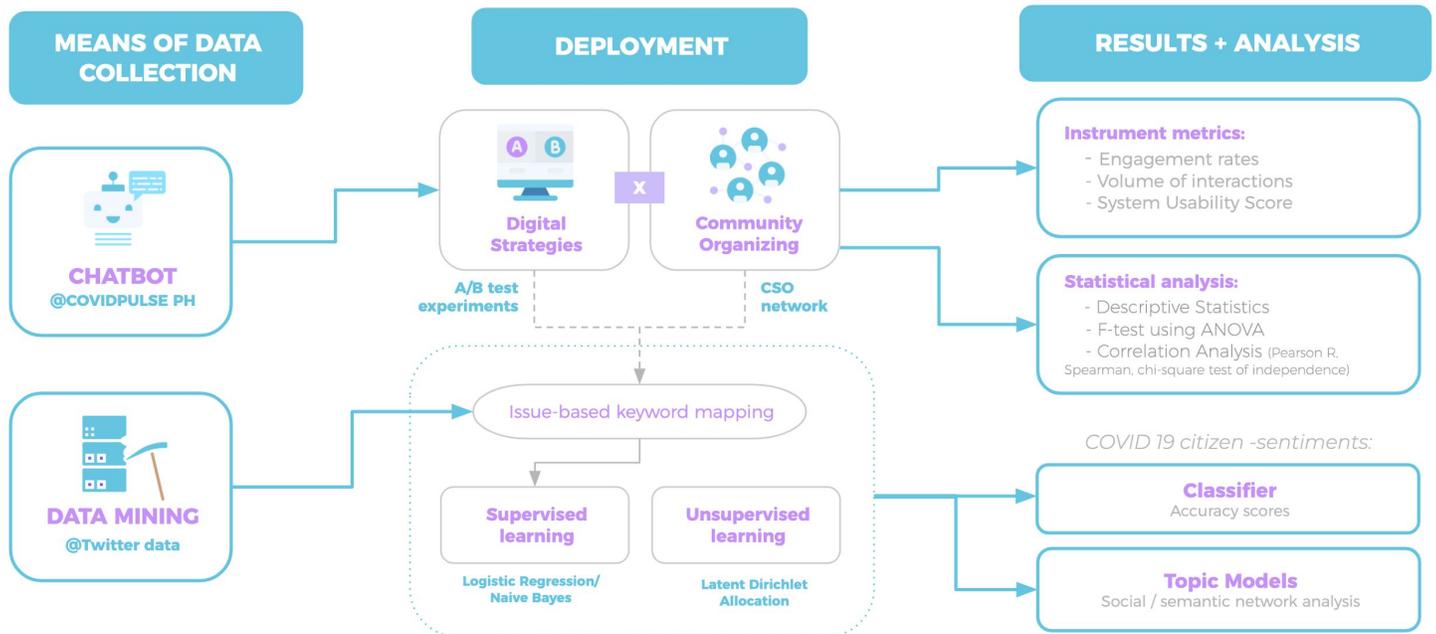
With the given restrictions of the quarantine, we explore new ways in utilizing existing digital resources such as the ubiquity of social media, chatbots, AI/ML tools, and free data access to **empower civil society organizations (CSOs) to amplify the voices of vulnerable and disadvantaged sectors** on the socio-economic impacts of COVID-19.

Our designed methodology builds on the social capital of CSOs to plant digital tools intended to serve as a safe space and **sustained channel for rapid data collection and open feedback among citizens** throughout, and possibly beyond, the period of the COVID pandemic.

AN OVERVIEW

In exploring alternative ways to rapidly determine the perceived socio-economic impacts of COVID-19, we combine chatbots and data mining to generate insights from stakeholders. **The target respondents for the chatbot tool are low-income households** while the target source for data mining scripts are tweets from users in Metro Manila.

Chatbots (bots) are conversational programs that either follow a set of rules or generate knowledge through training. For this survey use-case, the bot is named “**COVID PULSE PH**”, accessible at m.me/covidpulseph. The bot was deployed through digital promotion and on-ground mobilization with partner CSOs to build co-ownership and maximize reach to the intended demographic.



The initial open responses from the chatbot users are the basis in mapping relevant, issue-based keywords for data mining and application of AI/ML techniques that will help in identifying whether a string of text is related to COVID sentiments.

The expected set of results from the study are the following: (1) Instrument performance from the usability testing metrics, (2) statistical analysis of the survey responses, (3) topic models and/or a classifier from unsupervised/supervised learning techniques.

Survey questions and chatbot development

Relevant questions for the survey intent were lifted from the Household Socio-economic Impact Assessment (HSEIA) library and was vetted with the Zero Extreme Poverty Coalition (ZEP), the partner network of CSOs to align with ongoing data collection initiatives of the network. The **target respondents are low-income households** that are likely to be vulnerable especially to the secondary effects of the pandemic.

Once the questions were finalized, the technology partner, AI4GOV, started the production process from user interface and experience design, chatbot programming, to data flow setup. The pre-test was conducted on April 29 to respondents from Nagkaisang Nayon in Quezon City, and soft-launched on May 1-3 to test the performance and gather feedback before wider mobilization.



Once setup, chatbots can be easily iterated on the go with minimal compatibility issues in deployment, unlike mobile or web applications. Thus, it can adapt quickly from feedback to improve the user experience. This is important for agile development, especially in the context of rapidly changing situations. Through the pre-test and soft-launch, we gained insights from CSO mobilizers and direct comments in the bot on user reception of the tool, identified bugs, and adapted to user preferences, which was the basis of daily product refinements in preparation for advertising and community mobilization.

SIGNIFICANCE

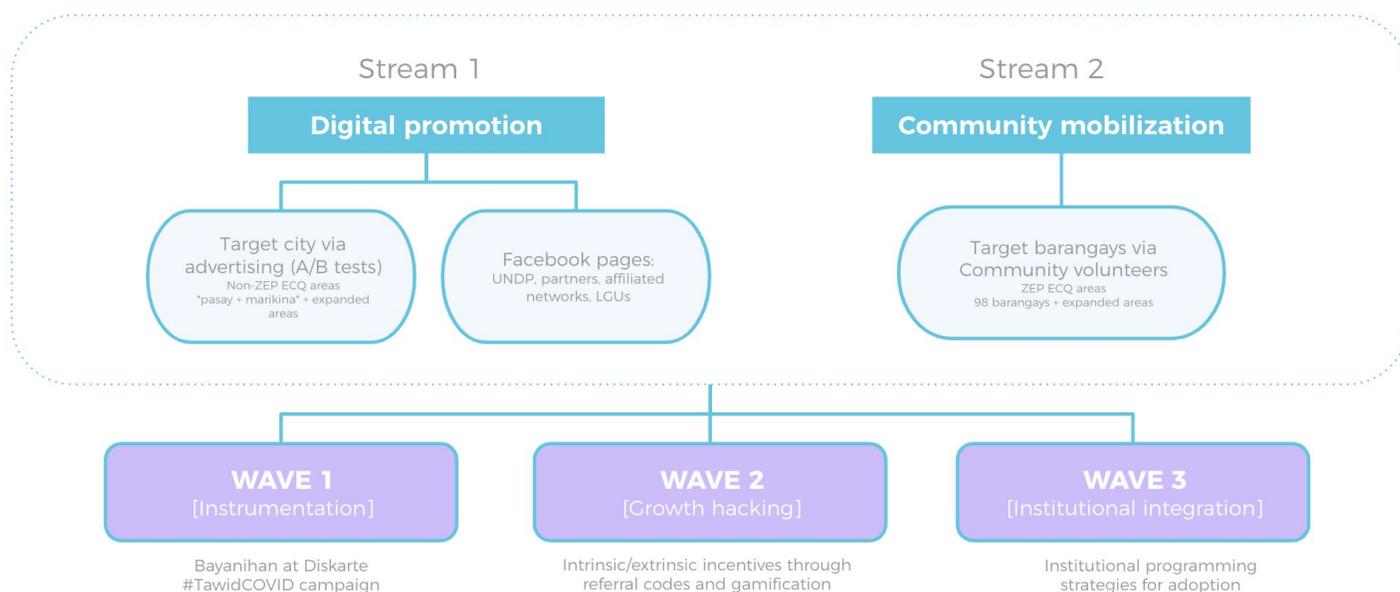
The purpose of the experimentation is to devise innovative tools that could be used in assessing COVID-19 impact in a way that decentralizes data collection and citizen engagement with co-ownership from civil society actors. This is a significant frontier with an implication beyond COVID response -- as it serves as a **foundational technology for deliberative democracy**.

Designed bots allow for inclusive modes of expression and citizen engagement -- a highly transformative tool when used at scale and with intent. It's best paired with a supplementary platform and socialization process with civil society to create feedback loops that may instigate informed deliberation and evaluation of government programs and policies.

Deployment strategy

The COVID PULSE PH bot is designed to be deployed in two streams: Stream 1-Digital promotion in social media channels and Stream 2- Community mobilization of the ZEP network.

There are three phases in the programming. Phase 1 “**Instrumentation**” (May) focuses on design and calibration of the survey tool to resonate with its target demographic; Phase 2 “**Growth Hacking**” (July) intended to optimize engagement strategies by intentionally incorporating intrinsic or extrinsic incentives in the design to drive use and growth of subscribers; Phase 3 “**Institutional Integration**” (August) intended to position the tool to be adopted by a target institution (state or non-state entity) for scaling and sustainability.



PHASE 1 IMPLEMENTATION

For Phase 1-Stream 1, we used digital promotion channels and posted creative assets on the social media pages of UNDP Philippines and ZEP affiliated network. We also prepared a digital strategy campaign to run **click-to-messenger advertisements** for a target reach of 159K to 462K viewers within a budget of P18K in Marikina and Pasay city, which are non-ZEP areas in Metro Manila, meant for A/B testing 4 types of campaign messaging materials.

We tested for transactional, affective, affirmative, and accountability-centered types of framing in order to optimize messaging for subsequent runs.

For stream 2, ZEP mobilized a total of 194 barangays in their network spread in 8 cities in Metro Manila and 4 cities in Cebu province.

In preparation for this, we aligned strategy with the CSO network and conducted an online orientation with ZEP's community mobilizers. Unique codes were generated per volunteer/ barangay, the data privacy policy was crafted, and protocol materials were prepared to assist community counterparts in informing target respondents of the COVID Pulse' purpose, usage guidance, terms and privacy policy, as well as the limitations of the tool.

PHASE 1 HYPOTHESIS

We have four hypothesis tested in Phase 1:

- 1) **Chatbots are accessible to low-income households and vulnerable sectors because of the cross-class ubiquity of messenger and availability of free data.** IF data shows that the survey deployed in messenger was able to significantly target respondents that belong to low-income households and used free data, THEN, chatbots are an accessible survey tool and feedback channel for disadvantaged/vulnerable sectors.
- 2) **The respondents will have a good user experience in using the COVID PULSE PH bot and are likely to recommend its use.** IF the bot scores high for System Usability Survey (SUS), between 70-90, and Net Promoter Score (NPS), 4-5, THEN, we have empirical basis to continue with the current design of the bot for subsequent runs.
- 3) **There is a significant difference between the different types of messages ran through A/B testing.** IF there is an ad-type that is significantly more cost-efficient than other types of ads in the campaign, THEN we can use the best performing ad to optimize subsequent advertisement campaigns.
- 4) **There are significant differences between the demographic profiles of people who engage with the bot.** IF there is a significant difference, THEN we calibrate the design and ways forward to resonate with the intended demographic profile.

PHASE 1 RESULTS

The scope of Phase 1 is limited to **instrumentation and preliminary sensing of survey responses**. The target areas were Metro Manila and Cebu, and the duration of data gathering is set from May 4-19 for NCR and until May 27 for Cebu.

Overall, there are 4,059 unique respondents who engaged with the bot and completed the survey from pre-test (April 29) to closing of Phase 1 (May 27). The users generated a total of 900K interactions with the bot with a daily average of 130 active users.

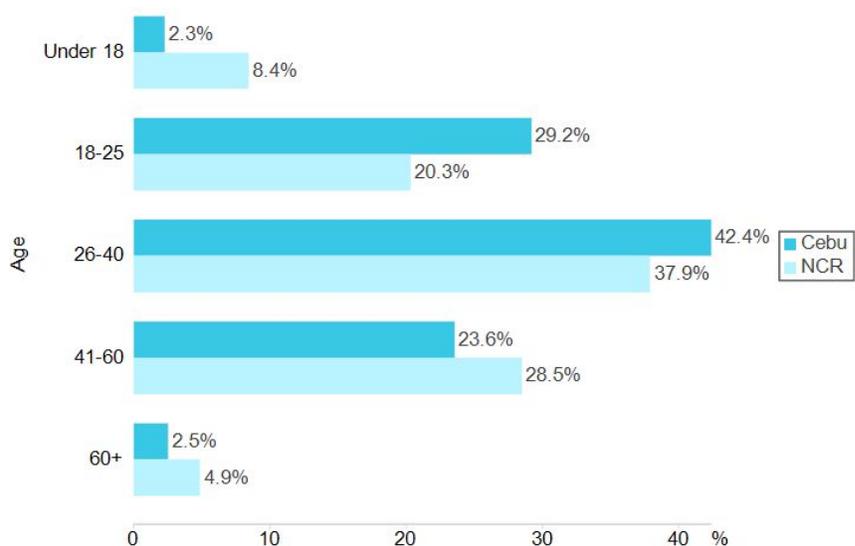
Given the set limitations for Phase 1 analysis, respondents who did not specify location or whose location is outside NCR or Cebu were trimmed from the dataset, leaving us with a total of **3,144 respondents**, 61% from 10 cities in Metro Manila and 39% from 4 cities in Cebu province.

Demographics of Respondents

Of the 3,144 respondents who completed the survey, 1922 were from the National Capital Region (NCR) and 1222 from Cebu Province; 97% or 3,072 were collected via on-ground mobilization with ZEP and 72 via advertisement. Majority of those who responded to the survey were female, specifically 77% in NCR and 73% in Cebu. While there are few respondents who identified they belong to LGBTQIA, about 2% in NCR and 1% in Cebu.

Most of the respondents are aged 26-40 years old. This pattern is similar in both NCR (38%) and Cebu (43%), while there are fewer respondents under 18 and above 60.

The result is the ideal age cohort for the survey since it's intended for adult representatives of a household.



Distribution of Age of Respondents by Area

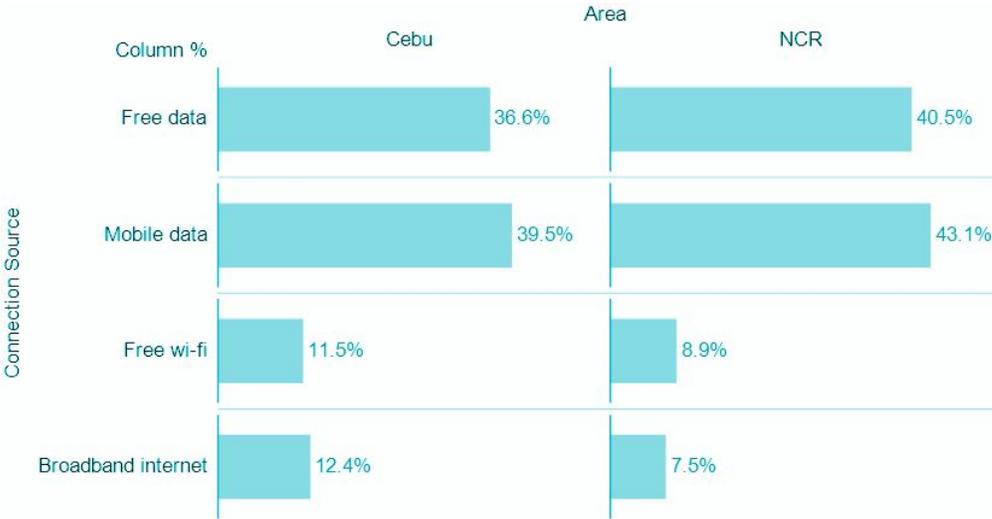
Looking at the sex by age distribution of respondents, there is a relatively higher percentage of respondents aged 26 and above who are female than below 26 years old. Distribution of sex and age between Cebu and NCR are similar.



Distribution of Age by Sex of Respondents between Areas

Connectivity

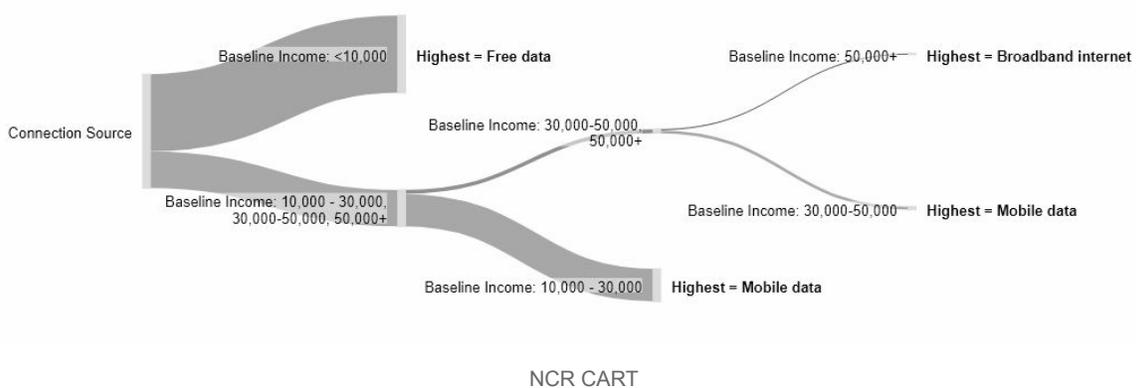
Most of the respondents are either using Free data or Mobile data to access the survey. There are about 8% to 12% who has broadband internet connection. Higher percentage of respondents in NCR are using Free data or mobile data as compared to respondents in Cebu.



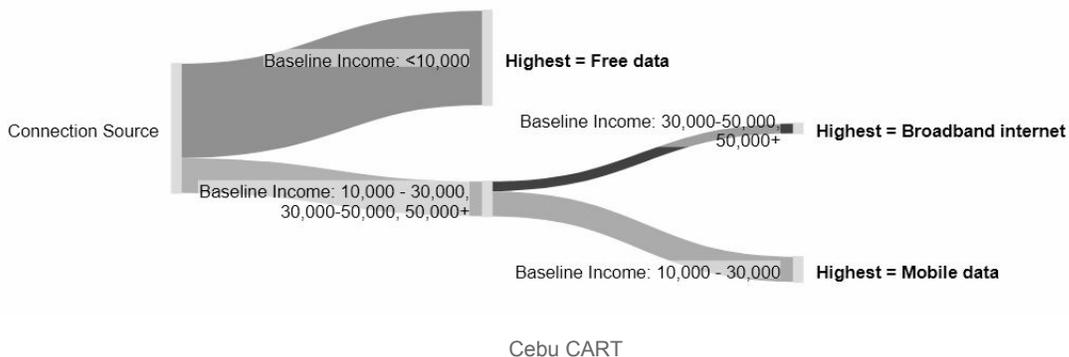
Distribution of Connection Source by Area

Relationship of household income and connectivity

Majority of survey respondents have an income of less than Php10,000. Using Chi-square test of independence, there is evidence to establish relationship between income and connection source of households in Cebu ($p < 0.0001$) and NCR ($p < 0.0001$). To determine the effect of income on the connection source of the respondents, we ran a classification and regression tree (CART) and visualized the model using a Sankey diagram. Three CARTs were produced, one for each area and one overall.



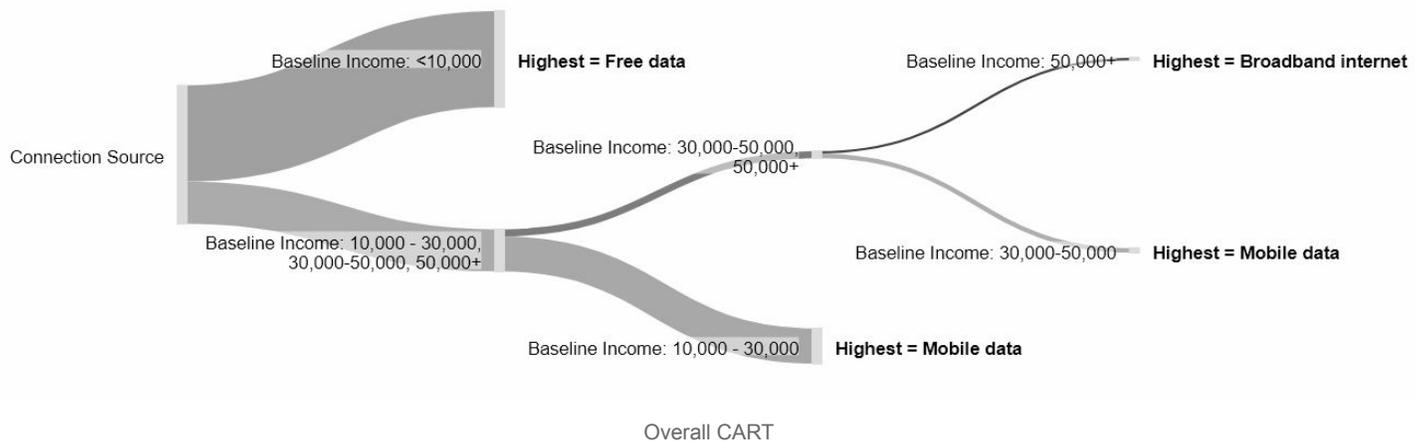
We find that households with income below Php10,000 in NCR have high likelihood to use free data, while majority of households whose income falls between Php10,000- 30,000 use mobile data. Higher income households tend to have broadband internet.



Similar to NCR, low income households in Cebu tend to use free data as their internet connection source to access COVID Pulse PH bot, while those with income of Php10,000-30,000 use Mobile data. Broadband internet users are usually those with income of Php30,000 and above.

Relationship of household income and connectivity

Consistent with each area, there is **high likelihood that low income households will use free data to access the COVID Pulse PH bot**, while high income households tend to use broadband internet. Meanwhile, middle income households have mobile data as their main connection source.



This finding confirms the first hypothesis of Phase 1 that **“Chatbots are accessible to low-income households because messenger is a native channel and users access the platform via Free data”**, it’s supported by the result that majority of respondents belong to low-income households.

Thus, we have evidence to assert the accessibility of chatbots as a promising survey tool or feedback channel to connect with disadvantaged sectors. There is very little transaction cost required for adoption on chatbot use, in contrast with downloading mobile applications or registering to web-based applications. The latter will inevitably have higher transaction costs for adoption due to device-specific requirements for compatibility and higher cost for maintenance.

Use of chatbots for this particular use-case is innovative because it leverages on a widespread communication channel as well as social class-normative behavior. By tweaking the existing technology and its infrastructure, we are accelerating access of the poor and disadvantaged sector to a platform for feedback and discourse. This tool has a great potential for bridging local divides in data collection and safe spaces for feedback.

Location and effective sample size

For the representation of the area under study, we computed for the effective sample size for each location. Effective sample size is a measure of the precision of the survey conducted. Since we do not have an actual list of households, there is a need to specify a universe where we can compute the weights from. To have a geographical representation of the target vulnerable and poor households the following approaches were used:

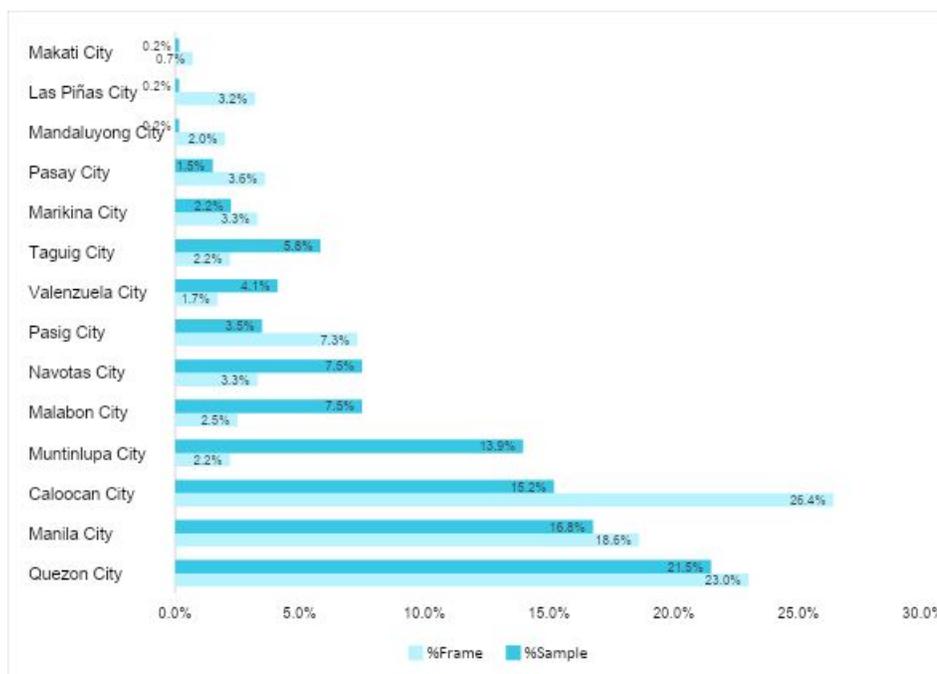
Weighting Approach in NCR:

1. Get the 2015 Number of HH and 2018 Poverty Incidence by City
2. Get % of Poor Households by City
3. Aggregate by Districts (4)
4. Weight the data by District based on % Poor Households

Weighting Approach in Cebu:

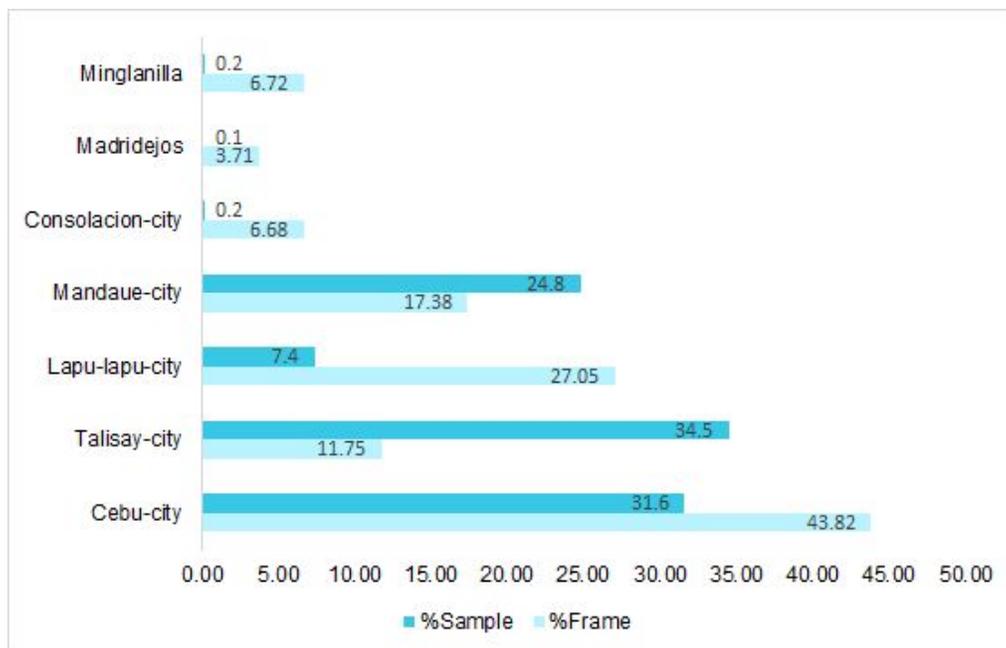
1. Get the 2015 Number of HH and 2015 Poverty Incidence by City
2. Get % of Poor Households by City
3. Weight the data by City (Cebu, Lapu-Lapu, Mandaue, Other) based on % Poor Households

Using this approach we obtained an effective sample size of at least 91% in NCR, which is an acceptable representation.



Although we have an acceptable district representation, we did not get a sample from San Juan City, Parañaque City, and Pateros. Furthermore, we only have 3 samples each from Makati City, Las Piñas City, and Mandaluyong City. If we are going to do inference on cities, we need to be cautious on interpreting for places with very few samples.

Meanwhile in Cebu, collapsing other cities to be closer to the frame constructed, the computed effective sample sizes are 46% to 76%. One possible reason is the outdated poverty incidence on the construction of the frame, latest data for small area estimation is last 2015. The largest discrepancy is found in Lapu Lapu City where a 27% representation is needed in the sample but only 7.4% of the households needed were collected. There may be areas that are not targeted in the study but included in the frame constructed, however, even trimming these areas out of the frame does not improve the result. Thus, information on the targeted areas such as the estimate of the number of HH from the community in each city is needed.

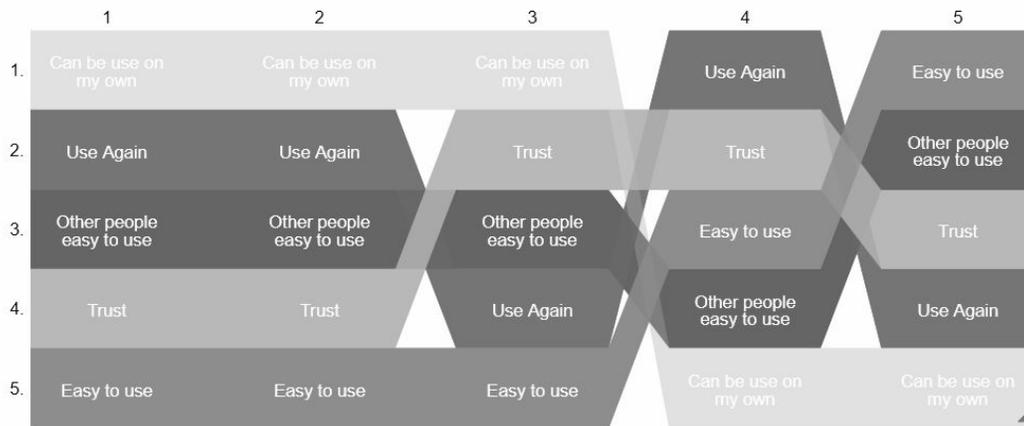


Through the resulting effective sample size computation for NCR, we can say with enough confidence that we may sufficiently infer the results from NCR as reflective of the general population, with some caution for generalizing on cities with very few respondents. On the other hand, we cannot conclude with enough confidence that the sample gathered from Cebu is representative of the population to sufficiently generalize from its results. However, analysis may be revised once a better reference for poverty incidence is available.

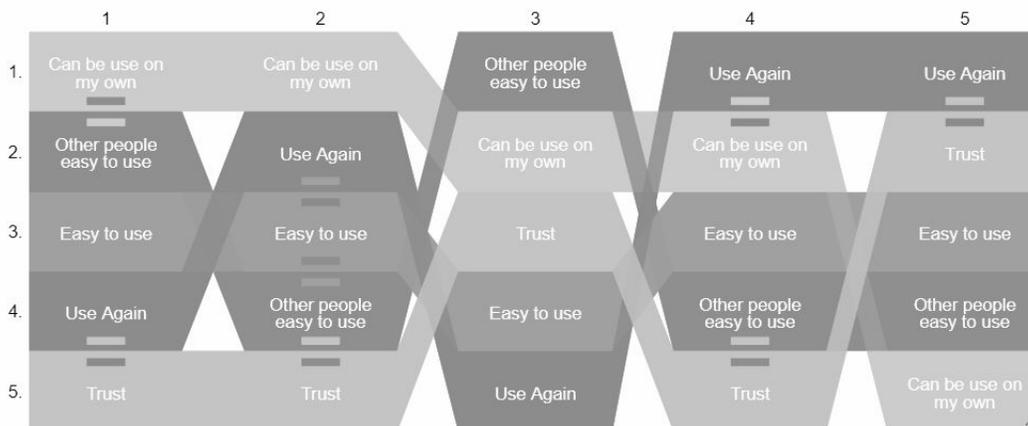
Chatbot usability

One of the main assessments made to evaluate the usability of the bot for household survey is the System Usability Scale (SUS). It is typically a 10-question survey, but we shortened and adjusted the scoring for this study. Each question is on a scale of 1 to 5.

Among the questions, NCR respondents rated the statement: *“The bot is easy to use”* with a score of 5 followed by *“I think other people will be able to use this easily”*. Respondents typically scored the bot lower on the question on using the bot without any guidance.



Meanwhile in Cebu, respondents scored the bot highest on *“I will use this bot again”* followed by the *“I feel a sense of trust in this tool”*.

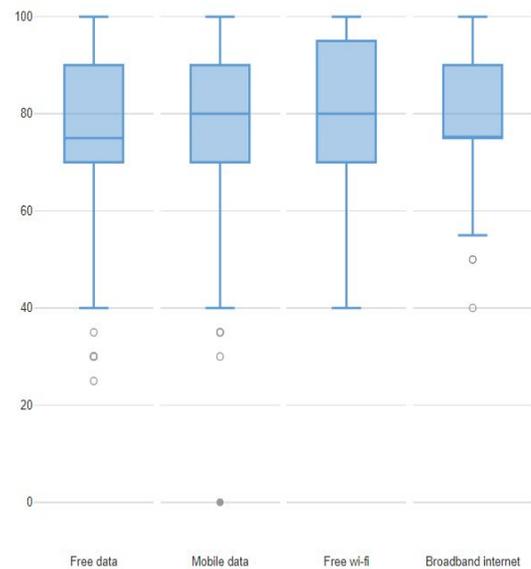


To provide an overall score for usability, these five questions were combined and transformed in a score of 0 to 100, where 0 is the lowest and 100 is the highest. The global average benchmark for SUS is 68. A score reaching 80 and above are rated as at least “A (Excellent)”. Looking at the distribution of the SUS scores for each area, both are generally higher than average. Cebu respondents rated the bot much higher than that of NCR respondents. This is evident as the lowest score found among Cebu respondents is 60 as compared to a minimum of 0 in NCR.

	Obs	Minimum	Maximum	Mean	Median	Standard deviation
Cebu	43	60.00	100.00	84.07	85.0	13.64
NCR	1705	0.00	100.00	79.48	80.0	13.64

Comparing the SUS scores to the internet connection source of NCR respondents, the distribution is almost similar with a median of around 70 to 80. Although few outliers were observed among free data, mobile, and broadband internet users.

To determine if there are differences in the average SUS score, F test using one-way Analysis of Variance was conducted. This is the test used since homogeneity of error variance assumption is satisfied.



F test showed no evidence to support differences in the average SUS scores among connection source ($F=0.493$, $p=.687$) at 5% level of significance. **This means that the average scores across connection source do not differ with the overall average of 79.**

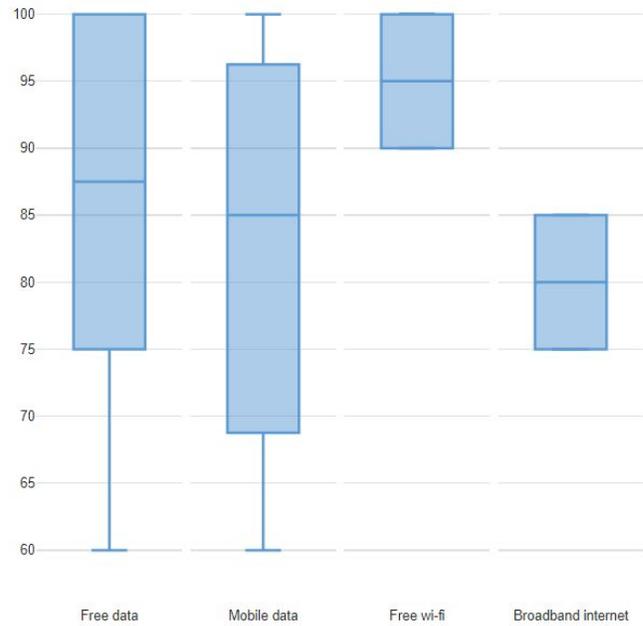
ANOVA – SUS Score

Cases	Sum of Squares	df	Mean Square	F	p
Connection Source	277.211	3.000	92.404	0.493	0.687
Residual	330688.136	1765.000	187.359		

Note. Type III Sum of Squares

At a glance, the distribution of SUS scores of Cebu respondents varies with averages ranging from 80 to 95. Assumption checks were done and satisfied.

F test using ANOVA showed no evidence to conclude differences in the average SUS scores among connection source ($F=0.579$, $p=.632$). Nevertheless, the scores are generally high regardless of the connection source.



ANOVA – SUS Score

Cases	Sum of Squares	df	Mean Square	F	p
Connection Source	333.045	3.000	111.015	0.579	0.632
Residual	7479.746	39.000	191.788		

Note. Type III Sum of Squares

One might expect a less ideal user experience when using Free Data due to a relatively slower connection and limitations on viewing graphics. However, the result of the F Test for both NCR and Cebu show that users of the chatbot, majority are free data users, still gave an overall high score for the chatbot usability, despite described challenges.

Another measure of the usability of bots is through the use of Net Promoter Score (NPS). The NPS is a one question scale that asks the respondent of the likelihood that he/she will recommend the bot to friends and/or family.

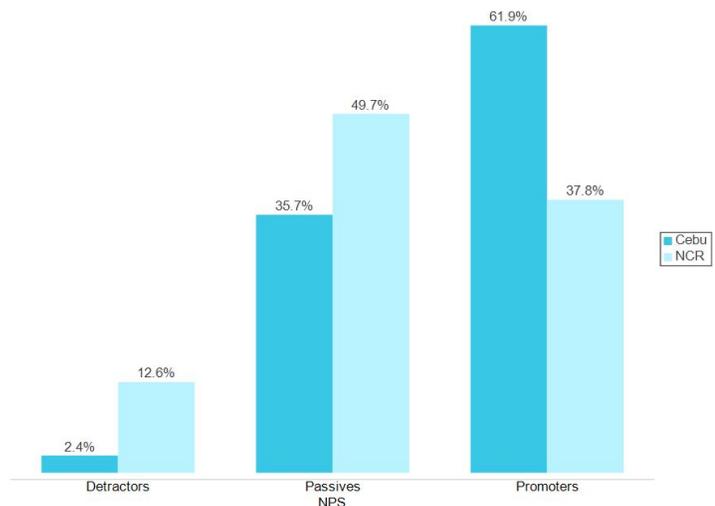
This is usually scored on a scale of 1 to 10 but due to phone screen restrictions we modified it to a scale of 1-5. In practice, those who score 1 to 3 are called “Detractors”, 4 are called “Passives”, and 5 are called “Promoters”. Detractors are typically those who are not satisfied with the overall feature of the bot.

Looking at the usability of the bot in NPS, the scores are generally high with a mean of 4.23 and 4.60 among NCR and Cebu respondents, respectively.

	Obs	Minimum	Maximum	Mean	Median	Standard deviation
Cebu	42	3.00	5.00	4.60	5.0	0.54
NCR	1705	1.00	5.00	4.23	4.0	0.74

Classifying the scores, majority (62%) of the respondents in Cebu are promoters while only 2.4% are not satisfied with the bot. On the other hand, in NCR, there are slightly more passive respondents than promoters. Furthermore, 13% of the NCR respondents are detractors.

Overall, we may conclude that the SUS score of COVID PULSE PH bot in the duration of its usability testing falls under excellent range (M=79.59), while the overall NPS score is 4.24 indicating most of the respondents are either passives or promoters of the bot.



There are several factors that contribute to positive user experience of a chatbot. Mindful structural design, conversational copy, use of empathy and trust signals matter in user perception of relevance. The nature of COVID Pulse PH bot as an interactive data collection tool enables the user-experience to be designed for appreciative inquiry and value exchange, in contrast with traditional tools that tend to be extractive or one-dimensional.

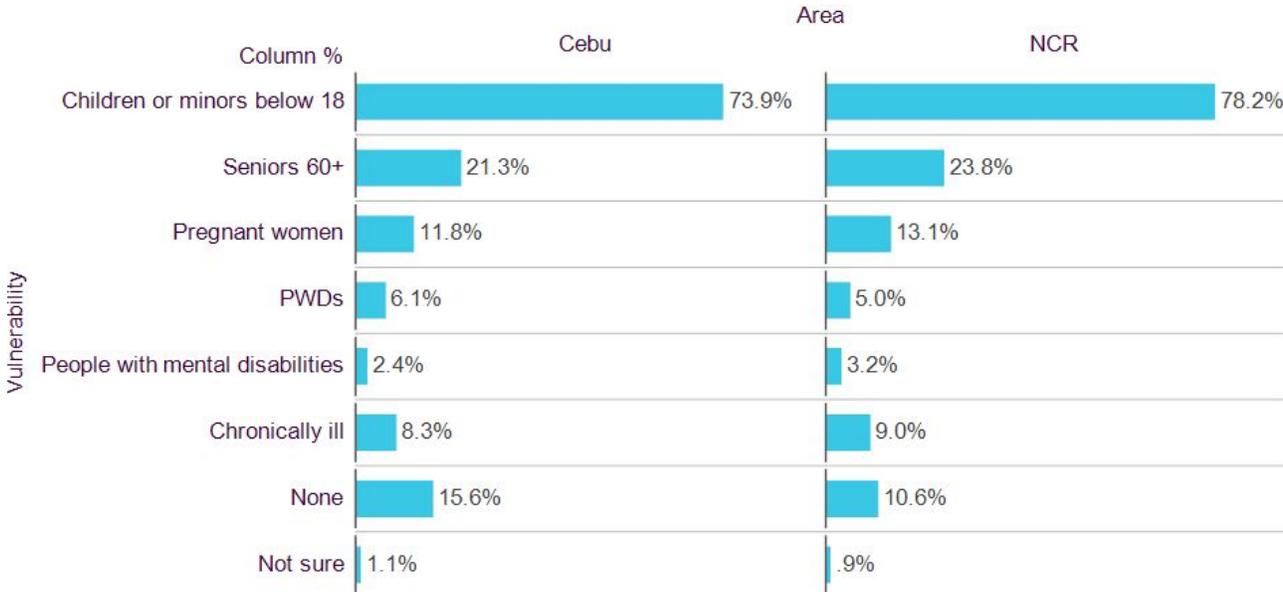
The bot performance scores described confirms our second hypothesis and its conditions: **“The respondents will have a good user experience in using the COVID PULSE PH bot and are likely to recommend its use.”** Thus, we have an empirical basis to continue with the current design of the bot for the subsequent runs.

Household profile

The 3144 respondents of the COVID Pulse PH bot represents a total of 18,328 household members. 64% or 11,712 of the household members are from NCR, while 36% or 6,616 members are from Cebu. The number of members among the HH surveyed ranges from 1 to 30 with an average of 6 members. There are few extremely high numbers of members within a family reaching up to 21 members in Cebu while 30 in NCR.

	Obs	Minimum	Maximum	Mean	Median	Standard deviation
Cebu	1222	1.00	21.00	5.41	5.0	2.64
NCR	1850	1.00	30.00	6.09	5.0	3.61
Overall	3072	1.00	30.00	5.82	5.0	3.27

In terms of HH composition, about 74% to 78% of the households surveyed have at least one minor member while 21% to 24% have at least one senior member. Taking note of the limitation that the survey question only asked for presence of a category in a household and not for the frequency.



Distribution of HH member type

Looking at the number of vulnerabilities present in a household, about 1/3 of the HHs have at least 2 members with vulnerable characteristics.

Freq. Column %	Cebu	NCR	Overall
0	202 16.5%	213 11.5%	415 13.5%
1	607 49.7%	1000 54.1%	1607 52.3%
2+	413 33.8%	637 34.4%	1050 34.2%
Total	1222 100.0%	1850 100.0%	3072 100.0%

Skipped Meals

About 26% of the households in NCR skipped meals during the crisis. Higher proportion of households who skipped meals are observed in Cebu (43%).

Is there a relationship between household size and skipping meals?

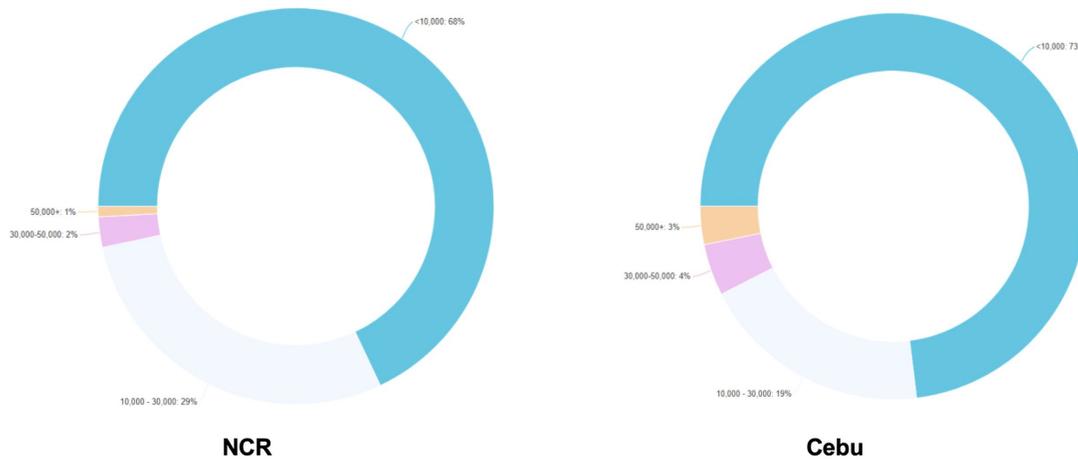
To determine if there is a relationship between household size and skipping meals, we ran two chi-square tests of independence representing each area. At 5% level of significance, we have no sufficient evidence to say that household size and skipping meals are related in Cebu area ($\chi^2=2.92, p=0.4$).

In contrast, NCR data shows household size and skipping meals are weakly associated ($\chi^2=8.54, p=0.036, V=0.07$). About 30% of households in NCR with at least 7 members tend to skip meals. This is 4% higher than the overall percentage of households who skipped meals in NCR.

HH Income Profile

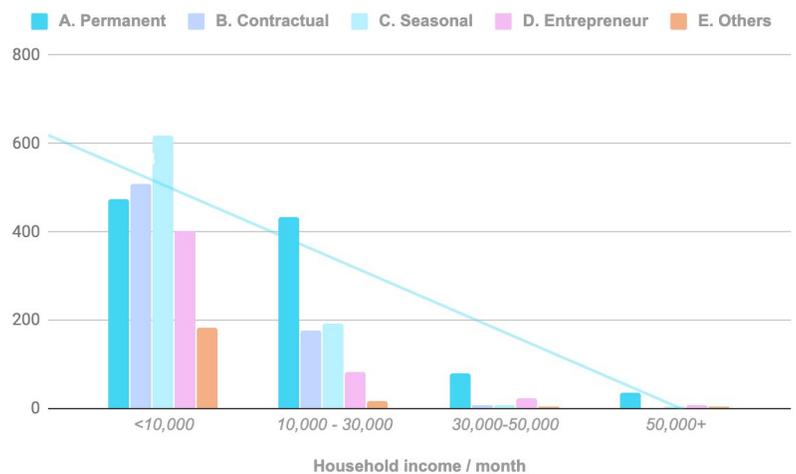
One in three main income earners in the household have a permanent job. In NCR, more than half of the main income earners job is either short term (26%) or working for different employers or customers (28%). Meanwhile, about 43% of the main income earners in Cebu have a small business or working for different employers or customers.

At least 68% of the households surveyed have an income of less than Php10,000 per month. This is expected as we intended to target low income households.



Column % Freq.	Cebu	NCR	Total
Permanent job	35.9% 439	30.6% 567	32.7% 1006
Contractual or short-term	18.7% 229	25.7% 476	22.9% 705
Casual / Seasonal	21.8% 266	27.6% 510	25.3% 776
Small business or vendor	21.4% 261	12.9% 238	16.2% 499
OFW	0.0% 0	0.4% 8	0.3% 8
Retired/Pension	0.0% 0	0.4% 8	0.3% 8
In-kind	0.0% 0	0.2% 3	0.1% 3
Unknown	1.0% 12	0.2% 4	0.5% 16
No Job	1.2% 15	1.9% 36	1.7% 51
Total	100.0% 1222	100.0% 1850	100.0% 3072

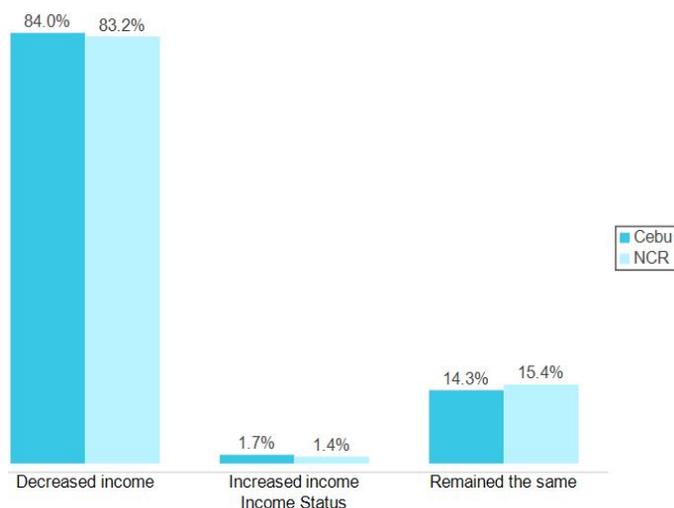
35% of households earning below Php10,000 per month have contractual or seasonal jobs as their main source of income. The precarious nature of their main source of livelihood is an added layer of vulnerability.



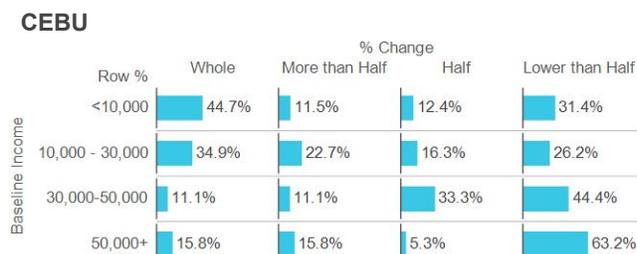
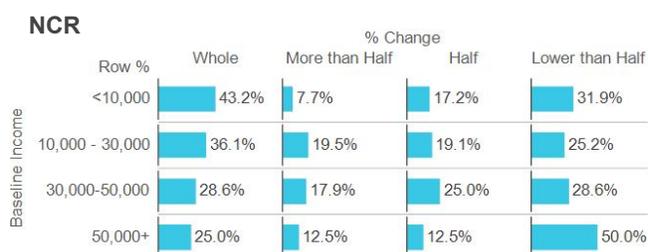
From the stories provided by participants, most employees under the 'No work, no pay' scheme stress about job security on top of the loss of income experienced during the pandemic. Since most of their employers are small-medium business owners who are also negatively impacted by the pandemic, they fear that there will be no more work to return to even after the quarantine is lifted.

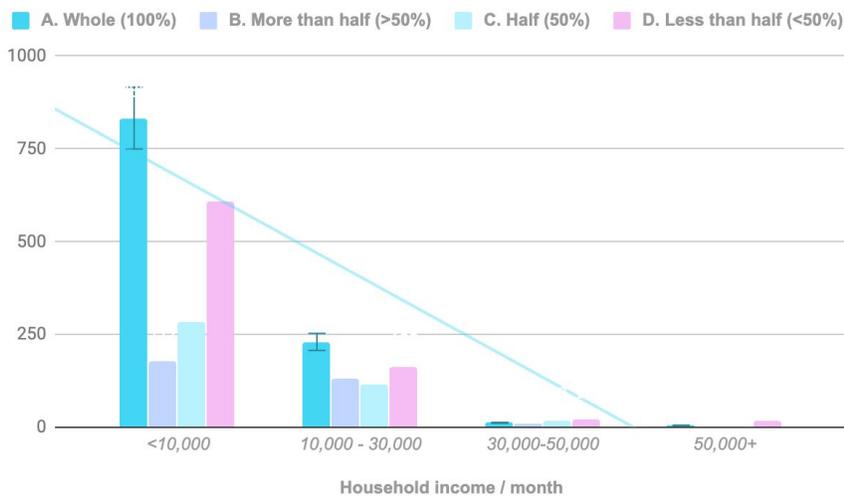
Overall during the crisis, 83% to 84% of the households experienced a decrease in their income. Looking closely, 40% of the household lost their whole income during quarantine, while 30% lost lower than half of their income.

In both NCR and Cebu, 43-45% of low income households reported to have lost their whole income due to the pandemic.



Column % Freq.	Cebu	NCR	Total
Whole	41.6%	40.8%	41.2%
	427	629	1056
More than Half	13.5%	11.3%	12.2%
	138	174	312
Half	13.5%	17.9%	16.1%
	138	275	413
Lower than Half	31.5%	30.0%	30.6%
	323	462	785
Total	100.0%	100.0%	100.0%
	1026	1540	2566





Overall results reveal that 75% of respondents who reported decrease in income earn below Php10,000 and are disproportionately impacted, with 30% completely losing their income, relative to other income groups.

From the degree of loss in income, we estimated the percentage of households who had their income fall below Php10,000 during the crisis. As we observed in the income status of households during the crisis, most of the households have lost a portion of their income while some completely lost their source of income.

In Cebu, 84% of the households experienced a decrease in their income. Among those who experienced a decrease in income, 79% of them are low income households. Calculating for households whose income fall under Php10,000 income during the crisis, it is estimated to be 89%.

Meanwhile in NCR, 68% of the households experienced a decrease in their income; about 69% of this population have an income of less than Php10,000. Regardless of income, the estimated percentage of households whose income fall below Php10,000 is equal to 86%.

Is there a relationship between household income and skipping meals?

To determine if there is a relationship between household income and skipping meals, we ran two chi-square tests of independence representing each area. At 5% level of significance, we have sufficient evidence to say that household income and skipping meals are strongly related in Cebu area ($\chi^2=124.63$, $p<0.0001$, $V=0.319$). Compared to the overall percentage of 43% of households who are skipping meals, majority of low income households (52%) in Cebu are skipping meals, while only 5% of high income households are skipping meals.

On the other hand, NCR data shows household income and skipping meals are moderately associated ($\chi^2=20.21$, $p=0.0002$, $V=0.129$). Overall, only 26% of households in NCR are skipping meals but this is 3% higher among poor households.

Coping strategies (Diskarte)

Given the similar distribution of households in the areas of study, results show that 68% of the households employed coping strategies to survive the crisis. The top 3 strategies or “diskarte” expressed by respondents in NCR and Cebu are “relied on cheaper food”, “sought other income”, and “borrowed money or food”.

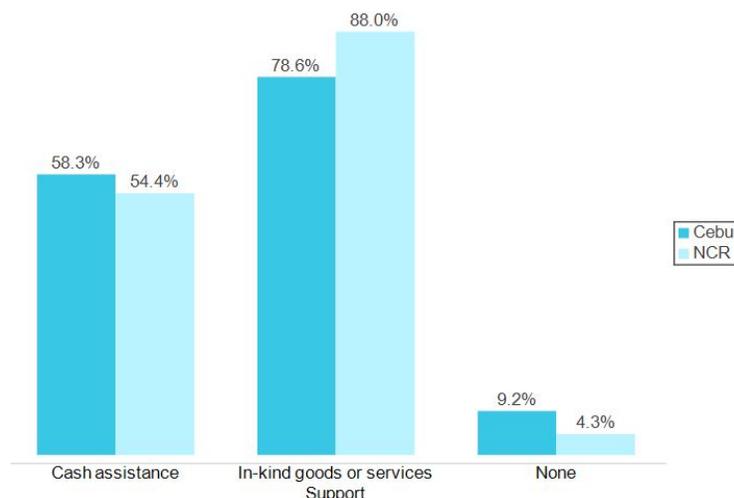
Column % Freq.	Cebu	NCR	Total
Relied on cheaper food	24.7% 302	35.9% 664	31.4% 966
Sought other income	37.8% 462	33.1% 612	35.0% 1074
Borrowed money or food	23.6% 288	24.4% 451	24.1% 739
Sought help from relatives	19.3% 236	19.1% 354	19.2% 590
Reduced food intake	7.1% 87	14.4% 267	11.5% 354
Sold assets	2.8% 34	3.5% 64	3.2% 98
Others	8.8% 108	6.1% 112	7.2% 220
Total	68.0% 831	68.1% 1260	68.1% 2091

As we observed, there were strategies that highlight household heads’ perseverance to provide needs for their family as at least one third of household looked for other source of income. Around 43% of households changed how they buy/consume food such as relying on cheaper food (31%) and reducing food intake (12%) There were also strategies were households are at a disadvantage as some headed for borrowing money (24%) and sold assets (3%).

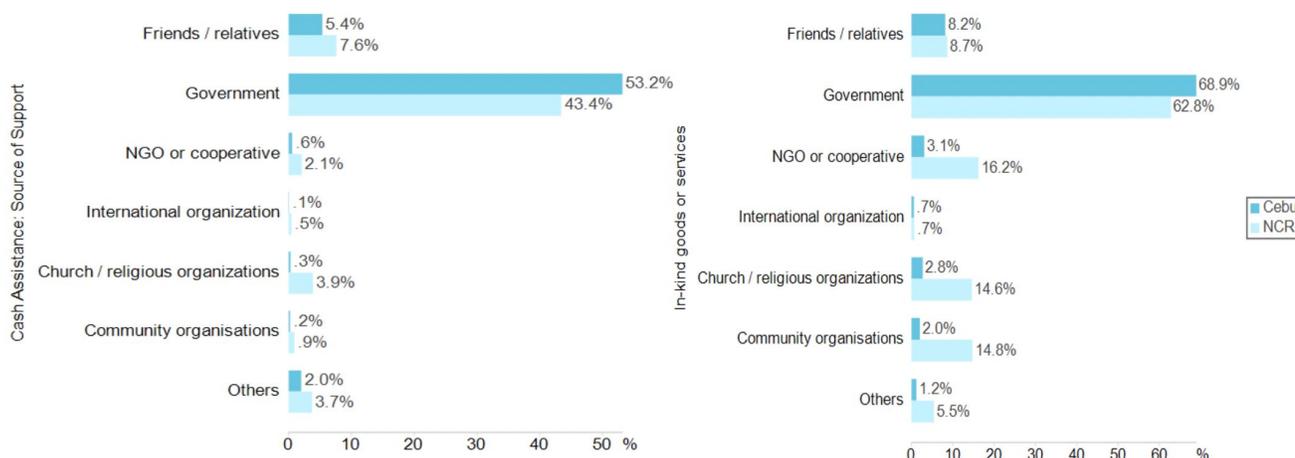
Some respondents shared their stories and insights in COVID Pulse PH. Among these we found that “nanopreneurs” or ambulant vendors are greatly affected. Some are able to cope by discretely selling within their neighborhoods while the rest had to completely stop. Other took the opportunity of providing on-demand services in order to have a temporary source of income (e.g. pasabay / errand service businesses). These emerging nanopreneurs, who are also heads of households, are among the many daily wage workers who have lost their main source of income.

Support

A very high proportion of households in areas of study received, about 90-96%, received at least cash assistance or in-kind goods or services during the pandemic. Only less than 10% of the households did not receive any type of support during the crisis. Most of the aid provided are in-kind goods.



Most of the cash assistance and in-kind goods and services received by respondents came from government entities, followed by friends or relatives, and non-government or religious organizations. Other source of assistance came from private sector groups or direct aid from companies respondents are working with.



A limitation in the set of questions for phase 1, we find that it's important to reveal not just the presence of aid, but the quality, consistency, and sufficiency of the aid received to support the needs of families, especially since most of the households have at least 5 members.

Low income households tend to receive at least one form of assistance. On the other hand, about 1 in 4 high- income households did not receive any type of support; for those who did received one, it's mostly in-kind goods or services than cash assistance

NCR

	<10,000	10,000 - 30,000	30,000-50,000	50,000+
Cash assistance	65.8%	45.6%	22.6%	12.8%
In-kind goods or services	80.1%	75.9%	75.5%	66.7%
None	6.4%	13.1%	24.5%	28.2%

Similar pattern was also observed in Cebu, with 25%-28% of relatively high income households did not receive any form of assistance.

CEBU

	<10,000	10,000 - 30,000	30,000-50,000	50,000+
Cash assistance	55.8%	53.0%	45.7%	12.5%
In-kind goods or services	86.5%	91.5%	95.7%	68.8%
None	4.8%	2.8%	2.2%	25.0%

Diskarte and income status

Majority of the NCR households planned some strategies to cope with the crisis (68%). We found evidence to say that strategies and income status have a weak relationship ($\chi^2=13.1$, $p=0.001$, $V=0.08$). The relationship found is due to the higher percentage of households who employed coping strategies (70%) among those whose income decreased as compared to households whose income remained the same (59%).

Similar results were found among Cebu households ($\chi^2=14.7$, $p=0.0006$, $V=0.09$). The relationship found is due to the higher percentage of households who employed coping strategies (70%) among those whose income decreased as compared to those households whose income remained the same (56%).

Income loss and assistance received

We found no evidence to support any relationship between income status and assistance received among households in NCR ($\chi^2=1.8$, $p=0.77$). While a moderate relationship was found between these characteristics among households in Cebu ($\chi^2=46.25$, $p<0.0001$, $V=0.15$). About 91% of those who received cash assistance experienced loss of income during the crisis. Further, 29% of those who did not receive any support belong to the group whose income remained the same.

Assistance Received and Hunger

There is no evidence to support a relationship between skipping meals and cash assistance received ($\chi^2=0.34$, $p=0.56$). The proportion of households who skipped meals between those who received cash assistance and those who did not are almost equally distributed at 33% each group. Meanwhile a weak relationship was found between skipping meals and in-kind support ($\chi^2=19.9$, $p<0.0001$, $V=0.08$). About 42% of those who did not received in-kind support experience skipping meals as compared to the overall percentage of 33%.

Cities and income

At least 60% of the households in NCR have an income of less than Php10,000 across cities except for Mandaluyong, Las Piñas, and Makati. But these three cities only have 3 respondents each and may not reflect true distribution of income. Very few (0.7%-2%) of households surveyed have an income of 50,000 or more. No high income households were observed in the cities of Navotas, Pasig, Valenzuela, and Taguig.

	Quezon City	Manila City	Calocan City	Muntinlupa City	Malabon City	Navotas City	Pasig City	Valenzuela City	Taguig City	Mandaluyong Cit...	Las Piñas City	Makati City
<10,000	63.2%	73.6%	71.9%	62.7%	67.4%	80.6%	61.2%	65.8%	67.0%	33.3%	0.0%	0.0%
10,000 - 30,000	32.2%	22.7%	24.0%	34.3%	29.2%	18.8%	37.3%	34.2%	33.0%	33.3%	100.0%	0.0%
30,000-50,000	3.9%	2.2%	3.4%	2.2%	2.8%	0.7%	1.5%	0.0%	0.0%	33.3%	0.0%	0.0%
50,000+	0.7%	1.6%	0.7%	0.7%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Majority of the households targeted in the major cities of Cebu fall in the lowest income range. Largest percentages of low income households are 81% and 84% which are in Talisay and Mandaue cities, respectively. Consolacion, Madridejos, and Minglanilla have very few responses and may not reflect the true income distribution of households.

	Cebu-city	Talisay-city	unknown	Lapu-lapu-city	Mandaue-city	Consolacion-c...	Madridejos	Minglanilla
<10,000	58.8%	81.2%	50.0%	62.6%	83.8%	100.0%	100.0%	100.0%
10,000 - 30,000	28.2%	15.0%	37.5%	25.3%	11.9%	0.0%	0.0%	0.0%
30,000-50,000	6.0%	3.1%	6.2%	9.9%	2.3%	0.0%	0.0%	0.0%
50,000+	7.0%	0.7%	6.2%	2.2%	2.0%	0.0%	0.0%	0.0%

Cities and assistance to vulnerable households

Comparing the cities with enough sample sizes, Malabon City had the least percentage of households who did not receive any kind of support. All households surveyed in Valenzuela city were given support. Aside from the in-kind goods or services, majority of households in Caloocan (54%), Manila (81%), and Pasig (82%) were given cash support. In terms of household composition, largest proportion of households with at least one minor member is found in Manila and Navotas, both are at 83%. Meanwhile, about 13% to 29% of the households have at least one senior member. It seems that no strong relationship exists in the household composition and support received as local government units were able to provide assistance for almost all of its constituents.

	Caloocan City	Las Piñas City	Makati City	Malabon City	Mandaluyong Cit...	Manila City	Muntinlupa City	Navotas City	Pasig City	Quezon City	Taguig City	Valenzuela City
Children or minors below 18	76.7%	66.7%	66.7%	76.4%	66.7%	83.2%	80.6%	83.3%	76.1%	75.1%	75.9%	72.2%
Seniors 60+	27.7%	33.3%	66.7%	22.2%	0.0%	19.9%	25.0%	28.5%	13.4%	23.0%	25.9%	24.1%
Pregnant women	12.3%	33.3%	33.3%	13.9%	33.3%	12.7%	10.4%	20.1%	11.9%	13.1%	17.9%	5.1%
PWDs	4.8%	0.0%	0.0%	4.9%	0.0%	2.8%	7.1%	6.9%	4.5%	4.6%	6.2%	5.1%
People with mental disabilities	2.7%	0.0%	0.0%	4.2%	0.0%	3.7%	3.7%	3.5%	0.0%	3.1%	2.7%	2.5%
Chronically ill	8.6%	33.3%	0.0%	11.1%	0.0%	9.6%	9.7%	8.3%	7.5%	8.7%	6.2%	10.1%
Vul: None	9.9%	0.0%	0.0%	9.7%	33.3%	9.0%	12.7%	6.9%	11.9%	12.6%	7.1%	13.9%
Vul: Not sure	0.7%	0.0%	0.0%	0.7%	0.0%	0.6%	1.1%	0.7%	3.0%	0.5%	3.6%	0.0%
Cash assistance	53.8%	33.3%	0.0%	46.5%	66.7%	81.4%	41.0%	36.1%	82.1%	49.2%	49.1%	53.2%
In-kind goods or services	83.9%	66.7%	66.7%	79.9%	66.7%	88.2%	89.2%	91.0%	94.0%	87.9%	97.3%	92.4%
Support: None	5.8%	0.0%	33.3%	9.7%	0.0%	1.9%	4.9%	4.2%	3.0%	4.6%	1.8%	0.0%

In Cebu, local government units were also able to provide assistance among households as only 6% to 17% of them did not receive any support. Highest percentage of households who did not received any support is found in Cebu City. A large proportion of households were also given assistance with lowest coming from Cebu City (45%) and highest from Talisay City (68%).

	Cebu-city	Talisay-city	unknown	Lapu-lapu-city	Mandaue-city	Consolacion-city	Madridejos	Minglanilla
Children or minors below 18	69.9%	77.2%	68.8%	64.8%	77.6%	50.0%	100.0%	50.0%
Seniors 60+	26.9%	18.3%	18.8%	22.0%	18.2%	0.0%	0.0%	50.0%
Pregnant women	11.1%	10.2%	6.2%	17.6%	13.5%	0.0%	0.0%	0.0%
PWDs	6.2%	6.7%	6.2%	2.2%	6.6%	0.0%	0.0%	0.0%
People with mental disabilities	2.1%	2.4%	0.0%	2.2%	3.0%	0.0%	0.0%	0.0%
Chronically ill	7.5%	6.4%	6.2%	9.9%	11.6%	0.0%	0.0%	0.0%
Vul: None	18.4%	13.1%	12.5%	25.3%	12.9%	50.0%	0.0%	0.0%
Vul: Not sure	1.0%	1.4%	0.0%	1.1%	0.7%	0.0%	0.0%	0.0%
Cash assistance	45.1%	68.2%	62.5%	58.2%	61.7%	50.0%	0.0%	50.0%
In-kind goods or services	70.5%	79.6%	75.0%	82.4%	86.8%	100.0%	100.0%	50.0%
Support: None	16.6%	5.5%	6.2%	6.6%	5.9%	0.0%	0.0%	0.0%

Mobilization vs. Advertising

As previously discussed at the beginning of phase 1 results discussion, COVID Pulse PH was deployed through on-ground mobilization with ZEP and through click-to-messenger advertisement on Facebook.

Digital strategy

The campaign objective of Stream 2 is to collect leads from non-ZEP areas under ECQ and test for key variables to inform Phase 2 media strategy.



DIGITAL EFFICACY

Target non-ZEP areas to test conversion rate of digital ads vs onground mobilization



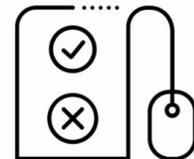
AUDIENCES

Create audiences per city to isolate performance of ads and filtered using proxy indicators to target intended audience



LEAD GEN ADS

Exclusively use click-to-messenger ads to lead users directly to the messenger



A/B TESTING

Determining receptiveness of specific audiences to particular messaging frames through A/B testing

The non-ZEP cities targeted for the campaign were Marikina and Pasay city with an estimated audience reach of 159K to 462K and expected conversion rate of 0.1-0.5% per city for a Php18,000 ad budget set.

Given that the goal is to generate leads for survey respondents, the preferred ad format for direct engagement is a *click-to-messenger ad*. Main difference versus sponsored post or link ads: minimal drop off because user can click the 'send message' button instead of a link.

The mechanics of the A/B testing is to test multiple messaging frames to identify the stronger variation for media optimization or generate insights on communications for particular demographic groups.

For this particular run, four ad variations were tested:

Default:

Variation A:

Variation B:

Variation C:

Transactional CTA

Affective CTA

Affirmative CTA

Accountability CTA

Straightforward call for respondents

General disposition to crisis

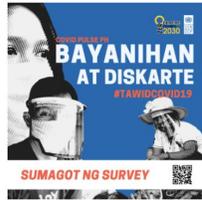
Specific coping mechanisms during crisis

Specific demands & concerns from LGU

A/B testing campaign mechanics

LAUNCH:

Run all variations until they reach the minimum impressions (1000)*
*FB automates this



DEFAULT



VARIATION A



VARIATION B



VARIATION C

MEASURE:

Determine CTR or click-thru-rate and audience response (gender, location, interests)



17% CTR
Male
PS, PQ



25% CTR
Female,
ML, PT



38% CTR
Male,
MK, SJ



67% CTR
Male/Female
MR, MD

OPTIMIZE

Identify which ads to either (1) continue / stop or (2) target only to specific groups



Discard from
ad set



Target only
for females



Target only
for males



Keep ad for all
audiences

Results overview



173,375
REACH



496
CONVERSIONS



Php 36.24
COST PER MSG



2,715
CLICKS



0.29%
CONVERSION
RATE



Php 18,000
TOTAL SPENT



Gender distribution is almost equal, but clicks are primarily driven by women at 59%.

Most users reached belong to the 25-34 age range, but older users 35+ are clicking on our ads more.

Metrics	Actuals Marikina	Actuals Pasay	Planned per city
Reach	87,471 ▼	84,416 ▼	159,000 min
Conversion rate	0.29% ▲	0.29% ▲	0.1% min
Conversions	252 ▼	244 ▼	318 min

Reach was disproportionately lower, possibly attributed to low amount of bid and ad quality of the artwork. Despite that, the conversion rate and target conversions were achieved. Improving the ad quality and increasing the budget will further improve performance.

The demographic distributions for both cities look almost similar, except both reach and clicks in Marikina are biased to women at 54% reach and 69% clicks.

Aligned with the general trend, we are seeing higher response rates for older segments 35+ that may imply that they are more receptive to the messaging of the ads.

MARIKINA



PASAY



Ad winner: Type A “Transactional messaging”

MARIKINA



PASAY



Ad conclusions and recommendations:

Both the winning ad per city is Ad A (Transactional), with the lowest cost per message (Php 22.28, 39% cheaper than the average). It is followed by Ad D (Accountability) at 33.58. The plausible explanation is the straightforwardness of the call to action of Ad A that directed the users in the desired action of sending a message to the bot.

- The results showed that the campaign is mostly reaching the 25-34 age range, but received higher responses from older demographics 34-65+, potentially because of the context of the survey touches on family-oriented concerns. Generally, women responded better to the ads, both reach and clicks.
- Ad A is the most effective and efficient ad for the campaign objective. While others ads, although not getting significant conversions, was commented on by users. It's possible that the unintended consequence of "non-transactional" messaging was that users are moved to engage directly with the post instead of clicking on the survey. Ad A, which is a straight call to action provided a clearer direction and expected type of interaction from the user.

This result confirms hypothesis #3: "There is a difference between the types of messages ran through A/B testing". We now have evidence to support that Ad A is significantly more cost-efficient than other types of ads in the campaign, Thus, we recommend to deploy the optimized version of ad A in subsequent campaigns, while other ad versions can still be rescheduled for regular posting.

- The ads can be further optimized to include a clear CTA to answer the survey and less texts/images on the art to improve ad quality. Further expand media campaign budget for Pasay and Marikina since reach is only 15% of the estimated population. The ideal media reach is at least 60%. Assuming ad optimization, recommended budget to reach this is Php 60,000 per city, for Pasay and Marikina. While the recommended budget is Php 70,000 per city, for 6 cities to reach 60% of the population.

However, despite these results, the Ad run was only able to generate 72 complete surveys from the 492 conversions at a **15% success rate** versus the overall **79% success rate** of the ZEP mobilization: From 194 barangays at 20 pax each target (3880 pax), the total of complete surveys generated is 3072, contributing 97% over the overall respondents total of 3144.

Highlights from citizens feedback

The following is a summary of the general sentiments revealed by respondents through open feedback. These citizen sentiments were culled from a total of 600 comments scraped and categorized by topic to provide richer nuance to the descriptive analysis from the previous section

	CHALLENGES	COPING STRATEGY
Food security	<p>Families experience difficulty in purchasing commodities. Food is a priority and it constitutes a majority of the household's budget. Due to the lockdown, those who were laid off or are on 'no work, no pay' scheme (construction workers, massage therapists, etc.) have no choice but to reduce their food expenses.</p> <p>Others have resolved to reducing their meal times to just twice a day to save on food expenses. Respondents have noted price increase of food which makes it more difficult for them to budget their small income/savings.</p>	<p>People's ingenuity manifests. Some have started container gardens where they can harvest vegetables they can eat.</p> <p>People are also becoming more conscious about their diet. Some respondents are requesting for healthier alternatives to the usual canned relief goods.</p>
<p><i>"Good am.salamat as survey..mahirap ang buhay ng mga Tao ngyon wla trabho wla kita.ang pag kain..limitado sa pera..ubos na ipon ko..nag hihiram ako sa mga magulang ko.para may pang gastos sa gamot ko at gatas ng anak ko. May relief nmN..kaso..hindi masustnya...Ng delata...wla din kmi nkukuha ayuda..saf.. kaya..malungkot at mahirap..pag ganito..sna..mawala na ang pandemic n covid..para mkpag trabho na lahat..at mging normal na..sana. Thanks"</i></p> <p><i>"Napakahirap,ng ganitong sitwasyon,kaya dapat magtipid para makaipon/tabi,para may madukot pangkain sa oras ng kagipitan.."</i></p>		
Economic activity	<p>Nanopreneurs or ambulant vendors (naglalako ng biko, fishball, etc.) are greatly affected. They are mostly heads of households who are among the many daily wage workers who have lost their main source of income.</p> <p>Aside from worrying about their income, some experienced layoff and most employees under the 'No work, no pay' scheme also stress about job security. Since most of their employers are small-medium business owners who are also negatively impacted by the pandemic, they fear that there will be no more work to return to even after the quarantine is lifted.</p>	<p>Some respondents took the opportunity of providing on-demand services in order to have a temporary source of income (e.g. pasabuy / errand service businesses), while a number of ambulant vendors able to cope and sell in their neighborhoods while the rest had to completely stop.</p>
<p><i>"Ang uri po NG aking problema ay ung mawalan NG trabaho ang aking asawa, simula NG mapatupad ang ECQ, nawalan kami NG pgkikitaan, naubosan po kami NG pnggastos,, ang tanging maasahan ko po ang tulong NG gobyerno na ayuda,, subalit di po kami mapalad,, di po kami nasama sa mga nabigyan,,, kami po umaasa na mabibigyan dhil po 3 po ang anak nmin,,tas ako po nagpapasusong ina,, Kaya po Isa po uri NG aking problema ay ang Pera po pnggastos lng araw arw,,, Kaya po ako po ay napilitan ihinto sa pagpapasuso sa aking anak na 1yr old,, dhil un Lang po ang aking Alam na Para an po,, Para kumita,, umiextra po ako sa fishport sa pgpipilili NG isda nagpapakapuyat Para lng my pagkakuhaan NG pnggastos sa a raw arw,, Yan po ang naiisip Kong sulosyon Para po di kami magutoman"</i></p>		

	CHALLENGES	COPING STRATEGY
Transportation / mobility	<p>Lack of public transportation to procure essential needs, difficulty in carrying heavy groceries for older people.</p> <p>Laborers who migrate to other locations (city-centers) for work were stranded with no means to travel back to their home provinces.</p> <p>Job losses for those in the mass transportation sector</p>	<p>Asking favors among neighbors and relatives to help in buying and transporting goods</p> <p>Staying at home as much as possible</p>
<p><i>"Dahil sa walang masakyan,..naglalakad ako ng malayo para makapamilya para sa maliit kung tindahan,..tiniis ang npakahaba na pila sa pamilihan...at kung minsan,nkikisuyo po ako sa kapitbahay kong na walan ng trabaho,.pagmabibigat ang bibilhin,..kasi hindi ko kaya magbuhat ng mga mabibigat,.at binibigyan ko nIng eto ng kahit pambili manIng ng 1kilong bigas,.."</i></p> <p><i>"Malayo ako sa pamilya ko ako andito sa pasay city dito na istranded simula mag lockdown.wala ako natatanggap na tulong mula sa company namin at barangay at gobyerno kahit singkong duling.mahirap Ang naging epecto ng lockdown sa akin nawala lahat at lahat ng akin gmit na pangtarbho naipagbili ko para lang mkakain sa pang araw arw ko sa paglalage dito sa pasay ang hirap mapalayo sa pamilya ko kahit pamilya ko wala rin makain dun wala ako magawa dahil sa covid 19 na ito kaya sana my mga taong my busilak Ang puso nawa sanay matulongan ako mkaalis na dito at makauwi nalang sa probinsiya na pinagmulan ko"</i></p> <p><i>"Stay home,kung wala nmang importanteng lakad sa labas,para maiwasan ang pagdami ng COVID-19 victim..Keepsafe every one & godbless"</i></p>		
Medical needs	<p>The ECQ has become a challenge for those with medical conditions that require regular check-ups. The lack of mass transportation and poor internet connectivity impair the low-income households' access to medical attention.</p> <p>Clamor to provide assistance to breastfeeding mothers</p> <p>PWDs, solo parents, pregnant women, and senior citizens should be given more attention as they are more burdened with the quarantine (access to medicine, transportation, cash aid)</p>	<p>Availing of telemedicine services, but the doctors are not always online.</p>
<p><i>"Ang hirap mag ff.up check up. OPD ang anak ko sa PGH Pedia Renal. May NS sya and may monthly check up. Nagbigay sila ng Acct. kung saan pwede mag follow up. unfortunately hindi naasikaso. nag ste steriods ang anak ko and hindi basta nabibili sa pharmacy and hindi daw pwede basta itigil ang paginom. Pero ilang linggo na rin hindi nag oonline yung doctor. sa panahon ngayon nagaalala ako sa anak ko also to his doctor."</i></p>		

	CHALLENGES	COPING STRATEGY
Security	<p>Perceived lax or uneven implementation of community quarantine rules among officers, while some reported that they feel safe with the visibility of law enforcement officers.</p> <p>Most understand the need to abide by the quarantine rules, though some respondents feel the lack of discipline in their neighborhood</p>	Peer-to-peer reminders among neighbors and family networks to follow quarantine rules for safety
<p><i>“Ang gusto ko lang po sabihin sa hindi kontento kase nakikita ko po kase na may pagkukulang pa sa implentasyon ng community quarantine kase nakikita ko na hindi naman lagi may bantay sa lagusan ng mga tao, iniisip ko na lang marahil kulang ang volunteer upang palaging may bantay sa lagusan at napapansin ko rin na kulang talaga sa disiplina ang mga tao ngunit ano nga ba ang maaaring gawin sa mga tao na walang disiplina lalo na ngayon na kinakaharap natin ang ganitong problema”</i></p> <p><i>“Ok ang pamamalakad ng mga pulis at sundalo at d man lubos ang pagsunod ng mga tao sa alituntunin ng gov. maaring sa kdahilanan ay ang kahirapan.”</i></p>		
Government AID	<p>Perception that the barangay officials distribute the SAP unfairly</p> <p>Some households believe that they are more deserving to receive government aid than others</p> <p>Metrics to qualify for aid or support are unclear</p> <p>Some respondents expressed canned relief goods are not healthy</p>	Bayanihan and sense of community
<p><i>“Ang gusto ko pong iparating na may pinipili lang po dto sa brgy namin para mabigyan sa DSWD... Saan pi ba kami lalapit para matulongan nmn po kami nangungupahan po kasi kami dto ei.. Sa brgy 145 sto. Pasay city... Sana po kahit boarders lang meron din pagkakataon na makahingi ng form at ma interview ng DSWD.. May anak po akong ginagatas.. Nag kakape nalng po yung anak ko, dto may pinipili po kasi ei yung mga may ari lang ng bahay ang meron... Ganun po ba kapag wala kang bahay wala kang matatanggap na ayuda galing sa gobyerno???”</i></p> <p><i>“Una po Ang problemang kiankaha ng nmin Ng aming pamilya at una Ang pagbawas Ng oras Ng trabaho nila na dating 8 hrs naging 6 hrs nalng at nabawasan din po Ng araw Ng pasok pero Kahit papanu napagkakasya ko po sya ..naipagpapatuloy ko po Ang akong pakikipag kapwa Tao sa aking komunidad sa pamamagitan Ng una pag sunod sa ecq policy ..at pangalawa po sa pagbbgay tulong din sa iba katulad Kung may bibigay na relief Ang brgy at munisipyo hinahati kopo iyon sa 2 at ibinbgay ko po sa 2 senior citizen Yung Isa po ay senior pero ilang mga apo Ang inaalagaan dahil Wala nang mga magulang at yung Isa nman po ay napagalaman kong araw araw nangungutang Ng tuyo para may makain ..naawa po Kasi ako sa mga sitwasyon nila Kaya kada may matanggap kaming biyaya at may extrang pera minsan d ko po nakaklimutang abutan silang 2 Hindi man po ganun kadami Ang nabbgay ko masaya na din po ako dahil iniisip ko napapasaya ko sila sa maliit na tulong nayun.ang aking reflection ay mas maraming taong naghihirap ngyon doble lalo sa MGA taong mahihirap na at walang wala”</i></p> <p><i>“Nkaraos dn sa 3 kilo with in 2 months now tpid pra mg kasya uli kung mg bgay iwan ko sa madaming pamilya hindi talaga mg kasya..?nway mg tanda ng tao kng pano hgpitan ang senturon ngayon sa dnanas ntin buhay. na ang diyos ang kailangan ntin at mg mhalan bwat pmilya huwag mtigas ulo pra mtaapos na itong ECQ at mg simula sa pnibagong kbanata ng bhay...?thanks God for your guidance on me always and my family we still healthy”</i></p> <p><i>“Bawat isang mamamyan ay nangangailan ng ayuda o financial support, kya ayaw man nila ay pilit na gagwa kme ng paraan para kme ay mabuhay at khit anong salita ating presidente na mgbigay ng financial support ay hinde natupad sa kadahilang mas pinili ng mga kakilala sa loob ang mga kakilala na my kaya nman sa buhay anu ang mgagawa naming mhihirap lalo na nangungupahan lang kundi pagkakasyahin ang kakarampot na kita Sana nga makarating man lang sa Pangulo ang hinaing nang kagaya ko na mabigyan man lang ng sap dahil pili daw ang nbibigyan. d pa ba sapat ang kgaya ko na single mother na wlang sariling tahanan o bahay? My anak pang my kapansanan na binubuhay.”</i></p>		

Recurring feelings:

Stress and anxiety over debts, increasing bills payment, and loss of employment

"Dahil wala aq pambayad sa bahay tapos ng covid balak kami paalisin.natatakot aq kc solo parent pi aq.dqu alam anu mngyayari tapos ng covid me dalawang anak aq 12y at 6y..at me isa aqng pamangkin.kumikita lng aq dahl din sa tulong tulong kami.gagawa aq merienda pinapadinda q sa kanila para kami me makain panu po pag tapos nito ang me ari ng bahay mahigpit sa mga bayarin ang kinakatakot q paalisin kami un ang kinatatakot q.kc tapos po ng covid alisin qudaw po ang maliit n pinagkakakitaan q dto lng nmn aq sa loob ng bahay gumagawa ng paraan.napakahirap po mag isa para sa mga anak mo"

"Mahirap subrang stress,hindi maka pag work,wlang byahe,ang hirap sa loob ng bahay pag sanay ka sa my trabaho,subrang init pa,araw mn o gabi,sakit sa ulo...mabubuang na ako kakaisip kung kylan may byahe...hirap ng life..huhuhu"

"Mahirap kc di ako makakatulog sa kakaisip tas walng ganang kumain kc lagi nalng sardinas ang ulam kc dika makalabas kc baka maya pag uwi m may sakit kana mahawa pa pamilya mo kaya natatakot ako lumabas."

"Malungkot kc bilang sidewalk vendor d ako mktinda ng maayos at d rin araw araw kc my schedule lng ang labas ko ng bhay.d Tuloy ako maipon ng pambayad ng tubig,koryente,at kuwartong inuupahan ko at llo n d ako mkgpag ipon ng lingguhan Kong pdla allwance ng 2anak ko kaawa tuloy mga anak ko tangin pgtitinda ko lng ang inaasahan nmin pno ko p maiipon ang png tuition ng mga anak ko preho p silang ng aaraal....ky dasal at pananampalataya nlng tlg s diyos ang pinanghwhkan ko at sipag at lakas ng loob nlng ang puhunan ko tiis at tiyaga nlng tlg alam ko lging my diyos....."

Frustration towards the national and local government

"I am not speaking for my own but for the rights of thr people especially those who are really in need. This pandemic shows how incompetent our government. Sana ma aksyonan abg nga corruption at kabobohang nagaganap sa administrasyon. Sana mapukaw ang puso at isip ng tao. That they should speak for the truth. The peolle deserves better or must I say best of the government. Dito sa lugar namen sobrang daming taong nagugutom na umaasa sa gobyerno. At dahil sa corruption at sa hindi pag iisip ng matino ng mga lider di sila makatanggap ng tamang ayuda para sa kanila ung hindi pipiliin. Dito samen puro picture lng or photo op ang mayor. Hindi binibigay ang tamang datus at tamang impormasyon sa tao. Sana marinig sa taas ang hinaing ng mga taong gutom at walang makain. Simpleng mamamayan lng din ako at sa totoo lng nakakaawa ang mga tao. I tried to help pero syempre kulang na kulang kase di nmn din ako mayaman. I also pray for the transparency of all the LGU and National government. Maging pantay at karapatan ng mayaman at mahirap with due and right process. Ang gulo gulo. Nanay po ako and I prayed na somedag when my children grwos hindi na ganto abg gobyerno naten. Salamat po"

"Sa ating pamahalaan ng governor.. Sana sa panahon ngayon ng covid - 19 hindi dapat nila pinipili ang kanilang tinutulungan lalong lalo na sa mga tulong naipamimigay s mga. Pamahalaan. At lalo ng sa dswd. Ako. O ang asawa ko wla mn lng kmi nkuha n ayuda sa dswd na higit kami nangangailan.. May mga. Pinamigay na mga relief. Pero mas higit namin kailangan ang. FENANCIAL dapat. Dahil ako ay volunteer lng naman.kng cno pa ang meron. Cla pa ang nabigyan. Ako n barangay health worker wng natanggap mula s dswd... Sana s pamamagitan nito malaking tulong ito para s. Amin n mga. BHW... City foned n hindi. Nla. Sinama sa dswd. Maraming salamat sa inyong survey. Sana makakatulong kau s amin dahil kmi frontliner din naman naka sasama ng loob kng isipin. N d. Kami napabilang sa governo o. Sa. Dswd... Hindi nila alam n kahit may. Covid. Kami ng. Duduty din. Bilang frontliner..."

Fear of contracting Covid-19

"Stress..kc di n flat curve at ngayun..gusto n mag open..ano ba tliga..kabwist d ba?..papapasukin n 50%..."

Feeling hopeful that the crisis will end

"Nanniwala po akong matatapos din Ang epidemyang kumakalat sa buong mundo at iyon nga Ang covid19. Hindi po Muna kami maglalabas labas Kung Hindi nman kelangan o importante Ang dahilan para makasiguradong makaiwas sa anung uri Ng skit.

"Cguro may pag asa pa tayo sa awa tulong ng governo at lalo na sa dios na may lalang. Sana balik sa normal ang buhay na masaya at maging masaya na..na wala alalahanin."

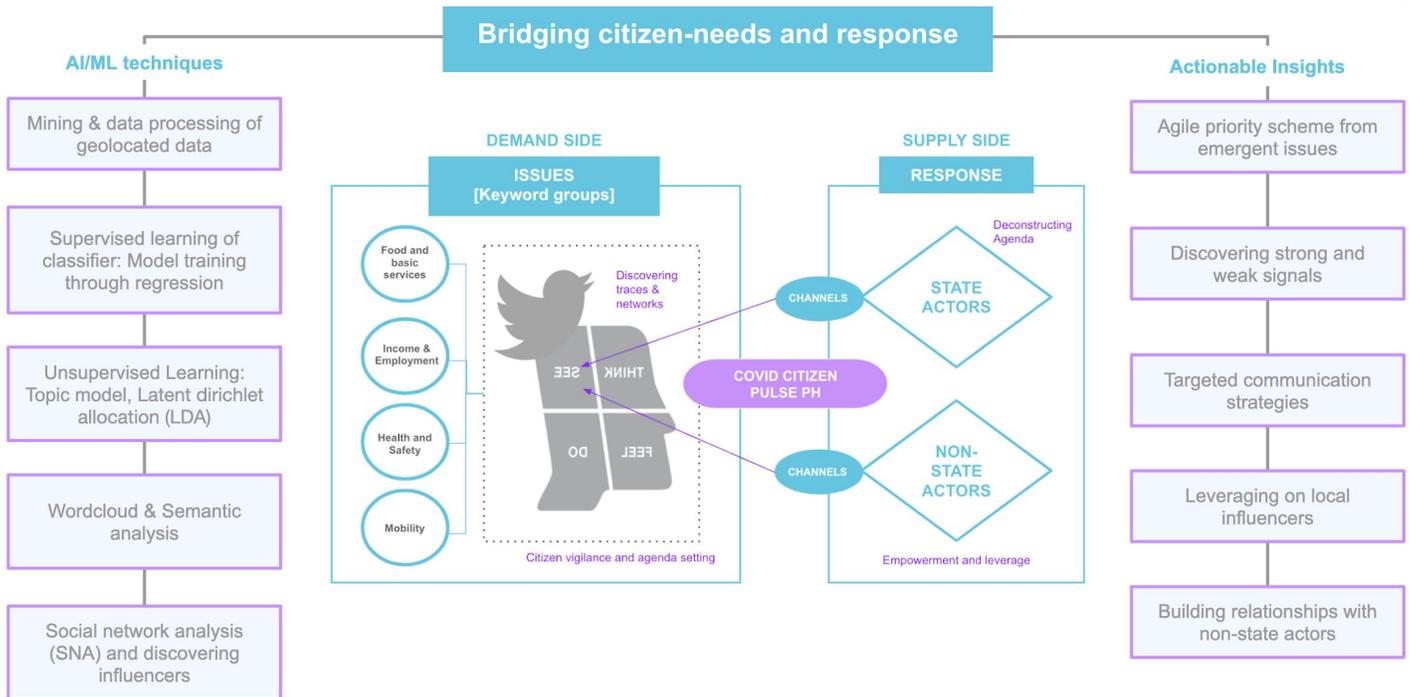
COVID PULSE PH SOCIAL LISTENING PROTOTYPE

The models that influence policy decisions at the time of COVID-19 such as doubling rate and care capacity utilization primarily considers the pandemic as a health crisis. As much as the pandemic requires the containment of the spread of the virus and urgent medical response, it also surface its political, economic and social underpinnings, which compounds risk and long-term effects of the pandemic.

Civil Vigilance in Digital Public Spaces

The national and local governments have been implementing a pandemic response from the onset of the crisis. However, the emergence of civic initiatives online are indicators that civic demands that are not adequately addressed. Large online movements have successfully set the agenda and instigated action from the government. However, most relevant concerns aired on social media do not get massive traction and remain unaddressed.

Using AI/ML tools, we may explore and surface issues that have been raised but left unnoticed or unaddressed to channel them to the appropriate state and non-state actors. Discovering and analysing traces of social actors in digital public spheres offer new perspectives in identifying issues and opportunities to minimize impact on communities.



The framework above describes the potential of AI/ML techniques to generate actionable insights. For Phase 1, we have limited the scope of the social listening work to exploring twitter data and conducting initial attempts in topic modeling. Bridging citizens and state response through leveraging AI/ML techniques requires a great amount of resource and time in order to have a deeper and more nuanced analytical work.

METHODOLOGY

The roughly 1.3M data collected from Twitter are from March 12 to May 20, 2020, which corresponds to the the start and end period of the enhanced community quarantine (ECQ) in Metro Manila. The keyword categories: (1) Basic Services, (2) State Responsibilities, (3) Social Cohesion were specified from key issues that UNDP and ZEP were interested to gain insights from the ground.

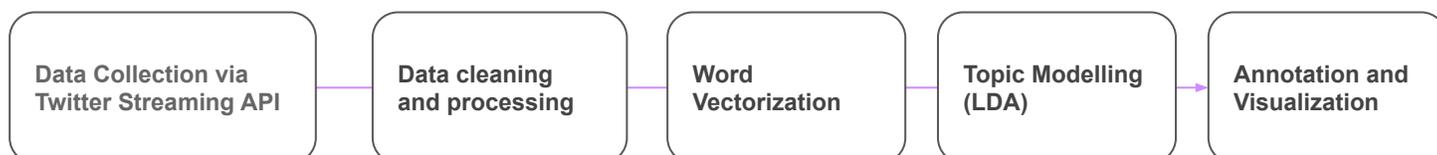
Subcategories and specific keywords related were defined and chosen based from clustering open feedback of respondents, gathered from the COVID PULSE PH chatbot. The list of keywords can be found in this [link](#).

General Issues	Basic Services	State Responsibilities	Social Cohesion
Subcategories	<ul style="list-style-type: none">- Mobility- Food Security- Economic Activity	<ul style="list-style-type: none">- Security- Medical Care- Government Aid	<ul style="list-style-type: none">- Emotions- Feelings

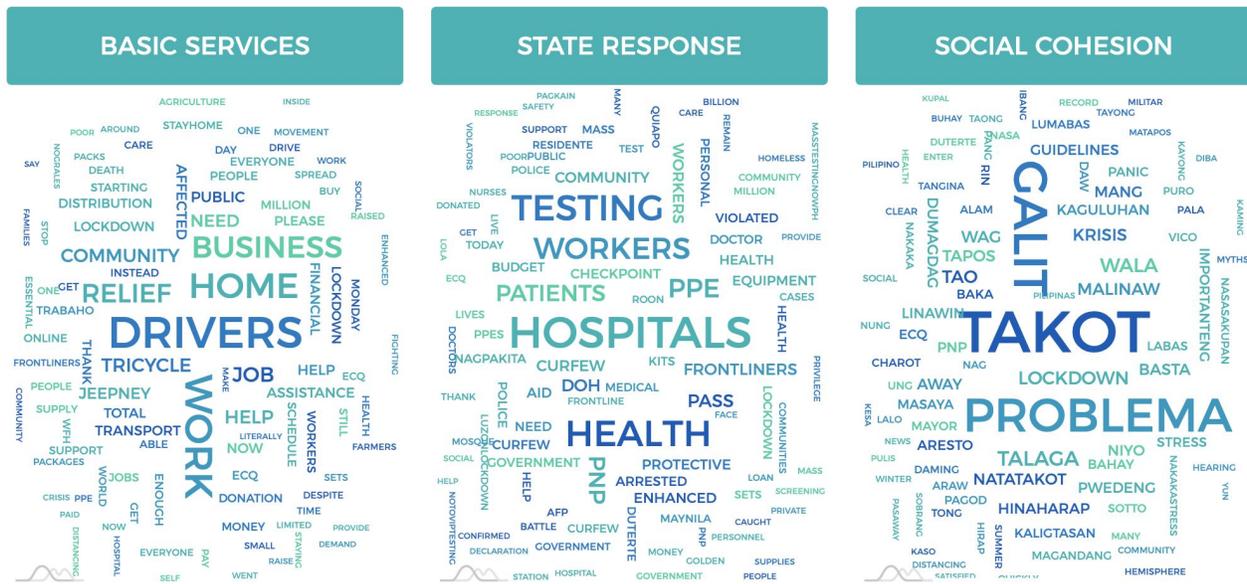
The weekly volume of tweets for each specific issue explored were summarized to determine the issues arising as the enhanced community quarantine taking longer effect because of extensions. For each specific issue, we explored what themes of conversation do Twitter users expressed during the quarantine period.

We conducted topic modeling using Latent Dirichlet Allocation (LDA). We aggregated the tweets by subcategory of issues explored. The raw tweets are the transformed into a document matrix of words. We set the number of topics to be discovered to 10. The output of LDA is the topic representation which is characterized by the distribution of words in each topic.

Topic modeling is an unsupervised learning approach and the interpretation of results are based on the patterns observed among sets of words emerging per topic. It is used for exploratory analysis and the results may vary depending on the number of topics specified by the user. In the results, only one topic per issue is highlighted. Frequency distribution of words per topic and issue were represented using word clouds.



Word cloud of topics per aggregated category:



On Basic Services

Mobility

One topic in this issue consists of 4,735 tweets, dominated by the words: **drivers**, **tricycle**, **jeepney**, **transport**, **assistance**, **affected**. Looking closely at tweets belonging to this topic, the following were observed:

- **Twitter users recognized the financial assistance given to Tricycle and Jeepney Drivers such as in Pasig and Makati (Vico Sotto, Makati)**
“tricycle and jeepney drivers in Pasig City whose jobs were affected by the enhanced community quarantine in Luzon would receive financial assistance from the city government...”
- **Expressed sentiments from tricycle and jeepney drivers because of the impact of quarantine to their only means of livelihood.**
“help our jeepney and tricycle drivers during this COVID19 crisis. Any amount will... our jeepney/tricycle drivers. They are part of the most affected in this COVID19 crisis. During the Enhanced Community Quarantine, their means of livelihood have been impacted...”

“most affected in this COVID19 crisis. During the Enhanced Community Quarantine, their means...QT @mtp_production: Maraming jeepney/trike drivers natin ang umaasa lang sa pamamasada ngunit dahil sa ECQ, isa sila sa stakeholders na apektado ang pamumuhay.”
- **Citizens saw social disparity in terms of mobility during quarantine.**
“Clearly a lockdown for the poor yet open city for the rich and powerful..”

On Food Security

One topic is proliferated by the words **relief, help, need, now, lockdown, thank, people, million, donation, money, support**. There were 20,183 tweets classified to this particular topic.

- **Many of the tweets assessed features the bayanihan spirit of people in these times.**

“Making efforts to sell crafts for a cause as validated by this tweet :“portraits for a cause. All proceeds will be donated to Zero Hunger PH to help us with our goal of distributing food bags to families affect by the ECQ due to COVID-19.” And some just have the heart and will to do so: “me and my high school classmates are gonna give away relief goods to those affected by the quarantine and Iâ€™m really that we can help during this time of crisis.”

- **Some tweets are about appreciating people who provide food to our table**

“Thank you to our backliners! Even with the COVID-19 situation, farmers still work every day to protect and sustain the food chain. Empowering local farmers have been part of the many initiatives of ASSIST.”

- **Some express lack of food assistance in their area**

“..na barangay may groceries, may bigas, may 1000 cash. kami kahit na 1 assistance wala pa...”

- **Some express that instead of cash assistance, food should be the main focus of the government.**

“Unpopular Opinion: Govt wasting money on the so called Amelioration funds. Pips dont need \$. They need food. How can they buy if quarantine is in place and limited banking hours? Landbank nga punuan an nagkakaubusan cash pag bigayan”

On Economic Activity

In terms of economic activity, words such as **work, home, business, help, lockdown, please, enough, everyone** were observed to dominate a particular topic comprising 22968 tweets.

- **Many of the tweets are about sharing work from home arrangements and experiences**

“First 3 weeks of wfh is temporary. So kung ano lang yung available sa bahay like table and chair, basta may laptop and wifi, okay na...”

“I know it’s a privilege to WFH but damn, I can’t wait for this quarantine to end. IM FEELING SO MUCH STRESS! I’ve never felt this tired even when the day just started wtf”

“sana matpos na ung virus. stress na dn ako sa work from home...”

- **Some expressed agreement about the establishment of curfew during lockdown**

“Ambobo ng nagrereklamo sa curfew kesyong may oras daw ba ang virus? Common sense! Lilimitahan kasi ang galaw ng mga tao to prevent the virus from spreading. Saka what's the point ng paglabas beyond 8pm?...”

“Yes, to 24/7 curfew and total lockdown.”

On Medical Care

Hospitals, Health, Testing, Workers, and PPE are the words more frequently seen among the 46389 tweets under one topic. Most of the contents of tweets in this topic are about workers in the hospital as well as their experiences finding hospitals to attend to their needs. Twitter users express appreciation to healthcare professionals and workers in hospitals for their unwavering duty performance. Some of them expressed support through donation drives. Some express dismay due to lack of protective equipment to frontliners.

“We thank our people who are keeping hospitals and essential facilities including retail and manufacturing, running for the public. We salute every frontline professional and everyone...covid19..”

“JANITORS ARE FRONTLINERS din. We should not downgrade their #AngBag in this Nation. They do the cleaning in every Covid19 hospitals. Lets us give them the respect they deserved. Instead give them a personal protective equip so they...”

“Majority of the positive cases here in Quezon are frontliners. Sad. I hope hospitals will have a strict protocol when it comes to PPE and quarantine but the health workers should be responsible enough to follow. SMH”

“As of today, we collected 100 face shields and 150 face masks for our Level 1 and 2 hospitals in Taytay and Angono. We still need more. Let us know if you want to help. #NursesCOVID19 #Covid_19PH...”

Some experiences told by twitter users in going to hospitals are unpleasant.

“8 days, we talked to 8 different hospitals, TMC is the only hospital that appreciated that this virus can be defeated at the local level..”

“Aside from CoVid-19 there are also other health issues everywhere (I used this not just to talk about in our country). It saddens me to see that these patients are being neglected or rejected by the hospitals.”

- **Appreciation to their company and work**

“Received good news that our company will provide ayuda to all staffs, was surprised and super thankfulōŸ™ ~ dah... paid pa rin naman kami for the duration of ECQ despite our work being suspended and can't wfh due to system limitations~..”

“I am very thankful that despite our situation, I am still paid since I am on a WFH arrangement even before the lockdown. ...”

“I've been so happy and productive at work lately despite the crisis. It feels meaningful to help make essential goods to fight the virus. It feels good to help the skeleton workforce.

- **Indicating loss of job due to quarantine**

“been advised of temporary unemployment due to the enhanced community quarantine. They are drastically affected by the no work, no pay scheme”

“Actually thinking of selling cookies bcos extended ang lockdown. Me needs money bcos no work no pay”

On State Responsibility

Security

One of the popular issues emerging during quarantine is how the police is handling checkpoints and quarantine violators. One specific topic was dominated by the words **Curfew, Community, Checkpoint, PNP, and Violators**. There were 12845 tweets classified in this topic.

- **Some twitter users express dismay oh how PNP treat people as though they are the enemy**

“Another day, another instance of police brutality in the Philippines; this time in a gated community in Makati. The PNP must have forgotten that the virus is the enemy here, not the people threatened by it!...”

“Ang problema sa PNP, tao ang itinuturing nilang kaaway. Hindi ang virus; hindi ang droga. Kaya ang laging solusyon: patayin ang tao.”

“Akala ko ba 'community quarantine' at hindi lockdown? Bakit may pag-aresto, curfew, etc.,? Sino ba kalaban dito?”

- **Some twitter users express gratitude towards the police and military for ensuring preventive measures are being practiced.**

“And thank u also to the police & military who are likewise in the forefront ensuring that we follow the govt's preventive measures to mitigate the spread of the virus. We appreciate everyone's efforts & sacrifices! May God bless...”

Government Aid

The President's name is one of the most frequent words influencing a particular topic in the issue about government aid. Other words include **Budget, Money, Poor Billion, Loan, Help**. There are 15,335 tweets belonging to this topic.

The contents of the tweets mostly pertain to their disappointment on the billions of pesos from donations and loans acquired by the government. They are questioning why these resources were not allocated in effectively combating the effects of the pandemic.

- **Ineffective use of resources**

“so this is it, the government plans to spend up to P600 billion but sad to say, more than half of it is galing sa loan...”

“pagnamatay tayo hindi natin mabiatbit ang pera. ; Nakakuha na ng \$500 million (P25 billion) loan ang Pilipinas sa World Bank bilang pondo sa laban kontra...”

“digong sinungaling ka, sabi ni sec. dominguez mayroon 1.7 trillion peso aid donation para sa covid-19 hindi pa kasama bagong loan sa world bank na 500M dollars, nasaan na pera? tapos ibenta mo na pinas?...”

“pera tayo??? Kaninong mga bulsa nanaman ba napunta yung budget??? ; The Philippine government is seeking another \$500-million (P25.4-billion) loan from the World Bank (WB) to fund programs that will assist poor households and small businesses amid the coronavirus...”

- **Concerns on social protection**

On the other hand, some tweets are questioning the giving of cash assistance to the poor instead of having a solid government plan, especially on the working force.

“Potah.Naawa ako sa working force, formal at informal. Sana maubos na pasaway sa lipunan. Kasi, nauubosan na m... mga ayuda. I mean, i wish there were less poor or no poor at all... I wish our government use this pandemic as a wake up...”

“Stop romanticizing this pandemic; I understand that we want to see a silver lining, but what we need now are concrete plans and solutions to aid those who are affected, especially the poor and laborers.”

On Social Cohesion – Feelings

“Takot” (Fear) at **“Galit” (Anger)** - these are the top two words in one of the topics identified in the emotional state of Twitter users during the quarantine. There are 14,735 classified under this topic.

The contents with the word fear refer to the virus. Some are observations that other people do not have fear of the virus or fear of getting the virus from people who are not responsible. Another is how the law enforcers handle quarantine violators.

“Kailan kaya ulit makakalabas ng wala ng takot at pangamba sa covid-19 ðŸ™£ Keep safe everyone!”

“lam nyo? para tayong kriminal dahil sa Covid19 na to! Takot na takot pagka nkakakita ng police patrol eh! sabay takbo mag sisigaw may police! may police! hahahah wala lang skl..”

“nag lalamyerda.walaNg takot sa covid19....Naniniwala na kayo ngayon na pilipino ay matapang,walang takot at may dugong mandirigma..Aba! Sabi na nga stay at home,ginawan na ng batas...”

“di ata takot sa covid tong mga Pilipino na'to labas pa din ng labas tapos iiyak iyak kapag nahawaan mandadamay pa”

“Susme nakakatakot, may kapitbahay kaming galing abroad. Kakalapag lang kanina tas nandito na agad. Ni hindi nagself quarantine wtf! Then, yung mga kamag-anak, galit pa at pinauwi pa dito sa may amin. Kutakot na pag-iingat namin dito tas kayo”

Contents with anger is about expressing dismay to others who neglect the effect of the virus to others. The anger is also combined with worry; not just the fear of losing lives but the uncertainty to their work. Some express emotional toll because of the effects of the pandemic such as quarantine.

“Haay. Naiiyak ako. Nampucha! Nagkaka-anxiety attack na ako dahil sa covid eeh. I am not victim blaming pero galit na galit ako sa isang selfish na isang PUI eeh. Imagine 1 PUI +2+5+21+24.. God! Nakakagalit po”

“Putangina puro galit na'tong nasa puso ko after quarantine putangina yung may mga may atraso sakin tanginanyo humanda kayo.”

“sana matapos na tong quarantine. Kailangan natin dalhin tong galit na to sa lansangan!”

“Isipin mo na hindi ka makatulog dahil nagaalala ka na mahawa sa #COVID19. Tapos madadagdagan pa ng posibilidad na mawawalan ka ng trabaho. Lahat ito ng dahil sa personal na galit ng iisang tao.”