

Article

# Multinomial Logistic Regression to Estimate and Predict the Perceptions of Individuals and Companies in the Face of the COVID-19 Pandemic in the Ñuble Region, Chile

Benito Umaña-Hermosilla <sup>1</sup>, Hanns de la Fuente-Mella <sup>2,\*</sup> , Claudio Elórtogui-Gómez <sup>3</sup> and Marisela Fonseca-Fuentes <sup>1</sup>

<sup>1</sup> Departamento de Gestión Empresarial, Facultad de Ciencias Empresariales, Universidad del Bío-Bío, Chillán 2463334, Chile; benito@ubiobio.cl (B.U.-H.); mfonseca@ubiobio.cl (M.F.-F.)

<sup>2</sup> Escuela de Comercio, Facultad de Ciencias Económicas y Administrativas, Pontificia Universidad Católica de Valparaíso, Valparaíso 2340025, Chile

<sup>3</sup> Escuela de Periodismo, Facultad de Ciencias Económicas y Administrativas, Pontificia Universidad Católica de Valparaíso, Valparaíso 2373223, Chile; claudio.elortegui@pucv.cl

\* Correspondence: hanns.delafuente@pucv.cl

Received: 16 October 2020; Accepted: 9 November 2020; Published: 17 November 2020



**Abstract:** The Coronavirus Disease 2019 (COVID-19) pandemic is transforming the world we live in, revealing our health, economic, and social weaknesses. In the local economy, the loss of job opportunities, the uncertainty about the future of small and medium-sized companies and the difficulties of families to face the effects of this crisis, invite us to investigate the perception of the local community. Based on a questionnaire applied to 313 citizens and 51 companies, this study explored the perception of these actors on the effects of the pandemic at the local level and determined the main factors that influenced their assessment using a multinomial logistic regression model. The results indicated a systematic concern for issues of employment, job security, and household debt. The variables of age and sex were significant when analyzing the vulnerability of certain groups, especially women and the elderly, to face the effects of the crisis and their role as citizens. At the business level, the focus was on economic policies that support its operational continuity and management capacity to face a changing scenario.

**Keywords:** COVID-19 pandemic; local community; perception analysis; econometric modeling; data science

## 1. Introduction

Local development studies have strongly encouraged interest to decipher, explain, and understand the role of the citizenry and local governments in promoting development [1,2]. The interaction between the economy, authorities, and the local citizenry is critical for dealing with crisis scenarios and accounts for the integration of the social paradigm in the context of economic policy formulation [3–5].

The cooperation and construction of the community are essential for economic, social, and environmental survival [6]. Likewise, it is considered that the community is the fabric for the collective action of individuals, a mediating structure between individuals/families and the social, economic, political, and environmental spheres, which are typical of local development [7]. As a result, the debate about local development not only involves experts, technocrats, and government authorities, but the assessment of the common citizen and the community also becomes more relevant to define political and social guidelines [8,9].

The vision of local stakeholders is fundamental to detecting gaps and trends in the local economic outlook. The collection of these visions using surveys allows local authorities to undertake efforts for strategic changes that promote local development processes and strengthen communication networks with citizens [10]. As part of a philosophy of community-based environmental monitoring, the survey can provide a viable solution and an attractive means of increasing legitimacy to implement measures that lead to improved quality of life [11,12].

Understanding that the effects of the COVID-19 pandemic have modified the daily dynamics of people, the way they relate to each other and the expectations of the local economy, it is necessary to investigate the social representations that arise in this context of uncertainty, where currently the business and social development of communities around the world is limited.

Following this approach, the socio-economic paradigms require new studies. A sustainable revolution is necessary to tackle climate change and these actions are globally required [13]. In addition, literature shows a positive relationship between sustainability and resilience [14,15].

This study investigates the perception of citizens and local companies about the effects that the COVID-19 pandemic has had on the development of their activities and lifestyle, seeking to understand how the current economic scenario is perceived in terms of employment, economy, and government performance, among others.

Special emphasis has been placed on the factors that influence the assessment of the challenges, risks and opportunities that this new and disruptive scenario offers to the region and its inhabitants, antecedents that allow the general vision of the population to be conceived according to the projection they can make based on their level of family income, supply, level of indebtedness, national and local economic situation.

The research will also allow to deepen the social resilience present in the population, where it has been observed that people and governments organize their efforts to face this global health crisis, thus trying to minimize the loss of human lives, help the population who are more vulnerable and adapt to better assimilate this new reality. In this framework, the study contributes to an emerging literature to assess the effects of the COVID-19 pandemic at the local scale.

This analysis adopts a quantitative approach, limiting the study area to Chile, specifically to the Ñuble region. The following research question is established: What are the appreciations of the inhabitants and businesspeople about their reality in the COVID-19 pandemic? In relation to it, the objective is to identify the perception of citizens on various topics of interest and sensitivity, and their effect on the economic and financial aspects of the country, all marked by the uncertainty of COVID-19.

Regarding the problem, the need to have records related to the effects of the pandemic from social representations is identified, therefore it is established as a research question: What are the appreciations of the inhabitants and business owners about their reality in the COVID-19 pandemic? In relation to it, the objective is to identify the perception of citizens on various topics of interest and sensitivity, and its effect on the economic and financial aspects of the country, all marked by the uncertainty of COVID-19.

This article analyzes the results of the survey “Pulse of the economy in the Ñuble region–Chile,” where the perceptions of residents and business owners are evidenced in relation to the effects of the pandemic at the local level. The subject is approached from an analysis that adopts a quantitative approach and the results are presented in the following sections.

## 2. World Context: COVID-19

The SARS-CoV-2 virus is the cause of the infectious disease known as COVID-19; its most common symptoms are fever, muscle aches, cough, fatigue, and shortness of breath, and it can also cause pneumonia, sepsis, and acute respiratory distress in severe cases. The contagion of this disease is mainly through small drops expelled when talking, coughing or sneezing, which has caused an increase in patients in the world exceeding 30 million infections registered in 190 countries, with the United States,

Brazil, and India being among the most affected countries, as their records exceed 100,000 deaths due to COVID-19.

In Chile, the first fatal victim of COVID-19 died on 17 March 2020; to date, according to information provided by the health ministry (until 14 October 2020), 13,415 deaths and 485,372 accumulated confirmed cases have been registered [16]. As in other countries, in Chile social distancing measures have been implemented that include confining families to their homes, in addition to activities such as work and study being carried out at a distance, in an attempt to reduce the number of infected people.

This situation is affecting the individual and social development of people, preventing physical contact, the operation of companies and free movement in the territory, which is generating negative emotional effects due to isolation and constant concern about contracting this disease. Among the most common alterations we find stress, depression, anxiety, insomnia, and dietary changes, among others, which will have a medium and long-term impact, weakening the mental health of the entire world.

Regarding the changes in people's dynamics, the role of the internet and social networks stands out, which currently allows them to carry out daily activities such as working and studying remotely. This new form has kept people connected and occupied from their homes, allowing them to advance and generate resources without exposing themselves to infection, but at the same time it has become a form of exclusion for the population of rural and vulnerable sectors [17,18].

In relation to the effects on economic development, a decrease in the demand for goods and services derived from the confinement of people is identified; among the most affected sectors are tourism and recreation services. Regarding the labor market, although teleworking has been implemented to facilitate activities from home, it has also promoted the exclusion of the most vulnerable sectors derived from rurality, scarcity of resources and all kinds of limits that prevent access to the internet.

### 3. Citizen Perception and Local Economic Development

Based on different approaches, public opinion studies play a key role in the evaluation of economic scenarios at both the local and national levels [19–22]. Perception and expectations, as an individual and subjective element, are often built on trust in the performance of the economy and support to institutions [23].

The role of public opinion on various aspects of the economy has been the subject of intense debate [24] and growing interest to explore the micro and macro determinants of the social preferences of the citizenry [25–28]. Numerous studies have demonstrated that community participation and citizen empowerment are key instruments for building local capacity, improving quality of life, reducing poverty, and promoting economic development at the local level [29–31].

Empowerment of the citizenry is an increasingly important aspect as a starting point for local development [32] because it provides greater capabilities for communities, especially in the control and information flows of the territorial resources [33,34]. Higher levels of community involvement in the local development processes are associated with the extension of the citizenry and better levels of governance [35].

From the community perspective, citizens participate because they perceive themselves as part of an integrated body that has common goals in the socioeconomic, political, legal, and cultural spheres [36–38]. In the case of opinion polls, the greatest achievements in the participatory processes have been the creation of interactive spaces between civil society organizations and public institutions aimed at implementing development initiatives from a collaborative, dynamic, and multidimensional approach [39–41].

Different authors have emphasized the importance of examining the factors related to the perceptions of local development [42–44]. Some researchers highlight the analysis of the cultural and institutional dimensions to understand the determinants of successful regional processes [45–47]. A better understanding of the factors that influence perceptions is essential to improve communication

strategies and the design of efficient local policies that facilitate development processes, especially in times of crisis, uncertainty, and instability.

To recognize their importance, it is necessary to comprehend that individual perceptions can be transformed into social representations that construct reality through language [48]. Likewise, admitting that cultural identity is established on the basis of the characteristics of a society and its social representations [49,50] provides support for the role that the vision of the citizenry should play in local economic development policies.

Cultural identity can be associated with a sense of belonging inspired by a territory, its social group, and culture [51]. It is a dynamic process of permanent reconstruction that supports social interactions [52,53], and it is directly related to the people's sense of belonging, which is considered fundamental for implementing "social cooperation processes" [54,55]. Furthermore, it invites us to question the notion of territory, so as to review the reality of functional rural-urban territories [56].

"Territory not as an "objectively existing" physical space, but rather it exists as a set of social relations that give rise to, and at the same time express, an identity and a sense of purpose shared by multiple public and private agents (even though such a construction often involves going through processes of conflict and negotiation). It is this identity that gives meaning and content to a development project of a determined space based on the convergence of interests and intentions" [57].

Validating the existence of the territory as "a social construction" that emerges from the local identity [58,59] allows us to explore population dynamics that are present in daily life, and which clearly influence perceptions and representations in the cultural identity of society. For example, special mobility is defined as an "internal, transitory, and frequent territorial movement of people without the need to establish a second residence" [60]; this phenomenon is present in functional territories where people travel to develop activities such as work, study, and have access to public and/or private goods and services. Such mobility constitutes interactions and allows different places to be part of a territory, which have, for example, a common labor market and supply of goods and services [61].

Some changes in the rural sector have been identified as a result of this interaction and influence from the urban sector, including an increase in non-agricultural occupations, higher participation by women in the labor force, and access to education and health, which directly promote economic development [62]. Moreover, the expectations of the rural population have shifted; for example, the educational attainment of the Chilean rural population has improved in recent years [63].

This reality is known as "urban living" [64] and allows people to maintain their residence in rural locations and pursue life goals in urban areas. They can therefore access goods and services not available in their community; this gradually modifies the expectations of new generations and, to some extent, modernizes rural life.

Given the background information and the current situation resulting from the COVID-19 pandemic, it is imperative to investigate the social perception of this "new normality", which has closed borders and paralyzed movement worldwide and activated quarantines and sanitary cordons to protect the population by lockdown and social distancing. This situation has also made the population aware of their responsibility for individual and social well-being [65].

Faced with this contingency that affects how people and organizations function, governments have implemented internal policies to mitigate the effects on economic well-being. Despite all efforts, we are facing a global economic crisis due to the pandemic. The results of the business survey on the impact of the COVID-19 crisis [66] indicate that most companies perceive decreased economic activity due to the health crisis, and smaller companies experience financing and liquidity problems. Another important aspect is how teleworking, production cost adjustment, and tax debt deferral are part of a strategy to continue their activities. As for expectations, there is quite a lot of pessimism as to the recovery of the economy.

Before projecting or comparing this reality, background information must be collected on what people and organizations are experiencing, and prepare representations based on the population's

perceptions to identify vulnerability at the local level. It is truly important to know the expectations and emotions related to the effects of the COVID-19 in Chile and to consult the people's evaluation regarding such aspects as the implemented policies and the performance of the local and national governments, which provide an insight into the reality that the country is facing.

#### 4. Methodology

##### 4.1. Data and Method

To understand the perceptions and assessment of the citizens and companies in the face of the pandemic in the Ñuble Region, Chile, a questionnaire was created and administered to residents and business owners of the region. The survey was administered in person and online. The sampling used to perform the measurement on this population was non-probabilistic and of convenience, where those interested in participating were contacted by an invitation. The online survey was circulated in the online version of a local daily newspaper. The survey included the Likert scale, multiple choice, open-ended, and demographic questions; it took approximately ten minutes to complete and respondents were not compensated.

To determine the factors that could predict the perceptions of people and companies as to how to face the pandemic in the Ñuble Region, a multinomial logistic regression model was fitted to the responses, and was used to predict the probabilities of the different possible outcomes [67]. Multinomial logistic regression was used to predict categorical variables or the probability of category membership on a dependent variable based on multiple independent variables [68]. As in binary logistic regression, multinomial logistic regression uses maximum likelihood estimation to evaluate the probability of categorical membership. Thus, this type of model allowed us to characterize the probability of a respondent's decision for a particular multinomial discrete choice, conditional on the values of the explanatory variables [69]. The distribution functions that characterize explanatory variables are often nonlinear. Thus, once the multinomial regression model is created, the parameters are used to make predictions about the probability of an event occurring compared with the reference category.

In this particular case, we wanted to know how changes affected the abovementioned independent variables on the probabilities of the variable (infrastructure choice) in Equation (1) expressed as

$$P(Y = j/X_1, X_2, \dots, X_k) = P(Y = j/K); j = 0, 1, \dots, J \quad (1)$$

In the multinomial case, response probabilities were represented in Equations (2) and (3) as

$$P(Y = j/X) = \frac{\exp(X\beta_j)}{1 + \sum_{h=1}^J \exp(X\beta_h)} = p_j(X, \beta); j = 1, \dots, J \quad (2)$$

$$P(Y = 0/X) = \frac{1}{1 + \sum_{h=1}^J \exp(X\beta_h)} = p_0(X, \beta) \quad (3)$$

We used maximum likelihood to estimate multinomial logit models in which the logarithm of the likelihood function that usually provides consistent and asymptotically normal estimators is expressed by Equation (4) as

$$l(\beta) = \sum_{i=1}^n \sum_{j=0}^J 1[Y_i = j] \log[p_j(X_i, \beta)] \quad (4)$$

##### 4.2. Study Area

The study was conducted in the Ñuble Region located in south-central Chile. This region covers an area of 13,178.5 km<sup>2</sup> consisting of a diversity of landscapes ranging from mountainous areas to

interior valleys. The region is divided into 3 provinces and 21 communes with a total population of 480,609 inhabitants, and 30.60% live in rural areas, which places the region as the most rural in Chile, well above the national mean of 16.73% [70,71]. As for poverty, the region has the highest national indicators with 16.1% of households living in poverty, which is much higher than the national mean of 9.4% [72]. There have been important demographic changes in recent years and the population has gradually decreased, reflecting the dynamics of the migration of the rural population to urban spaces and new occupational patterns of the territory through activities linked to tourism in the mountains, nature, and/or agrotourism [73,74].

Historically, the productive and economic base of the region is related to small- and medium-scale agricultural and forestry activity. Thus, the region shows a clear orientation towards agricultural production and this situation is not replicated in other sectors [75]. The seasonality of agricultural activities and the boom in vegetable and fruit export operations have a significant impact on job creation, accounting for 20.7% of jobs in the region. However, rural areas have undergone significant changes in the last 30 years, including the declining importance of agriculture in rural production and labor dynamics [76,77]. On many farms, owners and/or laborers spend part of their time in off-farm work. Rural modernization has changed the traditional ways of living and working. The services sector has become a source of employment and income [78]. In mountain areas, the diversification of activities has been a strategy to ensure the economic viability of farms by promoting various forms of rural tourism and protection and dissemination of both the natural and cultural heritage. Rurality is a strong component of the regional territorial identity [79].

## 5. Results

### 5.1. Descriptive Analysis

Within the framework of the complex world and Chilean pandemic scenario set in a historical context of great expectation for public opinion, research was carried out in the newly created Ñuble Region, Chile.

Due to the quarantine as a result of the COVID-19 virus, the present study considered virtual data collection from 13 to 22 April 2020 using a survey in social networks and e-mail, in Chillán and its neighboring communities. A total of 313 valid responses were obtained for the citizenry (individuals) and 51 valid responses for companies (business owners) and two virtual instruments were used:

- The first instrument was applied to individuals; besides economic categories, it surveyed specifics related to the coronavirus context, such as sources of information for the citizenry in the face of the pandemic, assessment of national and regional media, importance of social networks, and emotions during quarantine.
- The second instrument was aimed at companies and surveyed the general background information of their owners as to the national and regional economy, employment, and investment. In addition, it included categories such as those directly related to the health emergency situation and assessment of crisis management by national and regional authorities.

Therefore, the present work is a quantitative and cross-sectional descriptive study [80] using the survey as its research strategy [81]. The subjects were the owners of regional businesses located in the municipalities of Chillán Viejo, San Carlos, Yungay, Coihueco, Pinto, Bulnes, San Ignacio, and Chillán. For the survey applied to the citizens, study subjects were adults residing in Chillán and other municipalities of the Ñuble Region: Chillan Viejo, San Nicolás, Quillón, El Carmen, Quirihue, Yungay, Coihueco, Coelemu, Pemuco, Bulnes, San Carlos, San Ignacio, Portezuelo, Pinto, San Fabián, and Ranquil.

One of the main results described for individuals was the negative view of the existing economy (47.9%). The surveyed citizens manifested that the economic situation of the country a year ago was better than at the present (71.2%) and that 2021 would be worse than 2020 (65.5%).

Meanwhile, 64.2% of the sample maintained that the economic situation of the region in one more year would be worse than at the present. Some 48.3% of the surveyed individuals pointed out that the existing economic reality of the region was fair or bad.

The lack of employment (33.2%), low salaries (25.9%), and digital connectivity (12.5%) were the three most important problems at the regional level that were identified by the sample in the context of the pandemic.

The majority of the sample indicated that their household income in the last 12 months had decreased (53%), and they were pessimistic and predicted that it would continue to decrease (46.6%). The population admitted to having fear of losing their jobs (74.4%), even though teleworking had been introduced (48.2%). Some 62% of the sample reported some degree of difficulty in their household due to debt. Meanwhile, 43.8% of the citizens indicated they did not feel economically prepared to face the pandemic. In addition, 69.3% of respondents stated that the work of the regional media in addressing the pandemic was “fair to very good” in contrast to the perception of 47.6% of individuals who negatively evaluated the work of the national media.

Regarding the main exploratory results for companies, 54.9% of businesspeople indicated that they were prepared to face the pandemic “only for a while”. Some 41.2% positively evaluated the policies developed by the government to provide support to businesses. However, 90.2% were concerned for their levels of debt because they considered that the effects of the coronavirus, in addition to the social upheaval, had affected their commercial activity. Likewise, 64.7% of businesspeople specified that they considered that the economic situation of the country in 2021 would be the same or worse, and 62.7% pointed out that it would be the same or worse than the existing regional situation.

A positive perception was highlighted when associating the creation of the region with the management of future crises. However, there was uncertainty about the region’s current preparedness and the responses of regional/community authorities to the COVID-19 crisis.

## 5.2. Multinomial Logistic Regression

The arrival of COVID-19 in Chile was set in a particular context and probably generated a number of characteristics prior to the emergence of the first case declared on 3 March 2020. The scenario immediately prior to the coronavirus outbreak is a relevant issue due to high sensitivity and concern for the immediate future of the country, both economically and institutionally, among citizens and business people.

This predisposition is very different to how citizens responded to the “subprime crisis” in 2008. At that time, trust in the political institutions and the security in the Chilean economic management during the first presidential term of Michelle Bachelet (2006–2010) and in the Minister of Finance Andrés Velasco were relevant to minimize the effects of such instability. Moreover, Chile was one of the countries in Latin America that most successfully overcame the crisis.

Since October 2019, Chile has experienced a social upheaval of a magnitude that was not on the research agenda, academic studies, or political surveys. In fact, the administration of President Sebastián Piñera was preparing to host two important global forums, APEC and COP25, events that were to strengthen the country’s image, public diplomacy, and Chile’s international standing vis-à-vis the world.

However, the social crisis became very difficult for the government and the political establishment to manage and those events were therefore cancelled, including visits by Donald Trump and Xi Jinping. This was due to a wave of demonstrations that affected the activities, movements, and routines of the population and which were only interrupted by the arrival of the COVID-19. Before the pandemic context, there was already talk in Chile of a “new normality” due to social indignation or simply the impossibility of returning to “normality.”

It is therefore important to point out that the results reported in this study are on a continuum of tensions and concerns about what 2020 would be like for both the citizenry and entrepreneurs or business owners. The complexity of the health, economic, and psychological events related to the

coronavirus and its rapid spread in Chile should be measured in the regions that were exposed to the severity of the pandemic.

To respond to the research objective, a multinomial logistic regression model was fitted to know the perceptions of individuals and businesses and quantify the effects of the COVID-19 pandemic in the Ñuble Region. Table 1 summarizes the cases related to the citizens. A linear model was first run on the responses as a function of the predictors to ensure that there were no problems with multicollinearity; only predictors with variance inflation factors (VIF)  $< 2$  were included in these models [82].

Regarding the fitted model information, the chi-squared ratio test had a value of 317.910 ( $p = 0.000$ ), indicating a good model fit. Acceptable values were also obtained for the pseudo R-squared (Cox and Snell: 0.638, Nagelkerke: 0.789). Table 2 shows that the power of our logistic multinomial model was suitable because it correctly classified 88.8% of the known observations and can be expected to project future estimates. Table 3 shows the likelihood ratio tests for the effects of the model and the partials whose low  $p$ -values show the high significance of the variables in the model.

The perception of the citizenry in the Ñuble Region and the projections related to the health crisis are not encouraging, and it can be seen that there is a systemic concern. Assuming the slump in economic expectations prior to the coronavirus, the preparedness of the country to deal with the pandemic is associated with a number of aspects discussed below.

Age is an important issue in Chile because it has been permeating political and economic discussions over the last decade about the pension system, the fear of aging with low pensions, and the vulnerability of aging. It has also been a generational issue that transpired with the Chilean social upheaval because it established a perspective between the new emerging practices and old styles of leadership. The COVID-19 crisis cannot be excluded from the age-related aspects already incorporated in the perceptions of the population. Therefore, the interpretations of individuals in the face of the coronavirus also emerged from the diversified visions of the citizenry based on age group. The interest in greater social protagonism was found in the under-33 age group with its flexibility, vigor, and resilience to face the virus; this group has opened new spaces for discussion, voices, and empowerment never before observed in a country that shows a trend towards aging.

Gender was also important because the Chilean population has shifted the role of women. The feminine and masculine are perceived as differentiated styles of social and local problem solving. In addition, gender leadership tends to gain a greater presence in the regional social base. This should be considered when addressing such aspects as compliance with sanitary measures, responsibility for self-care to protect the community, or citizen support networks.

Closely related to the above, completion of schooling or educational level was relevant for the perceptions of the country's preparedness for the pandemic. The challenges that the disease poses in the analyzed Chilean reality have required individuals to meet the greatest instructional, technical, professional, or postgraduate demands as an efficient alternative to manage this complex situation. Knowledge, as a value of pandemic preparedness, dispels myths and insecurities and provides information and guidance. Moreover, in the midst of systemic insecurity, education has created new opportunities when faced with the lack or instability of employment generated by the COVID-19.



**Table 1.** Summary of citizen responses.

Questions	Variable	Alternatives	<i>n</i>	Marginal Percentage
How prepared is the country to face the pandemic?	Country preparedness	Well-prepared	12	3.8%
		Moderately prepared	160	51.1%
		Not at all prepared	141	45.0%
What is your sex?	Sex	Female	177	56.5%
		Male	135	43.1%
		Prefer not to say	1	0.3%
How old are you?	Age	18–25 years	63	20.1%
		26–33 years	46	14.7%
		34–40 years	60	19.2%
		41–50 years	74	23.6%
		51–60 years	47	15.0%
		61 years or more	23	7.3%
What is your educational attainment?	Education	Elementary	1	0.3%
		High school	96	30.7%
		Technical	40	12.8%
		University	46	14.7%
		Postgraduate studies	130	41.5%
What do you expect regarding household income in the next 12 months?	Projected income	Will increase	28	8.9%
		Will remain the same	94	30.0%
		Will decrease	146	46.6%
		Does not know	45	14.4%
What is your household debt situation?	Household debt	Complicated	72	23.0%
		Moderately complicated	122	39.0%
		Without problems	105	33.5%
		Does not know/Does not respond	14	4.5%
Has your household had any supply problems?	Supplies	Yes	64	20.4%
		No	246	78.6%
		Does not know/Does not respond	3	1.0%

Table 1. Cont.

Questions	Variable	Alternatives	<i>n</i>	Marginal Percentage
What is your political persuasion?	Political persuasion	Left	16	5.1%
		1	11	3.5%
		2	12	3.8%
		3	14	4.5%
		4	8	2.6%
		Center	21	6.7%
		6	6	1.9%
		7	7	2.2%
		8	3	1.0%
		Right	5	1.6%
	I have no political persuasion	166	53.0%	
	Does not know/Does not respond	44	14.1%	
How do you evaluate the performance of the Chilean government in the face of the pandemic?	Evaluation national government for pandemic	Very bad	68	21.7%
		Bad	70	22.4%
		Fair	103	32.9%
		Good	58	18.5%
		Very good	14	4.5%
How do you evaluate the performance of the regional government in the face of the pandemic?	Evaluation regional government for pandemic	Very bad	58	18.5%
		Bad	70	22.4%
		Fair	118	37.7%
		Good	56	17.9%
		Very good	11	3.5%
How prepared are you financially to face the pandemic?	Financial preparedness for pandemic	Very bad	60	19.2%
		Bad	77	24.6%
		Fair	129	41.2%
		Good	47	15.0%
Will the company where you work be able to financially withstand the pandemic and not go bankrupt?	Company in the face of the pandemic	Yes	108	34.5%
		No	43	13.7%
		Does not know	162	51.8%
What is the level of fear of losing your job?	Fear of losing job	High	133	42.5%
		Moderate	100	31.9%
		Low	80	25.6%

Table 1. Cont.

Questions	Variable	Alternatives	<i>n</i>	Marginal Percentage
How do you evaluate the work of the national media in dealing with the pandemic?	National media	Very bad, generate panic	102	32.6%
		Bad	47	15.0%
		Fair	107	34.2%
		Good	40	12.8%
		Very good, keep people informed	17	5.4%
How do you evaluate the work of the regional media in dealing with the pandemic?	Regional media	Very bad, generate panic	43	13.7%
		Bad	53	16.9%
		Fair	125	39.9%
		Good	67	21.4%
		Very good, keep people informed	25	8.0%
What were the social networks that provided you with the most relevant information to make decisions or take measures about the coronavirus?	Social networks for pandemic	Facebook	115	36.7%
		Twitter	49	15.7%
		Instagram	38	12.1%
		WhatsApp	34	10.9%
		YouTube	11	3.5%
		None	66	21.1%

**Table 2.** Power of classification of citizen model.

Observed	Predicted			Percent Correct
	Well-Prepared	Moderately Prepared	Not at All Prepared	
Well-prepared	12	0	0	100.0%
Moderately prepared	0	142	18	88.8%
Not at all prepared	0	17	124	87.9%
Overall percentage	3.8%	50.8%	45.4%	88.8%

**Table 3.** Multinomial logistic regression of citizen model.

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	−2 Log Likelihood of Reduced Model	Chi-Squared	Degrees of Freedom	p-Value
Intercept	199.969	0.000	0	–
Sex	370.670	170.701	4	0.000
Age	2721.641	2521.672	10	0.000
Education	385.351	185.382	8	0.000
Income projection	951.248	751.278	6	0.000
Household debt	457.733	257.764	6	0.000
Supplies	204.003	4.034	4	0.401
Political persuasion	216.214	16.245	22	0.804
Evaluation national government for pandemic	250.876	50.907	8	0.000
Evaluation regional government for pandemic	632.366	432.397	8	0.000
Financial preparedness for pandemic	376.776	176.806	6	0.000
Company in the face of pandemic	209.906	9.937	4	0.042
Fear of losing job	204.415	4.446	4	0.349
National media	423.152	223.183	8	0.000
Regional media	416.013	216.044	8	0.000
Social networks for pandemic	566.052	366.083	10	0.000

From this perspective, household income was a critical measure of the country's preparedness. The cost of living in the regions was not an easy issue for residents: it was directly linked to employment and job security, which was seriously threatened by a standstill of activities caused by physical distancing and sanitary measures. To a large extent, the perceptions and confirmations of residents as to how the country would overcome the pandemic depended on how they felt their income would be affected.

For this reason, household debt was another important variable for the country in the face of the coronavirus. This situation was a matter of concern that has raised awareness, with or without the COVID-19, in both national and regional public discussions. The capacity to take on guaranteed debt in the face of job loss and the direct effects of the crisis or debt that continues to grow at an alarming rate to survive during these difficult circumstances are manifestations of another social aspect that define the preparedness of the country.

At the structural level, the figure of a government in any crisis management is relevant to face such events that impact the world. This was quickly perceived by the residents because the need for the protection of the state was assumed, which was represented by its political and immediate decision making and government response time in an emergency. Leadership, the ability of persuasion of effective and credible communication policies, and clarity in decision making in favor of citizens in the health, social, and economic spheres are essential to manage the risks to the population. Moreover, under the Chilean political presidential system in which the regions must assume that power is centralized, government efficiency is perceived as a matter of collective survival.

However, the conditions pointed out since the Chilean social upheaval in 2019 also highlighted the importance of having local authorities that could provide greater autonomy in their responses to people due to their proximity, knowledge of the territories, and empathy with regional and identity problems. The condition of the prior social crisis, intensified by the pandemic, further differentiates this aspect. Residents have perceived that the country's preparedness to face the coronavirus involves

a more empowered and decentralized regional governance given that Ñuble Region was recently established as a region in 2018.

The economic preparedness of the residents is another characteristic identified by the analysis to face the pandemic. The people of the region perceive what a crisis is and quickly assimilate that it will not only affect life but also material conditions. The protection of the most domestic and intimate limits for basic needs is threatened.

The economic preparation of the citizenry is another characteristic identified in the analysis to face the pandemic. People in the region gauged in their perceptions what constitutes a crisis and quickly assimilated that it would not exclusively affect the valued condition of life but also the material aspect. The protection of the most domestic and intimate boundaries in terms of basic needs has been threatened.

Linked to other previously mentioned aspects, the fragility of the regions could be reverted with stronger companies that have the capacity to protect themselves against these external threats. If these businesses could economically withstand the pandemic and manage to avoid bankruptcy, it would mean that the country was more prepared to face the disease.

From the perspective of the residents, media-related variables emerged that reflected the importance of information and journalism when facing pandemic risks. Given the political centralization of the country, but with a growing need for local empowerment, national media are necessary to provide the population with knowledge about the measures that have an impact on their territory from the decision-making core of power.

However, this information required an adequate local context that was provided by regional media. When the public is informed and interprets the national from the local, it can act more effectively and with greater certainty. This is also important in applying civic behavior, which is necessary in emergency situations.

Finally, the sphere of social networks demonstrated the coexistence with a different informational digital space that was more oriented to the emotions and immediate expectations of the residents along with interactions with many people, accounts, and entities that were important and oriented to the residents. The value of this as a social and supportive resource among residents is undeniably one of preparation in the face of pandemic instability.

As for the analysis of the perceptions of the businesspeople of Ñuble Region, there is a series of other variables that complemented the preparation of the country for the coronavirus and others observed by the residents. Table 4 summarizes the cases related to the business owners. A linear model was first run on the responses as a function of the predictors to ensure that there were no problems with multicollinearity; only predictors with variance inflation factors (VIF) < 2 were included in these models [82,83].

**Table 4.** Summary of business owner responses.

Questions	Variable	Alternatives	<i>n</i>	Marginal Percentage
In your opinion, the economic situation of the country in one year will be:	Economic projection for the country	Worse than it is now	27	52.9%
		Same as it is now	6	11.8%
		Better than it is now	18	35.3%
What is the sex of the owner?	Sex	Male	41	80.4%
		Female	8	15.7%
		Prefer not to say	2	3.9%
What do you think of the policies developed by the Chilean government to support businesses?	Policies to support businesses	Very bad	7	13.7%
		Bad	8	15.7%
		Fair	15	29.4%
		Good	19	37.3%
		Very good	2	3.9%
The debt situation of your company before the pandemic was?	Pre-pandemic debt	Complicated	5	9.8%
		Moderately complicated	17	33.3%
		Without problems	29	56.9%
What do you think will be the debt situation of your company after the pandemic?	Post-pandemic debt	Complicated	27	52.9%
		Moderately complicated	19	37.3%
		Without problems	5	9.8%

Table 4. Cont.

Questions	Variable	Alternatives	n	Marginal Percentage
To support companies, the government should consider privileging national over international companies	Policy privileges for national companies	Not selected	34	66.7%
		Selected	17	33.3%
Which state economic stakeholders give you the most guarantees or confidence to deal with the economic crisis resulting from the social upheaval and COVID-19?	Confidence in economic stakeholders	Ministry of Revenue	28	54.9%
		Ministry of Economy	5	9.8%
		SERNAC: National Consumer Service	2	3.9%
		Central Bank	12	23.5%
		Superintendencies	1	2.0%
		SEREMIs: Regional Ministerial Secretariats	3	5.9%
Do you think that the creation of the Ñuble Region provides better prospects for dealing with future global pandemics or disasters in a decentralized manner?	Regional perspectives	No	21	41.2%
		Yes	30	58.8%

Regarding the fitted model information, the chi-squared ratio test yielded a value of 87.472 ( $p = 0.000$ ), indicating a good model fit. In addition, acceptable values were obtained for the pseudo R-squared (Cox and Snell: 0.820, Nagelkerke: 0.962, McFadden: 0.897). Table 5 shows that the power of the logistic multinomial model was suitable because it correctly classified 94.1% of the known observations and could be expected to project future estimates. Table 6 shows the likelihood ratio tests for the effects of the model and the partials whose low  $p$ -values show their high significance of the variables in the model.

Table 5. Power of classification of business owner model.

Observed	Predicted			Percent Correct
	Worse than It Is Now	Same as It Is Now	Better than It Is Now	
Worse than it is now	25	1	1	92.6%
Same as it is now	0	6	0	100.0%
Better than it is now	1	0	17	94.4%
Overall percentage	51.0%	13.7%	35.3%	94.1%

Table 6. Multinomial logistic regression of business owner model.

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	−2 Log Likelihood of Reduced Model	Chi-Squared	Degrees of Freedom	$p$ -Value
Intercept	4.500	0.000	0	–
Sex	18.962	14.463	4	0.006
Policies to support businesses	65.362	60.862	8	0.000
Pre-pandemic debt	38.162	33.663	4	0.000
Post-pandemic debt	38.890	34.390	4	0.000
Policy privileges for national companies	13.725	9.225	2	0.010
Confidence in economic stakeholders	64.045	59.545	10	0.000
Regional perspectives	13.398	8.898	2	0.012

The results of the multinomial model applied to both businesspeople and residents of the Ñuble Region highlighted the aspects of sex and age. However, they are associated with characteristics more typical of the elite, whose groups are historically considered to be “prepared” for crisis management; although things are changing, they maintain a symbolic and cultural weight because they are the owners of the companies. They are represented by adult men aged over 40. These characteristics are also close to the classic patterns of the cultural stereotype of political leadership or personalized representation of power in Chile. They are also prominent figures in regional agendas and in local trade associations, and are economically legitimized to act.

A relevant variable to face COVID-19 in Chile was the policies developed by the government in favor of businesses. After months of growing concern due to the social upheaval in 2019, businesses experienced a crisis with effects that were more adverse than expected and caused

by the coronavirus since March 2020. This quickly generated expectations from the owners for a relief package to provide sustainability to their respective businesses.

For the perceptions of the businesspeople, the types of economic policies the government has targeted to companies, as guarantor of the national budgets, are essential to determine the country's immediate economic success or failure in the crisis. Certain regions in Chile do not have a favorable situation for generating employment. In fact, the Ñuble Region was one of the regions with the highest unemployment rate before the pandemic, and this vulnerability is of great concern for business stakeholders.

Likewise, corporate debt issues are another sensitive and key point for the preparation of Chile to face the disease in two different situations. First, when the virus was not yet active in Chile and second, once the infectious outbreaks began to subside. The effects of indebtedness can be as devastating as the stopping of productive activities demonstrated under this scenario, although for many businesses they also provided options for survival, leading to the maintenance of regional employment.

The owners are aware that before any crisis arises, they should have a business without major debt problems; this is a necessary basis to face more complex times, which sooner or later come in inevitable cycles to countries open to the world. Indebtedness existing before the virus and the projected post-pandemic scenarios for regional businesses would mark a real level of country preparedness in this crisis, which is necessary when considering its success or failure.

Government measures such as those privileging national companies were appreciated in a context of increased global competition and the presence of international stakeholders in the regions. National companies, and those that were established in the same regions where they operate, tend to have a good relationship with the environments and communities that live there and have a positive impact on local economies. As key stakeholders that add cultural and identity value, they require greater protection from the weight of large foreign groups that have the capacity to protect themselves.

Meanwhile, for any government in times of crisis, confidence is essential in view of the social discipline required for the effectiveness of measures taken by the authorities and the persuasion of the policies they wish to promote in the economic sphere. The political and economic institutionality of the country leads to better preparedness in the face of destabilization by the pandemic.

On this level, business owners are aware that maintaining confidence in government authorities and state entities, especially the Ministry of Finance and the Central Bank which are responsible for overseeing the economic conditions of the country, minimizes uncertainty. This also places the state in its role as an essential coordination center to protect companies during the critical or recovery phases.

Finally, despite the recent creation of the Ñuble Region, a decentralized territory with the capacity to uphold the demands of businesspeople to the national government and efficiently transfer aid measures to the productive activity of local areas is fundamental for an adequate preparedness that speeds up the timeframe and the concerns of the business stakeholders. The need has also been reestablished for a state that is present in the various regional realities to implement systems and early responses to human, material, health, and social catastrophes.

## 6. Discussion and Conclusions

These are very challenging times for Chile as for all other countries because of the situation caused by the COVID-19 world crisis. The pandemic is rapidly weakening economies and due to social isolation most productive activities have come to a standstill. According to the Economic Commission for Latin America and the Caribbean [84], the sectors strongly affected are tourism services, traditional cultural industry, commerce, repair of goods, hotels and restaurants, transport, fashion, and automobiles.

At the microeconomic level, the Chilean scenario is even more worrisome due to the consequences of the social upheaval that began on 18 October 2019. This is especially reflected in the precariousness of smaller companies, which have high unemployment rates and family debt. This is more complex at the regional level given the high degree of centralism in the country. Based on the results of the

present study, it can be concluded that economic uncertainty and pessimism have increased in the Ñuble Region.

In this context, the present study addressed issues of great interest to the national and international community from a local and decentralized perspective, noting the serious economic and social conditions affecting both families and businesses. It also seeks to highlight the importance of generating local information that is relevant to the population and which can contribute to public policy and private investment decisions. In addition, the study emphasizes the need to strengthen local institutions, mainly universities and research centers.

The new scenario created by the COVID-19 pandemic has not only altered the “normality” of the inhabitants of the Ñuble Region, but it has also increased uncertainty. It also has an impact on household incomes and the economy in general.

There is a high level of economic pessimism because of the health crisis. Results showed that the majority of respondents had a very poor perception of the country’s level of preparedness to face the pandemic (only 3.8% considered the country to be well prepared] and that their household income would continue to decrease (46.6%). There is therefore pessimism about the economic situation of the country and the region in the upcoming 12 months. Likewise, it is concluded that there is deep concern about job loss (74.4%), and 43.8% of the respondents indicated that they did not feel economically prepared to face the crisis. There was a negative evaluation (44.1%) as to the efforts of the government to address the situation.

A similar level of pessimism and vulnerability to the effects of the crisis is also observed in the business environment of the Ñuble Region, a territory made up mainly of smaller companies that are protagonists of the local economic development. This defines a complex future scenario generated by the global health crisis of COVID-19. Of the surveyed companies, 52.9% consider that the economic situation of the country in another year would be worse than the current one. Although the companies considered that their indebtedness was not for the most part complicated, they did believe that the situation would worsen significantly as a result of the pandemic.

Furthermore, it can be concluded that the health emergency, together with increased economic uncertainty and pessimism, has raised concerns about pending demands in the country. These are related to the quality of public health, employment, wages, and digital connectivity, which are determinants in the way families can face the challenges caused by this crisis.

Finally, it is necessary to remember that humanity has the ability to overcome and adapt to difficulties, but the pandemic is a global challenge and we do not know how long it will continue to threaten people’s health. In this scenario, the concepts of resilience and sustainability are fundamental in the development of future social actions and will be the impulse that allows societies to restructure the lifestyle of families.

From now on, the most important challenge is to reduce the economic gap and for society to generate alternatives to include the most vulnerable in this new social dynamic, where access to technology and internet connection are elementary in “social isolation” and they are changing the way we communicate, learn, and work.

Regarding the limitations, we can mention that when carrying out the data collection through an online survey, an exclusion of the inhabitants who do not have internet access is generated due to the rurality of the town where they live or due to the lack of resources. In relation to this, it was not possible to obtain a proportional participation of all the communes of the Ñuble region and therefore, the response rate was lower than expected. On the other hand, future research will consider other variables and relationships, such as the production linkages and employment effects of the business environment on the rest of the Ñuble economy region [85–88].

**Author Contributions:** Formal analysis, H.d.l.F.-M., B.U.-H., M.F.-F., and C.E.-G.; funding acquisition, B.U.-H. and H.d.l.F.-M.; investigation, H.d.l.F.-M., B.U.-H., M.F.-F. and C.E.-G.; methodology, H.d.l.F.-M., M.F.-F.; project administration, B.U.-H.; software, H.d.l.F.-M.; supervision, B.U.-H. and M.F.-F.; validation, H.d.l.F.-M. and C.E.-G.; writing—original draft, B.U.-H. and M.F.-F.; writing—review & editing, H.d.l.F.-M., C.E.-G. All authors have read and agreed to the published version of the manuscript.



**Funding:** Hanns de la Fuente-Mella and Claudio Elórtogui-Gómez are supported by Grant Nucleo de Investigación en Data Analytics/VRIEA/PUCV/039.432/2020.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References and note

1. Sánchez-Bernal, A.; Batiz, M.L.G. El desempeño económico de los gobiernos municipales mexicanos en los procesos de desarrollo a escala local. *Econ. Soc. Territ.* **2010**, *22*, 355–412. [CrossRef]
2. Salazar, C.; Jaime, M. Participación en organizaciones sociales en Chile. ¿Una alternativa para mejorar el bienestar económico de los hogares? *Estud. Econ.* **2009**, *36*, 191–215. [CrossRef]
3. Polanyi, K. *The Great Transformation: The Political and Economic Origins of Our Time*, 2nd ed.; Beacon Press: Boston, MA, USA, 2001.
4. Wright, A. Sustainable Development at the Community Level: An Analytical Framework for Embedding the Economy in Local Decision-Making. Ph.D. Thesis, Political Science, Northern Arizona University, Flagstaff, AZ, USA, 2017.
5. Hopkins, D.J.; Kim, E.; Kim, S. Does newspaper coverage influence or reflect public perceptions of the economy? *Res. Polit.* **2017**, 1–7. [CrossRef]
6. Guillen, M.; Guardiola, J.; Garcia, F. Sustainable development in times of economic crisis: A needs-based illustration from Granada (Spain). *J. Clean. Prod.* **2017**, *150*, 267–276. [CrossRef]
7. Fawson, F. Local Economies, Local Governance and Community: Defining Community in Nova Scotia. Master's Thesis, Saint Mary's University, Halifax, NS, Canada, 2006.
8. Barrett, C. Rural poverty dynamics: Development policy implications. *Agric. Econ.* **2005**, *32*, 45–60. [CrossRef]
9. Vogt, C.; Polino, C. *Percepción Pública de la Ciencia. Resultados de la Encuesta en Argentina, Brasil, España y Uruguay*; Editora Unicamp: Sao Paulo, Brazil, 2003.
10. Rodríguez, C.; Padilla, G. Percepciones sobre ciencia y tecnología en Chile: Un análisis factorial exploratorio y confirmatorio para la primera versión de la Encuestas Nacional de Cultura Científica y Tecnológica. *PAAKAT Rev. Tecnol. Soc.* **2019**, *8*, 1–20.
11. Galardi, G. Exploring the Use of Citizen Satisfaction Survey Results in Municipal Policing. Ph.D. Thesis, Northcentral University, Prescott Valley, AZ, USA, 2008.
12. Miller, T.; Miller-Kobayashi, M. *Citizen Surveys: How to Do Them; How to Use Them; What They Mean*, 2nd ed.; International City Management Association: Washington, DC, USA, 2000.
13. Trojanowicz, R.; Kappeler, V.; Gaines, L. *Community Policing: A Contemporary Perspective*, 3rd ed.; Anderson: Cincinnati, OH, USA, 2002.
14. D'Adamo, I.; Falcone, P.M.; Martin, M.; Rosa, P.A. Sustainable revolution: Let's go sustainable to get our globe cleaner. *Sustainability* **2020**, *12*, 4387. [CrossRef]
15. D'Adamo, I.; Rosa, P. How Do You See Infrastructure? Green Energy to Provide Economic Growth after COVID-19. *Sustainability* **2020**, *12*, 4738. [CrossRef]
16. Elmqvist, T.; Andersson, E.; Frantzeskaki, N.; McPhearson, T.; Olsson, P.; Gaffney, O.; Takeuchi, K.; Folke, C. Sustainability and resilience for transformation in the urban century. *Nat. Sustain.* **2019**, *2*, 267–273. [CrossRef]
17. Ministerio de Salud. Reporte Diario COVID-19. 2020. Available online: <https://www.minsal.cl/wp-content/uploads/2020/10/CP-REPORTE-COVID-19-Mi%C3%A9rcoles-14102020.pdf> (accessed on 14 October 2020).
18. Huarcaya-Victoria, J. Consideraciones Sobre La Salud Mental En La Pandemia De Covid-19. *Rev. Peru. Med. Exp. Salud Publica* **2020**, *37*, 327–334. [CrossRef]
19. Vallina-Hernández, A.M.; Martínez, P.; González, C.; Fuentes, R.; De la Fuente-Mella, H. Gravity Models for Latin American Economies. In *Advances in Human Factors, Business Management and Leadership, Proceedings of the International Conference on Applied Human Factors and Ergonomics, San Diego, CA, USA, 16–20 July 2020*; Kantola, J., Nazir, S., Salminen, V., Eds.; Springer: Cham, Switzerland, 2020; pp. 495–501.
20. Rattliff, J.R. Economic News and Public Perceptions of the U.S. Economy. Ph.D. Thesis, Department of Political Science in the Graduate School of Duke University, Durham, NC, USA, 2001.
21. Lampis, A.; Rodríguez, L.K. Colombia, entre lo local y lo global: La inserción de las regiones en la nueva economía global. *Soc. Econ.* **2012**, *22*, 95–131.
22. Mildemberger, M.; Leiserowitz, A. Public opinion on climate change: Is there an economy-environment tradeoff? *Environ. Polit.* **2017**, *26*, 801–824. [CrossRef]

23. Gómez, C.E.; Ruetter, J.; de la Fuente-Mella, H. The Philanthropy of Chilean Citizenship: A Quantitative Data Science Study. In *Advances in Human Factors, Business Management and Leadership, Proceedings of the International Conference on Applied Human Factors and Ergonomics, San Diego, CA, USA, 16–20 July 2020*; Kantola, J., Nazir, S., Salminen, V., Eds.; Springer: Cham, Switzerland, 2020; pp. 509–515.
24. Schwarz, V. Citizen in the New Latin American State: Politics, the Economy and the Dynamics of Democratic Legitimacy in Bolivia and Latin America. Ph.D. Thesis, Vanderbilt University, Nashville, TN, USA, 2014.
25. Soroka, S.N.; Stecula, D.A.; Wlezien, C. It's (change in) the (future) economy, stupid: Economic indicators, the media, and the public opinion. *Am. J. Polit. Sci.* **2015**, *59*, 457–474. [[CrossRef](#)]
26. Svallfors, S. *Contested Welfare States: Welfare Attitudes in Europe and Beyond*; Stanford University Press: Redwood City, CA, USA, 2012.
27. Shapiro, R.Y. Public opinion and American democracy. *Public Opin. Q.* **2011**, *75*, 982–1017. [[CrossRef](#)]
28. Elórtegui-Gómez, C.; De la Fuente-Mella, H.; Alvarado, M.; Guajardo, M. Efficiency of the City Councils Using Cross-Sectional Model: Challenges in Times of Change and Political Tension. *IntechOpen*. Available online: <https://www.intechopen.com/online-first/efficiency-of-the-city-councils-using-cross-sectional-model-challenges-in-times-of-change-and-politi> (accessed on 11 November 2020).
29. Mayeda, A.; Boyd, A. Factors influencing public perceptions of hydropower projects: A systematic literature review. *Renew. Sustain. Energy Rev.* **2020**, *121*, 109713. [[CrossRef](#)]
30. Ahmand, M.; Abu Talib, N. Empowering local communities: Decentralization, empowerment and community driven development. *Qual. Quant.* **2015**, *49*, 827–838. [[CrossRef](#)]
31. Duncana, S.; Goodwina, M. Local economic policies: Local regeneration or political mobilization. *Local Gov. Stud.* **2008**, *11*, 75–96. [[CrossRef](#)]
32. Agrawal, A.; Gupta, K. Decentralization and participation: The governance of common pool resources in Nepal's Terai. *World Dev.* **2005**, *33*, 1101–1114. [[CrossRef](#)]
33. Bennet, L. *Using Empowerment and Social Inclusion for Pro-Poor Growth: A Theory of Social Change. Background Paper for the Social Development Sector Strategy*; World Bank: Washington, DC, USA, 2002.
34. Corbett, J.; Keller, P. Empowerment and participatory geographic information and multimedia systems: Observations from two communities in Indonesia. *Inf. Technol. Int. Dev.* **2004**, *2*, 25–44. [[CrossRef](#)]
35. Salazar, I.; Caro, N.; Zegarra, E. Desempeño de la gerencia de desarrollo económico de la municipalidad de Leoncio Prado (Huanuco) y el desarrollo económico local. *Investig. Amazon.* **2016**, *2*, 11–19.
36. Fawaz, M.J.; Vallejos, R.; Tolón, A.; Lastra, X. Redefining local participation in sustainable rural development in Chile: The case of small farmers in Ñuble Province. *Int. Dev. Plan. Rev.* **2012**, *34*, 295–318. [[CrossRef](#)]
37. Hickey, S.; Mohan, G. Towards participation as transformation: Critical themes and challenges. In *Participation: From Tyranny to Transformation? Exploring New Approaches to Participation Development*; Hickey, S., Mohan, G., Eds.; Zed Books: London UK; New York, NY, USA, 2004; pp. 3–24.
38. Stewart, A. Two conceptions of citizenship. *Br. J. Sociol.* **1995**, *46*, 63–79. [[CrossRef](#)]
39. Oldfield, A. Citizenship: An unnatural practice? *Polit. Q.* **1990**, *61*, 177–187. [[CrossRef](#)]
40. Cornwall, A. *Making Spaces, Changing Spaces: Situating Participation in Development*; IDS Working Paper; Institute for Development Studies: Sussex, UK, 2002; Volume 170.
41. Ramírez, R.; Quarry, W. *Communication for Development. A Medium for Innovation in Natural Resource Management*; IDRC/CRDI—FAO: Ottawa, ON, Canada, 2004; Available online: [http://www.fao.org/waicent/faoinfo/sustdev/Welcome\\_.htm](http://www.fao.org/waicent/faoinfo/sustdev/Welcome_.htm) (accessed on 11 November 2020).
42. Gaventa, J. Exploring Citizenship, Participation and Accountability. *IDS Bull.* **2002**, *33*, 1–11. [[CrossRef](#)]
43. Wong, C. Determining factors for local economic development: The perception of practitioners in the North West and Eastern Regions of the UK. *Reg. Stud.* **1998**, *32*, 707–720. [[CrossRef](#)]
44. Peters, M.; Chan, C.; Legerer, A. Local Perception of Impact-Attitudes-Actions towards Tourism Development in the Urlaubsregion Murtal in Austria. *Sustainability* **2018**, *10*, 2360. [[CrossRef](#)]
45. Abukari, H.; Mwalyosi, R.B. Local communities' perceptions about the impact of protected areas on livelihoods and community development. *Glob. Ecol. Conserv.* **2020**, *22*, e00909. [[CrossRef](#)]
46. Rodrick, D. *The New Global Economy and Developing Countries: Making Openness Work*; Overseas Development Council: Washington, DC, USA, 1999.
47. Berdegué, J.; Schejtman, A. Desarrollo territorial rural. In *Territorios Rurales. Movimientos Sociales y Desarrollo Territorial Rural en América Latina*; Bengoa, J., Ed.; RIMISP: Santiago, Chile, 2006; pp. 45–83.

48. Berninger, K.; Kneeshaw, D.; Messier, C. The role of cultural models in local perceptions of SFM—Differences and similarities of interest groups from three boreal regions. *J. Environ. Manag.* **2009**, *90*, 740–751. [CrossRef]
49. Cárcamo, H. Ciudadanía y formación inicial docente: Explorando las representaciones sociales de académicos y estudiantes. *Rev. Pedag.* **2008**, *29*, 245–268.
50. Martínez, A.G. La influencia de la cultura y las identidades en las relaciones interculturales. *Kairos Rev. Temas Soc.* **2008**, *22*, 3.
51. Castells, 1997 as cited in Balbontin, R.; Rojas, N. Percepciones sobre la identidad del profesor rural en la Región del Ñuble, Chile. *Rev. Educ. Las Am.* **2020**, *10*, 1–14.
52. Vega, J. Geografía e identidad territorial. *Notas Hist. Geogr.* **2000**, *11*, 193–222.
53. Molina, J. Desarrollo, Identidad y Descentralización: El caso de la Sexta Región. 2005. Available online: <http://repositorio.uchile.cl/bitstream/handle/2250/113368/cs39-molinaj38.pdf?sequence=1> (accessed on 11 November 2020).
54. Molano, O. Identidad cultural un concepto que evoluciona. *Rev. Opera* **2007**, *7*, 69–84.
55. Brea, L. Factores que determinan el sentido de pertenencia de los estudiantes de la PUCMM-CSTA. *Cuad. Pedag. Univ.* **2017**, *12*, 21–38. [CrossRef]
56. Giménez, G. *Territorio e Identidad. Breve Introducción a la Geografía Cultural Trayectorias*; Universidad Autónoma de Nuevo León: Monterrey, Nuevo León, México, 2005; Volume VII, Núm. 17; pp. 8–24. Available online: <https://www.redalyc.org/pdf/607/60722197004.pdf> (accessed on 11 November 2020).
57. Cazzuffi, C.; López, D.; Del Valle, V. *Crecimiento e Inclusión en los Territorios Rurales-Urbanos de Chile*; Serie documento de trabajo No 255, Jóvenes Rurales y Territorios: Una estrategia de Diálogos y Política; Rimisp: Santiago, Chile, 2019; Available online: [https://rimisp.org/wp-content/files\\_mf/1570477913Crecimientoeinclusio%CC%81nenlosterritoriosruralesurbanosdeChile.pdf](https://rimisp.org/wp-content/files_mf/1570477913Crecimientoeinclusio%CC%81nenlosterritoriosruralesurbanosdeChile.pdf) (accessed on 11 November 2020).
58. Schejtman, A.; Berdegué, J. Desarrollo territorial rural. *Debat. Temas Rural.* **2004**, *1*, 7–46.
59. Berdegué, J. ¿Qué Desarrollo Territorial? 2016. Available online: <http://lasillavacia.com/silla-llena/red-rural/historia/que-desarrollo-territorial-58748> (accessed on 24 July 2020).
60. Nogué i Font, J. Paisaje, Identidad y Globalización, Fabrikart: Arte, Tecnología, Industria, Sociedad. Available online: <https://ojs.ehu.eus/index.php/Fabrikart/article/viewFile/2227/1843> (accessed on 11 November 2020).
61. Vallejos, R.; Fawas, J.; Fonseca, M. Análisis de la Movilidad Espacial Femenina en Territorio Funcional de la Provincia de Ñuble: Una Caracterización de sus Efectos en los Ámbitos de Empleo, Educación, Acceso a Bienes y Estilos de vida en Mujeres Urbano-Rurales. 2015. Available online: <http://repobib.ubiobio.cl/jspui/handle/123456789/436> (accessed on 11 November 2020).
62. Berdegué, J.; Jara, B.; Fuentealba, R.; Tohá, J.; Modrego, F.; Schejtman, A.; Bro, N. *Territorios Funcionales en Chile*; Documento de trabajo No 102. Programa Dinámicas Territoriales Rurales; Rimisp: Santiago, Chile, 2011.
63. Salazar, X. El Estudio del Sistema de Asentamientos como parte del Diagnostico del Sistema Territorial Cantonal. Master's Thesis, University of Cuenca, Cuenca, Azuay, Ecuador, 2013.
64. Fawaz, M.; Vallejos, R. Calidad de vida, ocupación, participación y roles de género: Un sistema de indicadores sociales de sostenibilidad rural (Chile). *Cuad. Desarro. Rural* **2012**, *8*, 24.
65. Micheletti, S.; Cortés, F.S.; Troncoso, F.L. Los contenidos del habitar rurbano: Prácticas, movilidad e identidades en las ciudades intermedias del Maule, Chile. *Cuad. Urban.* **2020**, *27*, 111–131. [CrossRef]
66. Landa, C. Constitución y Emergencia Sanitaria. Palestra Editores. 2020. Available online: [https://books.google.es/books?hl=es&lr=&id=icLsDwAAQBAJ&oi=fnd&pg=PT122&dq=nueva+normalidad+&ots=LKoFM36w6c&sig=b1YVuyJOHzFv5B2n0KeR\\_HAuMLQ#v=onepage&q=nueva%20normalidad&f=false](https://books.google.es/books?hl=es&lr=&id=icLsDwAAQBAJ&oi=fnd&pg=PT122&dq=nueva+normalidad+&ots=LKoFM36w6c&sig=b1YVuyJOHzFv5B2n0KeR_HAuMLQ#v=onepage&q=nueva%20normalidad&f=false) (accessed on 6 August 2020).
67. De España, B. *Escenarios Macroeconómicos de Referencia Para la Economía Española Tras el Covid-19*; Boletín económico/Banco de España (Artículos): Madrid, Spain, 2020.
68. Coughenour, C.; Paz, A.; De la Fuente-Mella, H.; Singh, A. Multinomial logistic regression to estimate and predict perceptions of bicycle and transportation infrastructure in a sprawling metropolitan area. *J. Public Health* **2016**, *38*, e401–e408. [CrossRef]
69. Clark, S.; Coughenour, C.; Bumgarner, K.; De la Fuente-Mella Reynolds, C.; Abelar, J. The impact of pedestrian crossing flags on driver yielding behavior in Las Vegas, NV. *Sustainability* **2019**, *11*, 4741. [CrossRef]
70. Coughenour, C.; De la Fuente-Mella, H.; Paz, A. Analysis of self-reported walking for transit in a sprawling urban metropolitan area in the western U.S. *Sustainability* **2019**, *11*, 852. [CrossRef]

71. Subsecretaría de Desarrollo Regional y Administrativo. Observatorio Regional. Gobierno de Chile. 2020. Available online: <http://www.observatorioregional.cl/> (accessed on 8 August 2020).
72. Instituto Nacional de Estadísticas. Síntesis de Resultados. Censo. Gobierno de Chile. 2017. Available online: <https://www.censo2017.cl/descargas/home/sintesis-de-resultados-censo2017.pdf> (accessed on 3 August 2020).
73. Ministerio de Desarrollo Social y Familia. Encuesta de Caracterización Socio-Económica. Gobierno de Chile, Santiago. 2017. Available online: [http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen\\_2017.php](http://observatorio.ministeriodesarrollosocial.gob.cl/casen-multidimensional/casen/casen_2017.php) (accessed on 24 July 2020).
74. De la Fuente-Mella, H.; Quezada, E.R.; Muñoz, C.G.; Lagos, M.; Inostroza, C. Probabilistic Models of Job Placement and Positioning for Students with a Career in Chile. In *Advances in Human Factors, Business Management and Leadership, Proceedings of the International Conference on Applied Human Factors and Ergonomics, San Diego, CA, USA, 16–20 July 2020*; Kantola, J., Nazir, S., Salminen, V., Eds.; Springer: Cham, Switzerland, 2020; pp. 516–522.
75. Umaña, B. *Caracterización de la Provincia de Ñuble y una Propuesta Estratégica para el Desarrollo del Territorio*; Ediciones Universidad del Bío-Bío: Concepcion, Chile, 2015.
76. Observatorio Laboral de Ñuble. Reporte Síntesis Silvoagropecuario. OTIC SOFOFA, Universidad del Bío-Bío y Servicio de Capacitación y Empleo (SENCE), Ministerio del Trabajo, Gobierno de Chile. 2019. Available online: [https://www.observatoriolaboralnuble.cl/wp-content/uploads/2019/pdf/Reporte%20S%C3%ADntesis%20Silvoagropecuario%20\[mayo%202019\].pdf](https://www.observatoriolaboralnuble.cl/wp-content/uploads/2019/pdf/Reporte%20S%C3%ADntesis%20Silvoagropecuario%20[mayo%202019].pdf) (accessed on 5 August 2020).
77. De la Fuente-Mella, H.; Alvaro Martínez, M.; Elórtégui Gómez, C.; Calderón, M.G. Econometric Modeling of the Performance in the City Council of Chile. In *Advances in Human Factors, Business Management and Leadership, Proceedings of the International Conference on Applied Human Factors and Ergonomics, San Diego, CA, USA, 16–20 July 2020*; Kantola, J., Nazir, S., Salminen, V., Eds.; Springer: Cham, Switzerland, 2020; pp. 151–160.
78. Gobierno Regional/Agraria. *Informe Política para el Sector Agroalimentario para la Región del Bío Bío*; GORE: Concepción, Chile, 2010.
79. Fawaz, M.; Vallejos, R. Exploring the linkage between secondary technical and vocational education system, labor market and family setting. A prospective analysis from Central Chile. *Educ. Stud.* **2020**, *56*, 186–207. [[CrossRef](#)]
80. De la Fuente-Mella, H.; Vallina-Hernández, A.M.; Estay-Cornejo, R. Econometric modeling of the efficiency in the generation of electric power in Chile. In *Advances in Human Factors, Business Management and Leadership, Proceedings of the International Conference on Applied Human Factors and Ergonomics, Washington, DC, USA, 24–28 July 2019*; Kantola, J., Nazir, S., Eds.; Springer: Cham, Switzerland, 2019; pp. 352–360.
81. Hernández, R. *Metodología de la Investigación*; McGraw-Hill: Mexico City, Mexico, 2010.
82. Cea, M. *Fundamentos y Aplicaciones en Metodología Cuantitativa*; Síntesis: Madrid, Spain, 2012.
83. Paz, A.; De la Fuente-Mella, H.; Singh, A.; Conover, R.; Monteiro, H. Highway expenditures and associated customer satisfaction: A case study. *Math. Probl. Eng.* **2016**, *2016*. [[CrossRef](#)]
84. Naciones Unidas. *Informe de Políticas: La COVID-19 y la Transformación del Turismo*; UN: New York, NY, USA, 2020.
85. CEPAL. Sectores y Empresas Frente al COVID-19: Emergencia y Reactivación. 2020. Available online: [https://repositorio.cepal.org/bitstream/handle/11362/45734/4/S2000438\\_es.pdf](https://repositorio.cepal.org/bitstream/handle/11362/45734/4/S2000438_es.pdf) (accessed on 11 November 2020).
86. Sadik-Zada, E.R.; Loewenstein, W.; Hasanli, Y. Production linkages and dynamic fiscal employment effects of the extractive industries: Input-output and nonlinear ARDL analyses of Azerbaijani economy. *Miner. Econ.* **2019**. [[CrossRef](#)]
87. Sadik-Zada, E.R. Addressing the growth and employment effects of the extractive industries: White and black box illustrations from Kazakhstan. *Post Commun. Econ.* **2020**. [[CrossRef](#)]
88. De la Fuente-Mella, H.; Vallina, A.M.; Solis, R. Stochastic analysis of the economic growth of OECD countries. *Econ. Res. Ekon. Istraž.* **2020**, *33*, 2189–2202. [[CrossRef](#)]

**Publisher’s Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0/>).