Defining Cities in the New Normal:
A Conjoint Experiment of Livability Attributes

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Abstract: This paper examines attributes of cities that people prefer to live in after the outbreak of the COVID-19. Using an online survey of approximately 700 respondents in the Philippines conducted from December 2020 to March 2021 that incorporated conjoint experiments, we investigate the relative importance of various attributes of a city – such as neighborhood, healthcare, infrastructure, and governance – in influencing people's willingness to live in the city under the new normal.

Key words: COVID-19; residential choice; governance; survey experiment; Philippines

1. Introduction

This paper examines attributes of cities that people prefer to live in after the outbreak of the COVID-19. Using an online survey of approximately 700 respondents in the Philippines conducted from December 2020 to March 2021 that incorporates conjoint experiment, we investigate the relative importance of various attributes of a city – such as neighborhood, healthcare, infrastructure, and governance – in influencing people's willingness to live in the city under the new normal.

COVID-19 has undeniably impacted all facets of life since its outbreak. With more than 2.4 million lives lost due to the pandemic (World Health Organization, n.d.) and with over 100 countries having gone into lockdown, the pandemic has triggered the greatest economic, social, and financial shock of the 21st century (OECD 2020). Among the most decisive questions that needs reckoning is how COVID-19 will influence where people live. Devastating outbreaks in the past have taught us that diseases have a significant impact on urban design, planning, and overall quality of life. Historically, our responses to such diseases have largely resulted in healthier, safer urban environments. Nevertheless, COVID-19 showed us that our current living space is still vulnerable to airborne contagious diseases. While promising vaccine projects are underway in leading countries, the entire world cannot be disease-proof until well into 2021 and experts believe that we will be co-existing with the virus for the next few years (Cortez 2020).

Taking off from this realization, scholars discuss how cities are playing a vital role as societies transition to the "new normal" (Sharifi and Khavarian-Garmsir 2020; Bereitschaft and Scheller 2020). The global pandemic has been prompting cities to rethink how they deliver services, plan its space, and resume economic development. Such attempts are seen to become opportunities in improving lives and stimulating

innovation to build a more resilient livable space. The post COVID-19 recovery has the potential to build a "new normal" in cities, which is expected to lessen the susceptibility of economic, social, and environmental systems.

Given the importance of understanding how cities should look like in the post-pandemic era, this paper examines important factors that people consider in choosing a city as the world transitions to the new normal. We employ a conjoint experiment in which we come up with different city profiles; respondents are asked whether they prefer to live in the hypothetical city presented. Scenarios with alternative combinations of livability attributes allow our study to evaluate how respondents consider tradeoffs between competing sectoral issues. Specifically, we focus on the following categories of attributes that we hypothesize would be of value to how people choose their preferred living space: neighborhood, healthcare, mobility and infrastructure, and governance and rule of law.

Although there have been studies that investigated residential preferences or how people come to choose where they live using survey data (e.g., Bayoh, Irwin, and Haab 2006; Ennis, Pinto, and Porto 2006; Ströbele and Hunziker 2017), this study, to the best of our knowledge, is one of the first ones that applies the method of conjoint experiment to investigate people's preference and willingness to live in a hypothetical city across inter-disciplinary livability attributes under the new normal. Furthermore, by exploring choices and the tradeoffs in choosing a livable space following a critical phenomenon, our paper seeks to provide insight in laying down the foundation for adaptive planning that will be responsive to the societal changes brought by the COVID-19.

The rest of the paper is organized as follows. Section 2 describes the Philippines after the outbreak of the COVID-19 to provide background of our survey. Section 3

presents hypotheses. Section 4 explains the data and method. We conducted an online survey of approximately 700 respondents from various parts of the Philippines. In the survey, conjoint experiment was incorporated in which we asked the respondents to evaluate hypothetical profiles of cities. Section 5 presents the findings, followed by a conclusion and discussions in Section 6.

2. Background: Pandemic and Cities in the Philippines

The Philippines was named as the country with the worst COVID-19 outbreak in Southeast Asia (Cortez 2020). With cases doubling almost every three days, the government was pushed to impose an enhanced community quarantine (ECQ) over the main island of Luzon with the objective of flattening the curve. Provinces and cities outside Luzon were also prompted to impose lockdowns following this situation. Just two months from the occurrence of the first case, country cases ballooned to more than what the state could handle.

The bulk of cases are dominantly in the congested region of the National Capital Region (NCR), followed by the neighboring region of IV-A and the next most populous Region VII. Though current numbers would show that the curve has been flattening, reverting to a more relaxed modified enhanced community quarantine (MECQ) could still cost the NCR and its adjacent regions some 2.1 billion pesos in wages a day. Meanwhile, the National Economic and Development Authority (NEDA) reports that every day of General Community Quarantine (GCQ) would cost these regions around 700 million pesos in wages. All these deficits point to the urgency to work together in re-opening the economy further 2021 onwards.

The sudden imposition of ECQ in Luzon caught many sectors unprepared. NEDA conducted a survey on people's experiences and expectations during and after the ECQ.

The results of the survey provided a good indication of the pains of consumers and businesses resulting from the COVID-19 crisis and the ECQ. For example, income drops were reported by 40% of the respondents, 60% had to reduce food consumption, and less than a quarter of the respondents expressed their intention to travel within a year after the ECQ is lifted.

It also seemed that the pandemic and the ECQ have amplified the inadequacies of the country's health system and the inefficiency of the supply chain and logistics system, and the government puts priority in addressing both issues. The government developed a nationwide recovery plan to mitigate the consequences of the pandemic and eventually build a better normal for economic conditions to normalize.[1] Its plight in battling the virus is to continue managing risks, and not to avoid them completely. This way, the country is expecting to bring back jobs and income sources to enable many to address their non-COVID-19 sicknesses and hunger as well. Overall, the government foresees that incomes and jobs will come back with the safe relaxation of community quarantines.

Learning from the rapid spread of the virus in the highly congested NCR, the Philippine government proposed for the institutionalization of the "Balik Probinsya, Bagong Pag-asa" program which is geared towards addressing the capital's congested urban areas by encouraging people to return to their home provinces and assist them in the transition by supporting them in their daily needs to survive, such as livelihood,

[1] Inter-Agency Task Force for the Management of Emerging Infectious Diseases – Technical Working Group for Anticipatory and Forward Planning. (2020). We Recover as One. https://www.neda.gov.ph/we-recover-as-one/

education, and transport.[2] The program aims to avert the negative impacts of COVID-19 and manage public health emergencies of the same magnitude in the future through urban decongestion. The National Housing Authority has reported that around 10,000 citizens expressed interest to avail of the program since May 2020, and majority of these people wanted to move back to the provinces of Camarines Sur, Bohol, Leyte, and Samar.[3] Similarly, the Hatid Tulong program was implemented to give more focus on aiding non-Metro Manila residents to get back to their home provinces and cities.

In line with such, this study proves to be more relevant in this endeavor. As local governments respond to the mandate and seek to improve overall city design for those who are moving in as well as those who are currently residing in their localities, the findings of this study will serve as a foundation for local planners to efficiently deliver services, plan their space, and resume economic growth.

3. Hypotheses

At the time of the COVID-19 outbreak, academics were quick to explore and provide their own synthesis on how cities would likely evolve (E.g, Batty 2020; Couclelis 2020; Florida, Rodriguez-Pose, and Storper 2021; Kleinman 2020). As cities have multidimensional attributes, dwellers form preferences and make decisions about alternatives which differ in multiple ways. While prior research explored what place attributes people would highly value (Hankinson 2018; Mummolo and Nall 2017; Ennis, Pinto, and Porto 2006b), discourse on exploring what led them to those choices –

[2] Executive Order (EO) No. 114 (2020)

[3] "10,000 Filipinos apply for 'Balik Probinsya' program — NHA". Philippine Daily Inquirer. May 13, 2020. Retrieved May 30, 2020

specifically following a critical event such as a pandemic – is limited. In the case of an airborne disease such as COVID, its contagious nature may affect how people view competing variables of health and economy. Understanding such phenomenon is critical for policymakers to design effective public health interventions. However, beyond being a health concern, choosing a city involves numerous factors (Ströbele and Hunziker 2017).

Similar to other pandemics, COVID-19 has a spatial dimension that needs to be managed. Beyond being a public health concern where healthcare facilities are greatly challenged, other factors such as urban density, transportation, digitalization, and governance were seen to play a critical role in crisis management and recovery, especially of highly affected populations (Azmizam 2020). In coping up with the new norms, the physical and functional structures of cities play a large role in keeping people at pace with the evolving demands of work and lifestyle. In investigating how they choose a livable space, the following attributes deemed critical in influencing people's residential preferences.

3.1 Neighborhood and Healthcare

Despite the benefits of having better accessibility to local services and jobs, compact and densely populated cities are vulnerable to the pandemic (Mohanty 2020; Hamidi, Sabouri, and Ewing 2020). The more populated the area, the more likely contagion would occur through inevitable human contact. In realizing the vulnerabilities of congested urban areas, people may start to rethink where they want to live, and wish to move away to less densely-populated places. In addition to concerns about infection in congested areas, people would be highly concerned about the availability of healthcare since the lack of medical resources – which could be exacerbated by ineffective public health measures at early phases – would lead to an increase in mortality (Barrett et al. 2020).

It would be interesting to examine whether and to what extent these features of the city – congestion and healthcare services – outweigh economic benefits that urban centers presumably offer, such as job opportunities and various commercial and public services. Considering the ongoing challenges the pandemic imposes on public health at the time of our data collection (2020-21), our expectation is that people give more importance to a healthy surrounding with excellent healthcare than other economic advantages of urban centers. Thus, we test the following hypotheses.

H1.1: People prefer to live in a city with a good healthcare system than in a city with better accessibility to jobs and services.

H1.2: People prefer to live in a city with wide open space than accessibility to jobs and services.

3.2 Mobility and Infrastructure

Infrastructure development is associated with growth (Calderon and Servén 2004; Cigu et al. 2019). The more visible infrastructure expansion is in an area, the more likely the influx of people. Cities require effective modes of transport to manage and sustain its economic requirements. A good public transportation system and its complementary infrastructure networks allow commuters to manage their schedules with limited traveling costs.

However, the pandemic substantially impacted transportation and mobility. Adjusting to mobility restrictions and with the imposition of lockdown and home quarantine measures, the population has turned into digital connectivity in order to continue work and study (Livingstone 2020). However, teleworking (work and study-from-home) exposed the realities of digital divide (Beaunoyer, Dupéré, and Guitton 2020). With heavy reliance on digital technologies, strengthening and extending access to the

internet and digital equipment have become an important feature of recovery. Between observable infrastructure expansion and having better internet access, it is argued that the latter is given more preference by citizens, given the restrictions imposed by the pandemic.

H2. People give more importance to reliable internet connectivity than observable road or other infrastructure development for their choice of city.

3.3 Governance and Rule of Law

On top of these dimensions, government response proved to be critical in effectively mitigating and coping with the consequences of the crisis. Studies show that in a crucial time of COVID-19, effective and reliable governance improves a locality's response and recovery (Dutta and Fischer 2021; Shaw, Kim, and Hua 2020). Therefore, in this pandemic situation, the kind of governance people expect from their local governments is something of utmost cruciality. Consequently, perceived quality of a city's governance would affect their preference for living in the city.

H3.1: People prefer to live in a city with better governance.

Regarding the dimension of governance, people's perception about the responsiveness of the government may depend on the descriptive characteristics of the leaders. Some studies of political science suggest that descriptive representation results in substantive representation: preferences of a group of voters (e.g., women; younger voters) are better reflected when the local government is led by the leader who shares the group's characteristics (e.g., female leader; younger leader) (Chattopadhyay and Duflo 2004; McClean 2021; Suci, Yamada, and Wibowo 2020). This suggests that people may take into account the descriptive characteristics of the leader to make inference about what the local government would do and how well it performs. In the Philippines' context, some young elected officials have been inspirational in responding to the challenges of

the pandemic. This perception would be more pronounced among younger voters. Considering that many of our respondents' ages fall into younger categories, their willingness to live in a city could be influenced by whether it is led by a young leader.

H3.2: People prefer to live in a city led by younger politicians.

Finally, we add one feature related to governance and rule of law that would substantially affect one's living conditions, with or without the pandemic: crime rate. Living in a safe place would be an important attribute for many. Tita, Petras, and Greenbaum (2006) shows that a higher level of violent crimes leads to a lower housing price in the United States. Hipp et al (2019)'s study using neighborhood level data in the United States show that businesses are less likely to choose neighborhood with higher crime rates and are more likely to fail in such places. It would be reasonable to expect that in the Philippines, too, people and businesses would avoid insecure neighborhoods. Here we test the following hypothesis.

H3.3: People prefer to live in a city with lower crime rates.

4. Data and Method

4.1 Online Survey of Residents

In order to test the hypotheses, we conducted an online survey of nearly 700 residents from various parts of the Philippines from December 2020 to March 2021. The mode of data collection is online survey, not other modes like face-to-face interviews due to the difficulty of directly contacting the respondents during the pandemic. Furthermore, given the need for randomization and a large number of possible profiles, it would be difficult to incorporate the conjoint experiment with many attributes in the other modes of data collection.

We recruited the respondents through *SurveyMonkey audience*. We first recruited

292 respondents in Central Philippines Region and Mindanao Super Region (Dec 17, 2020).[4] Subsequently, 176 and 260 respondents were recruited from North Luzon Agribusiness Quadrangle (Jan 12, 2021) and Metro Luzon Urban Beltway (Mar 5, 2021), respectively. Thus, 728 respondents responded to at least one question and 683 of them completed the conjoint questions: all the responses were collected in less than a day after starting the recruitment. For each of the three waves, we contacted the maximum number of respondents possible within the budget constraint. Note that for North Luzon Agribusiness Quadrangle and Metro Luzon Urban Beltway, we stratified by gender and age groups so that the sample resembles the population of the Philippines.[5] Characteristics of the respondents are reported in Table 1.

[Table 1 here]

4.2 Questionnaire

The questionnaire contained four parts. The first section contained questions regarding respondent's attitudes toward the city they live in and their opinions on how the city has been handling the pandemic. The second section is the core of the survey, in which conjoint questions were included. We presented four sets of two hypothetical cities; for each set of two cities, we asked the respondent to rate their likelihood of living in each of

[4] This includes the following regions: Western Visayas, Central Visayas, Eastern Visayas, Zamboanga Peninsula, Northern Mindanao, Davao, Soccsksargen, Caraga, and BARMM.

[5] In Central Philippines Region and Mindanao Super Region, we did not stratify by the respondents' characteristics and found that female and younger individuals accounted for a large fraction of the respondents, resulting in our decision to stratify in later surveys.

the two cities and which of the two cities they would rather live in. We describe the details in Section 4.3. The third section of the survey asked questions related to tradeoffs during the pandemic – such as how much they are willing to give up their jobs to reduce the chance of COVID-19 infection. The fourth section asked demographic questions. There were 29 questions in total.

4.3 Conjoint

1. Basic Feature

To examine the relative importance of various attributes of hypothetical cities, the method of conjoint experiment was incorporated. In conjoint experiment, researchers present a hypothetical profile or a pair of hypothetical profiles and seek to understand respondents' attitudes toward the profile(s) presented. Each profile consists of some attributes that describe the profile, and each attribute contains two or more levels. For each attribute, one of the levels is randomly selected. For example, if we are to present a hypothetical profile of a society's condition in the near future, attributes may include features such as inflation rate, unemployment rate, and severity of the COVID-19 pandemic. In case of the attribute "severity of the COVID-19 pandemic", the levels could include "good", "not so good", and "bad".

There are studies that incorporate survey experiment in the research on residential preferences, including vignette experiment (Gimpel and Hui 2015; Hui 2013) and conjoint experiment (Franke and Nadler 2019; Hoshino 2011; Iman et al. 2012; Kwak, Yoo, and Kwak 2010; Molin, Oppewal, and Timmermans 2001) . For example, Hoshino (2011) incorporates conjoint experiment in an online survey conducted in Japan; the respondents were presented "a hypothetical scenario in which [they] were required to live alone in a one-room dwelling (p.368)." Various attributes such as rent, size of the living

unit, type of building, and proximity to shops are included. Franke and Nadler (2019) conducted a survey of tenants and owners of housing units in Germany; in addition to rent, size, number of rooms, building condition, and location, their conjoint incorporated energy consumption as one of the attributes to understand the relative importance of energy efficiency of the housing units in residential choice.[6]

Despite the prior research on residential preferences, the roles of factors related to governance and politics have been under-investigated in prior research. Relevant to our study would be Hui (2013) and Hui and Gimpel (2015), who focus on the impact of partisanship of neighborhood on the residential preference: they examine whether the same, hypothetical residential location is evaluated differently depending on the partisan composition of the area (e.g., 80% of the people in the neighborhood are Democrats VS 20% Democrats). However, to the best of our knowledge, governance-related factors examined in our study – such as the quality of governance and the age of mayors – have not been investigated in the prior research of residential preferences using conjoint.

We also acknowledge recent studies related to the COVID-19 utilizing conjoint experiment (Jonker et al. 2020; Wiertz et al. 2020; Frimpong and Helleringer 2020; Mon and Yamada 2022). For example, in an online survey conducted in the United States that

[6] The method has been increasingly used in political science to examine individuals' evaluation of attributes for various objects such as candidates in elections (Carlson 2015; Horiuchi, Smith, and Yamamoto 2020), political parties' campaign manifestos (Horiuchi, Smith, and Yamamoto 2018), policies on social investment (Brazzill, Magara, and Yanai 2020), price levels (Yamada 2022), and civil servants' evaluation of hypothetical public employees (Oliveros and Schuster 2018).

incorporated conjoint experiment, Frimpong and Helleringer (2020) provided a pair of hypothetical contact tracing applications to the respondents with several attributes such as financial incentives, privacy, and accuracy of the applications. Similarly, using an online survey that incorporated conjoint experiment in the Netherlands, Jonker et al (2020) examine the relative importance of several attributes – such as financial incentives, conditions to receive a test after receiving a warning, and whether detailed warning (including date and time of being close to the infected) is given – in explaining respondents' chance of selecting the application. Finally, Mon and Yamada (2022) provide a pair of hypothetical conditions of the Myanmar society and analyzes the extent to which people prefer democracy to autocracy under varying levels of the pandemic condition. Our study follows these conjoint-based studies of COVID-19 but examines people's preferences for cities to live in after the onset of the pandemic.

2. Attributes and Levels

We selected the attributes based on studies on this topic and results of previously conducted interviews. Specifically, as discussed in Section 3, we aim at testing the roles of four categories of attributes, including (1) neighborhood, (2) healthcare, (3) mobility and infrastructure, and (4) governance and rule of law. For each category, we come up with some specific attributes; each attribute can take two or more values, only one of which is presented to the respondent.

In coming up with the final set of specific attributes, we primarily relied on our theoretical expectations discussed in Section 3. Concurrently, we conducted key informant interviews which involved environmental planners in the Philippines from different fields in order to understand what features of cities would be most relevant in

the real-world choices.[7] There are a total of 11 attributes. To reduce burdens on the respondents, we conducted two conjoint experiments, presenting six attributes for the first conjoint and five for the second. For each conjoint, we selected attributes so that the hypotheses can be tested.[8] For each conjoint, two pairs of cities (four cities in total) are presented.[9] Table 2 summarizes the attributes and levels. A preliminary survey with a convenience sample of approximately 20 people conducted in November 2020 suggested that respondents understood the hypothetical scenarios correctly and that interview burdens were not too high.

[Table 2 here.]

3. Outcome Measure

We use two measures of voters' preferences on the hypothetical city, rating-based and choice-based. In the rating-based measure, respondents give a numerical rating to each profile which represents their degree of preference. In the choice-based measure,

[7] Environmental planners in the Philippines are licensed professionals from varying fields (architecture, local planning and development coordinators, economists, and sociologists, among others).

[8] Since *SurveyMonkey* does not have a ready-to-use conjoint function, we combined a series of A/B tests. Specifically, for each attributed, we used a text A/B test, which allows us to randomly present one of the texts prepared. Within each A/B test, all the texts were set to have the same probability of being presented.

[9] Using samples recruited from online opt-in panels, Bansak et al. (2018) show that it is safe to use as many as thirty (30) tasks on respondents without detectable degradation in response quality.

respondents are presented with two or more alternatives varying in multiple attributes and are asked to choose the one they prefer more.

For each conjoint, after an introductory sentence, the first pair of cities (called City A and B) was presented. Specifically, we presented the profile of one city first and asked the rating question: "How likely are you to live in City A?" The answer choices were presented on a five-point ordinal scale and included "highly likely", "likely", "neutral", "unlikely", and "very unlikely." We then presented the profile of the other city and asked the rating question. Finally, the choice question was asked: "In which city, A or B, would you rather live in?" The respondents were asked to select either City A or City B.

After the first pair was presented and the questions were asked, we presented the second pair of cities (called City C and D) and asked the identical questions to the first pair. The second conjoint parallels the first conjoint with different attributes: we presented two pairs of cities (E and F; G and H) and asked the respondents to rate each city and select which one of the two cities in each pair they would rather live in.

4. Empirical Strategy

We estimate the Average Marginal Component Effect (AMCE) with conditional logit regression for the choice-based dependent variable and OLS for the rating-based dependent variable. In the context of our conjoint, AMCE would show the change in the probability of selecting the hypothetical city (choice-based) or the change in the level of rating of the hypothetical city (rating-based), on average, if one of the attributes changes from the baseline level to a specific level (Hainmueller, Hopkins, and Yamamoto 2014).

In the OLS, the dependent variable is the rating of the city in the five-point ordinal scale. Since each respondent evaluates two pairs of cities for each conjoint, we pool the rating of four cities from each respondent and consider them as four distinct observations.

Thus, the number of observations for each conjoint is approximately four times the number of respondents. For each attribute, we create binary variables indicating the levels with one level used as a reference category. For example, in "Local Governance" attribute in the first conjoint, there are three levels: we create a binary variable which takes the value of one if the respondent is assigned to observe the profile with "average governance quality" and zero otherwise; similarly, a binary variable indicating the assignment to "efficient and reliable local government" is created. These binary variables indicating levels are used as independent variables.

In the conditional logit regression, for each pair of cities, each respondent evaluates two profiles and ultimately chooses one of the two. In the dataset, two profiles appear as two separate rows with information indicating that the two are evaluated by the same respondent. The dependent variable is binary – whether the profile is selected as the preferrable one by the respondent. The independent variables are the same as the ones in the rating-based analysis.

5. Findings

The findings are reported in this section. We first describe the respondents' perception of the city in which they currently reside. We then report the results of the conjoint experiment, our main findings.

5.1 Perception of the Current City

Tables 3 and 4 report respondents' assessment of the city they live in now. About 60% conveyed that they are satisfied with how their city responded during the implementation of lockdown and quarantine measures in time of COVID-19. Similarly, 38.5% and 40.4% agree and somewhat agree that their city is ready for the new normal. However, more than 40% believe that transport system, healthcare, and governance need

improvement, while other features were also selected by a non-trivial proportion of the respondents (e.g., 39.5% reported that their city needs improvement in infrastructure and digital connectivity). We find that features of the city that many respondents think need improvement are similar to the attributes in the hypothetical cities in the conjoint; in other words, the attributes in the conjoint would be the features that the respondents are quite concerned about.

[Table 3 here]

[Table 4 here]

5.2 Findings of the Conjoint Experiment

1. Rating-Based Analyses

We first report the results of the rating-based analysis. The dependent variable is how likely the respondent would live in the hypothetical city presented. For each conjoint, the respondent evaluated two pairs of profiles, resulting in the evaluation of four profiles. We treat the rating of each city as a distinct observation; thus, there are four observations generated from each respondent. Results of the OLS regressions are reported in Tables 5 and 6. We report the results for each city presented (four cities in one conjoint), results where all the responses are pooled (i.e., a respondent's rating of four cities are considered as four separate observations), and the analysis of the pooled data with respondents' characteristics (age, sex, region) included as the control variables.

[Table 5 here]

[Table 6 here]

Here we interpret the results of the pooled data without control variables since the attribute levels are randomized and inclusion of control variables lead to a smaller sample size due to item non-responses. As for the first conjoint, Table 5 shows that a city with

current road upgrading on average receive ratings that are 0.366 unit higher than a city without current development in a 5-point scale, holding other factors constant. We can also see that for a city with highspeed internet connectivity, people have an estimated level of preference that is 0.666 higher than those with unreliable connection. Compared to a baseline city with poor governance, cities with better performance (average and efficient) have significantly higher ratings (by 0.427 and 0.552). With respect to housing, a city offering affordable units receive preference that is 0.373 higher than a baseline of high-cost housing. In this pooled estimate, although wide bike lanes remain significant as a variable for city choice (0.236), sidewalks do not seem to matter. Moreover, younger politicians governing the city seem to matter and receive ratings that is 0.09 higher than a city run by old and traditional leaders.

In the second conjoint reported in Table 6, it is found that a city with better healthcare facilities receive higher ratings. For instance, a city with hospitals that can cater more patients for admission (surplus bed) receive ratings that are 0.67 higher than those with relatively poor healthcare, while those that have impeccable facilities (excellent healthcare) receive even higher ratings of 1.09 compared to the baseline. An environment with a better state of security also seems to be of great importance. Results show that a city with a relatively lower level of crime rate (average and low) receive higher scores (by 0.65 and 1.01). In terms of job availability, in a city where one's skills are on-demand, people have an estimated level of preference that is 0.49 higher than those in a business environment which does not necessarily require one's skill sets. With respect to space, cities with wide open spaces receive ratings that are 0.26 higher than those with crowded and highly dense areas. Proximity to urban areas does not seem to matter much: the variable indicating the random assignment to a city with 10-minute drive to urban areas

does not have a statistically significant association with the dependent variable.

2. Choice-Based Analyses

Results of the choice-based analyses provide similar results. Since the coefficients are not directly interpretable, we report the marginal effect of attributes for the first and second conjoint in Figures 1 and 2, respectively. The marginal effect reports the change in the predicted probability of selecting the city when the respondent is assigned to observe a specific level of an attribute – in comparison with the baseline level of the attribute.

[Figure 1 here]

[Figure 2 here]

3. Findings and Hypotheses

There are several attributes significantly associated with the respondents' choice of the city. In Table 7, we summarize whether each hypothesis was supported by the findings. Hypothesis 1.2 is not supported since in Conjoint 2, the marginal effect of the attribute of job availability is greater than the attribute of wide-open space. Economic considerations seem quite important. The other hypotheses are consistent with the findings. The effect of being assigned to a city with excellent healthcare is larger in size than that of the job availability and proximity to city center (Hypothesis 1.1). Good internet connection is found to have a significant effect on the respondent's chance of selecting the city (Hypothesis 2), while attributes related to governance and the rule of law all have statistically significant effects with expected signs (Hypotheses 3.1, 3.2, and 3.3); the magnitude of the effect is particularly large for cities with efficient governance and low crime rate.

[Table 7 here]

6. Conclusion

COVID-19 has laid bare how well our living environments are planned to survive and recuperate from disasters. The pandemic has stimulated cities to rethink how to manage service delivery, make use of space, and how to recover from economic loss. Building for the new normal allows the opportunity to improve lives and stimulate innovation that not only brings back business as usual but shapes a more resilient and sustainable living space.

The results of the conjoint experiment showed that features that people deem important in a city within the new normal scenario are excellent healthcare, low-level of crime rate, fast and reliable internet connectivity, availability of jobs related to one's skill set, efficient and reliable governance, younger generation of politicians, affordable housing, infrastructure development, less-dense and wide-open spaces, and presence of wide bikelanes as a mobility option. After employing OLS and conditional logit regressions to perform rating-based and choice-based conjoint analysis, it was found that the outcomes for both models have no fundamental differences. The significant attributes give us a trajectory on how we should prioritize planning and manage cities in responding to the new normal.

We conclude by discussing a few limitations of our study. First, despite the many attributes that deem important for city choice and COVID-19, we focused only on the four main variables of Healthcare, Neighborhood, Mobility and Infrastructure, and Governance and Rule of Law and its attributes. Second, we acknowledge that the respondents' choices were made between hypothetical cities. As such, in interpreting results, care must be exercised.

Third, although we have respondents from three regions and stratified by gender and age groups, it is not a probability sample and there is possible deviation between the sample and the population. Therefore, generalizability beyond relatively young and educated populations who are willing to serve as the online survey respondents could be questioned. Finally, we emphasize the importance of the timing of the survey: it was conducted from December 2020 to March 2021 during which the pandemic situation deteriorated. If vaccination and other measures successfully contain the virus, their concerns about healthcare or other features of the city helpful in reducing the chance of infection may decline. It would be important to conduct multiple waves of surveys in the years to come to examine whether, how, and to what extent residential preferences and choices shift as the pandemic situation changes.

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Table 1: Summary Table

	Overall		Mindanao		North Luzon		Metro Luzon	
	Obs	Percent	Obs	Percent	Obs	Percent	Obs	Percent
Location								
Mindanao	292	40.11						
North Luzon	176	24.18						
Metro Luzon	260	35.71						
Total	728	100.00						
Gender								
Female	399	58.42	175	64.81	85	52.15	139	55.60
Male	284	41.58	95	35.19	78	47.85	111	44.40
Total	683	100.00	270	100.00	163	100.00	250	100.0
Age								
~ 29	396	57.56	177	64.84	85	51.52	134	53.60
30~39	189	27.47	72	26.37	45	27.27	72	28.80
40~49	74	10.76	17	6.23	26	15.76	31	12.40
50~59	16	2.33	5	1.83	4	2.42	7	2.80
60~69	11	1.6	2	0.73	3	1.82	6	2.40
70 ~	2	0.29	0	0.000	2	1.21	0	0.00
Total	688	100.00	273	100.00	165	100.00	250	100.00

Note: Characteristics of the all respondents, those in Mindanao, North Luzon, and Metro Luzon are reported. The number of observations varies across variables due to item non-responses.

Table 2: Attributes and Levels

(1) First conjoint

Category of attributes	Attribute	Levels
Neighborhood	Housing	Higher cost of housing units
		Affordable cost of housing units
Mobility and infrastructure	Infrastructure	No current road upgrading or infrastructure development
		With on-going road and transport upgrading
	Digital infrastructure	Unreliable internet connectivity
		Relatively slower internet speed
		High-speed internet
	Urban Design	With sidewalks but no bike lanes
		Wide bike lanes
		6-lane vehicle roads but no sidewalks or bike lanes
Governance and rule of Law	Local Governance	Pool local government response
		Average governance quality
		Efficient and reliable local government
	Politics	Led by old/traditional politicians
		Led by younger/new generation of politicians

(2) Second conjoint

Category of attributes	**Attribute**	**Levels**
Neighborhood	Availability of jobs	Jobs related to your skill-sets are not in demand
		Jobs related to your skill-sets are readily available
	Distance to urban center	20-minutes drive to urban area where services are available
		10-minutes drive to urban area where services are available
	Density	Congested area
		Wide-open space
Healthcare	Healthcare	Poor healthcare
		Limited number of hospital beds
		Surplus of hospital beds
		Excellent healthcare
Governance and rule of law	Crime rate	High crime rate
		Average crime rate
		Low crime rate

Note: For each conjoint, two pairs of cities are presented. A profile of a city is generated by randomly selecting one of the values of each attribute.

Table 3: Respondents' Opinions on the Current City

How Current City Responded during the ECQ: Satisfied or Dissatisfied?

Answer choice	Frequencies	Percentage
Satisfied	425	60.1
Somewhat Satisfied	226	32.0
Neither Satisfied nor Dissatisfied	37	5.2
Somewhat Dissatisfied	13	1.8
Dissatisfied	6	0.9
Total	707	100

Readiness of City in the New Normal: Agree or Disagree?

Answer choice	**Frequencies**	**Percent**
Agree	272	38.5
Somewhat Agree	285	40.4
Neither Agree nor Disagree	66	9.4
Somewhat Disagree	42	6.0
Disagree	37	5.2
Don't Know	4	0.6
Total	706	100

Note: The table reports the respondents' opinions on their city's response to the Enhanced Community Quarantine (ECQ) and the readiness of the city in the new normal.

Table 4: Respondents' Attitudes toward the Features of the Current City

Features of the city with which the respondents are satisfied

Features	Observations	Percentage
Transport system	313	43.0
Peaceful environment	447	61.4
Urban design	194	26.7
Work environment	266	36.5
Local governance	277	38.1
Healthcare system	232	31.9
Infrastructure and Digital Connectivity	217	29.8

Features of the city that the respondents think need improvement

Features	Observations	Percentage
Transport system	347	47.7
Peaceful environment	177	24.3
Urban design	189	26.0
Work environment	243	33.4
Local governance	302	41.5
Healthcare system	360	49.5
Infrastructure and Digital Connectivity	289	39.7

Note: We asked the respondents the features of their city that they are satisfied with (presented in the top panel) and the features of their city that they think need improvement (presented in the bottom panel). They were allowed to select as many features as they like. The table reports the percentages of the respondents who selected each feature presented.

Table 5: Rating-Based Analysis, First Conjoint

	City A	City B	City C	City D	Pooled	Pooled (with control)
Infrastructure (base: no current upgrading)						
Ongoing upgrading	0.393***	0.290***	0.469***	0.317***	0.366***	0.356***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.04)	(0.04)
Digital connectivity (base: unreliable internet)						
Relatively slow	0.214**	0.0843	-0.0883	0.105	0.0758	0.0896*
	(0.11)	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)
Highspeed	0.682***	0.600***	0.596***	0.791***	0.666***	0.696***
	(0.11)	(0.10)	(0.10)	(0.11)	(0.05)	(0.05)
Urban design (base: wide road no sidewalk or bikelane)						
Sidewalk but no bikelanes	0.0343	0.131	-0.102	0.0148	0.0179	0.0257
	(0.11)	(0.10)	(0.10)	(0.11)	(0.05)	(0.05)
Wide bikelanes	0.283***	0.336***	0.201**	0.143	0.236***	0.228***
	(0.11)	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)
Governance (base: poor response)						
Average quality	0.562***	0.341***	0.482***	0.374***	0.427***	0.439***
	(0.11)	(0.10)	(0.10)	(0.11)	(0.05)	(0.05)
Efficient and reliable	0.548***	0.495***	0.627***	0.555***	0.552***	0.556***
	(0.10)	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)
Politicians (base: old/traditional)						
New/younger generation	0.157*	0.0372	0.121	0.02	0.0915**	0.0905**
	(0.09)	(0.08)	(0.08)	(0.09)	(0.04)	(0.04)
Housing (base: high cost)						
Affordable	0.318***	0.209**	0.510***	0.445***	0.373***	0.377***
	(0.09)	(0.08)	(0.08)	(0.09)	(0.04)	(0.04)
Control variables (age, sex, region)	No	No	No	No	No	Yes
Constant	2.326***	2.556***	2.161***	2.165***	2.064***	2.143***
	(0.13)	(0.13)	(0.13)	(0.13)	(0.07)	(0.08)
Observations	696	699	699	696	2790	2690
R-squared	0.155	0.118	0.214	0.175	0.157	0.164

Note: Results of OLS regressions are reported. Results for each city evaluated (Models 1 – 4), results in which the evaluation of four cities are pooled (Model 5), and the analyses with pooled data with control variables (Model 6). The dependent variable is a five-point ordinal variable indicating how likely the respondent is to live in the city presented. Independent variables are binary variables indicating a specific level of an attribute. Standard errors are reported in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 6: Rating-Based Analysis, Second Conjoint

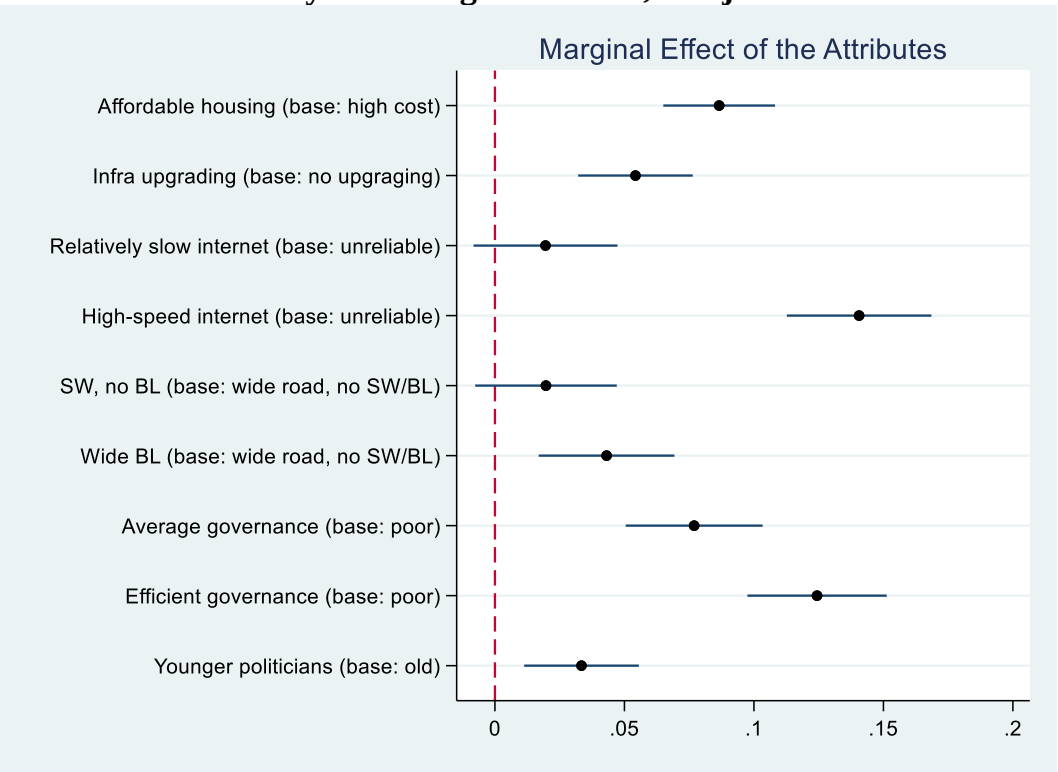
	City E	City F	City G	City H	Pooled	Pooled (with control)
Healthcare (base: poor healthcare)						
Limited hospital bed	0.483***	0.357***	0.280**	0.436***	0.384***	0.394***
	(0.12)	(0.12)	(0.11)	(0.12)	(0.06)	(0.06)
Surplus hospital bed	0.775***	0.578***	0.641***	0.688***	0.667***	0.666***
	(0.12)	(0.12)	(0.11)	(0.12)	(0.06)	(0.06)
Excellent healthcare	1.203***	1.061***	0.979***	1.116***	1.087***	1.117***
	(0.12)	(0.12)	(0.11)	(0.12)	(0.06)	(0.06)
Crime (base: high-level of crime rate)						
Average crime rate	0.706***	0.609***	0.765***	0.523***	0.649***	0.654***
	(0.10)	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)
Low-level of crime rate	1.081***	1.059***	1.057***	0.840***	1.008***	1.009***
	(0.10)	(0.10)	(0.10)	(0.11)	(0.05)	(0.05)
Distance (base: 20-minute drive to urban area)						
10-minute drive to urban area	0.0208	0.128	-0.0081	0.0642	0.0529	0.0674
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)
Job (base: not in-demand)						
Jobs related to your skill set are readily available	0.655***	0.349***	0.672***	0.256***	0.486***	0.501***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)
Space (base: congested; highly dense)						
Wide open spaces	0.328***	0.257***	0.195**	0.253***	0.259***	0.246***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)
Control variables (age, sex, region)	No	No	No	No	No	Yes
Constant	1.401***	1.612***	1.570***	1.770***	1.591***	1.652***
	(0.13)	(0.13)	(0.12)	(0.13)	(0.06)	(0.08)
Observations	696	692	691	691	2770	2683
R-squared	0.304	0.249	0.287	0.202	0.253	0.262

Note: Results of OLS regressions are reported. Results for each city evaluated (Models 1 – 4), results in which the evaluation of four cities are pooled (Model 5), and the analyses with pooled data with control variables (Model 6). The dependent variable is a five-point ordinal variable indicating how likely the respondent is to live in the city presented. Independent variables are binary variables indicating a specific level of an attribute. Standard errors are reported in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 7: Summary of Hypotheses and Findings

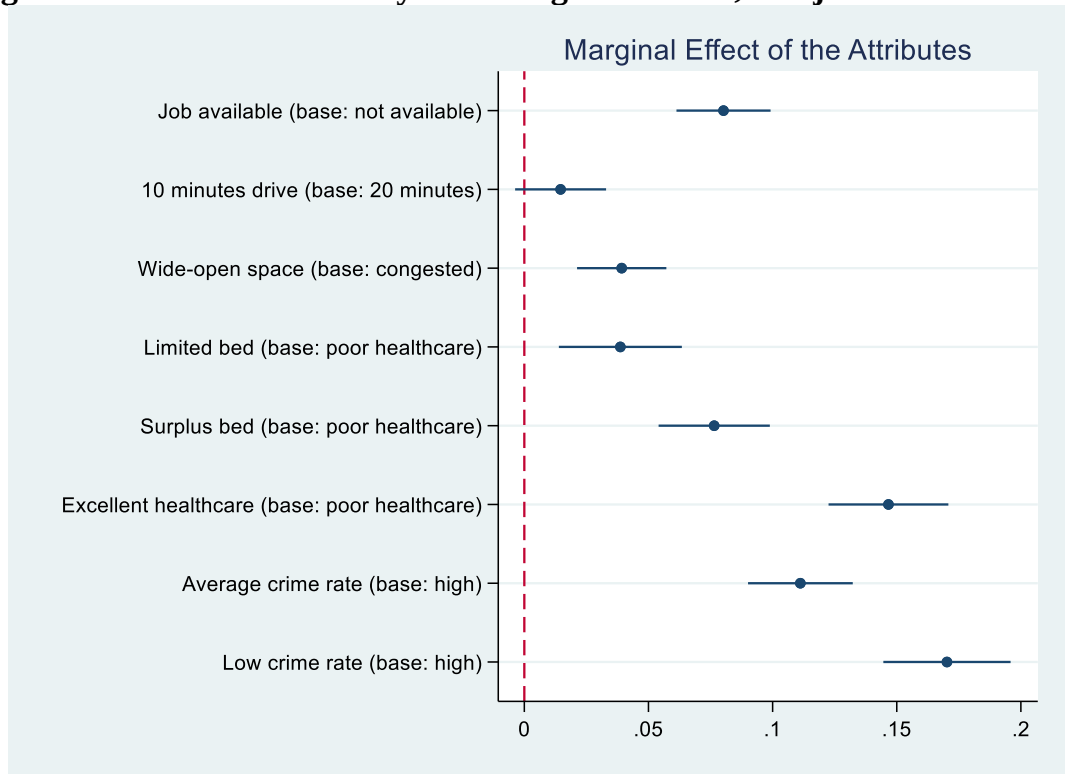
Hypothesis	Supported or not	Relevant findings (Figure 1)
H1.1: People prefer to live in a city with a good healthcare system than in a city with better accessibility to jobs and services.	Supported	Conjoint 2, comparing marginal effects of the healthcare attribute and the attribute of job availability. The marginal effect of excellent healthcare is greater than the marginal effect of job availability.
H1.2: People prefer to live in a city with wide open space than accessibility to jobs and services.	Not supported	Conjoint 2, comparing marginal effects between job availability and wide-open space: the former is greater than the latter.
H2. People give more importance to reliable internet connectivity than observable road or other infrastructure development for their choice of city.	Supported	Conjoint 1, comparing marginal effects between reliable internet and infrastructure upgrading
H3.1: People prefer to live in a city with better governance.	Supported	Conjoint 1, marginal effects of the governance attribute (average and efficient in comparison with the base level of poor)
H3.2: People prefer to live in a city led by younger politicians.	Supported	Conjoint 1, marginal effect of having young politicians in comparison with the base level of having old politicians
H3.3: People prefer to live in a city with lower crime rates.	Supported	Conjoint 1, marginal effects of the attribute of crime level. The marginal effect of having a low crime rate is positive and large, followed by that of having an average crime rate.

Figure 1: Choice-Based Analysis – Marginal Effects, Conjoint 1



Note: The figure reports the marginal effect of each attribute - a change in the predicted probability of selecting the city when the attribute is presented compared to the baseline attribute. For example, random assignment to observe a city with "reliable internet" is expected to increase the probability of selecting the city by approximately 0.14 (14 percentage points) compared to the baseline level of this attribute (unreliable internet connection). Marginal effects are calculated based on the conditional logit regressions (regression tables are not reported). Each respondent evaluated two pairs of cities, and we pooled the evaluation of two pairs from the same respondent and treat them as two distinct observations.

Figure 2: Choice-Based Analysis – Marginal Effects, Conjoint 2



Note: The figure reports the marginal effect of each attribute - a change in the predicted probability of selecting the city when the attribute is presented compared to the baseline attribute. For example, random assignment to the "low crime rate" is expected increase the probability of selecting the city by approximately 0.17 (17 percentage points) compared to the baseline level of this attribute (high crime rate). Marginal effects are calculated based on the conditional logit regressions (regression tables are not reported). Each respondent evaluated two pairs of cities, and we pooled the evaluation of two pairs from the same respondent and treat them as two distinct observations.