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Characteristics and Motivations of Consumers of Direct Purchasing Channels and the Perceived Barriers to Alternative Food Purchase: A Cross-Sectional Study in the Ecuadorian Andes

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Abstract: Modern food systems generate social inequalities in the access to healthy food, but some families maintain behaviors that provide an alternative to these systems. Agroecological consumers (ACs) and non-agroecological direct market consumers (DMCs) are key actors in alternative food systems. We assessed the characteristics of ACs and DMCs using data from a representative sample of households in Ibarra, Quito and Riobamba ($n = 2914$). We also deepened the exploration of motivations for adopting these practices through mini-ethnographies with families who were identified as ACs or DMCs ($n = 15$). We found motivations related to personal health problems, food quality (e.g., taste, freshness), and safety (e.g., avoiding pesticides) to be key. Other motivations were price and community solidarity with farmers. Barriers included inconvenience, lack of awareness, and insecurity of market location. Using Chi-square tests, we found differences between ACs and DMCs on place of residence, education, employment, health, and diet. Controlling for socioeconomic and health variables using logistic regressions, we found DMC dietary habits to be similar to the remainder of the study population, except that they were *less* likely to eat processed foods less frequently (adjusted odds ratio (AOR) 0.6, 95% confidence interval 0.4–0.9). In contrast, ACs were more likely than the remainder of the study population to control their salt intake (3.2, 1.9–5.2) and have greater knowledge of nutrition labels (2.8, 1.7–4.6). They were *more* likely to eat traditional foods frequently (1.9, 1.1–3.3), fruit and vegetables daily (1.6, 1.0–2.8), and processed foods less frequently (2.7, 1.5–4.8). Hence, these two types of alternative food provisioning practices (AC and DMC) were adopted by different types of consumers, with heterogeneous motivations and food consumption practices. These findings have implications for public health initiatives aiming to scale up the nutrition and ecological potential of alternative food systems.

Keywords: agroecology; direct market; food system; Latin America; low- and middle-income countries; mixed-method; nutrition; supply chain; sustainable consumption

1. Introduction

The industrialization of food and the globalization of food economies are primary contributors to the environmental, social, and nutritional disturbances that burden public health [1]. Globally, it is estimated that one in nine people is now affected by undernourishment and one in three by overweight or obesity [2]. Local and ecological food systems are recognized and strongly promoted as a better choice not only by international public health bodies, but also by many farmers, consumers, and some governments [3]. Growing evidence demonstrates that localized and ecologically sound food provisioning practices can bring social, economic, and health benefits to the diverse actors in the food system, but there is an emphatic need for more consumer-oriented studies [4–9].

Although food systems that are rooted in local communities and ecosystems are disappearing in middle-income countries, there are still strong movements of people who act as agents of social change through their food choices [10]. In Ecuador, a middle-income country of South America, civil society played an active role in persuading its government to set a political and regulatory framework to strengthen local healthy and sustainable food systems [11–13]. The Constitutional Act on Food Sovereignty adopted in 2008 aimed to stimulate multi-level initiatives fostering organic food production and helping consumers source food directly from producers [14]. Some initiatives have been organized by provincial governments, such as farmers' markets and centers for the collection and direct sale of products from local farmers. Other market spaces are initiated by civil society; farmers and artisans organize individually or collectively to reach consumers through farm sales, box schemes, stores, restaurants, and fairs, most of which involve not only direct trade, but operate according to organic or agroecological values and processes [10,13,15]. Although organic farming and agroecology are both based on farm management that avoids the use of any synthetic agrochemical inputs, they are clearly distinguished overall. Organic production can fit into the global and capitalist food system when it is implemented on the basis of intensive production and requires the application of fee-based certification [16]. Agroecology is a system of agri-food harvesting and processing that builds on existing local resources and strengthens the ecosystem in which it takes place, oriented toward ecological and equitable methods of food distribution, consumption, and disposal [17]. Furthermore, it tends to be associated with an internal collaborative monitoring process called the “sistema participativo de Garantía” (SPG), which is an alternative to a third-party certification process. It is based on the principles of participation, transparency, and trust among both consumers and producers [18].

Patrons of these multiple types of direct markets are often studied as a single group, united by the alternative nature of their food provisioning practices [19]. The literature provides a certain amount of information on factors that motivate alternative food procurement practices such as purchasing from farmers' markets, organic stores, or food box schemes [20–23]. Some evidence supports the idea that direct markets are frequented by consumers with political, ecological, or community-oriented motivations, which is to be expected given the anchoring of this supply chain in local food and ecologically restorative practices [9,24]. However, others have shown that personal concerns, such as health and price, are more salient motivations [21,25]. Despite better prices acting as a key motivator for direct market patrons, there is a strong preconception that alternative procurement practices are a luxury that only some can afford. High prices are often reported as barriers to the use of direct markets, along with inconvenience and lack of knowledge [21,22]. Alternative food consumers are often portrayed as predominantly wealthy and educated women [9,21,26–28]. However, the literature on alternative sourcing practices comes mainly from countries with largely industrialized and globalized food systems, where organic food is a specialty market [8,29].

In Latin America, certified organic foods are export-oriented, and thus many actors in the region are more aligned with agroecology, which includes organic farming principles but employs non-conventional certification mechanisms, so it may be more affordable [15,18,30]. The link between alternative food procurement practices and the economic circumstances of consumers remains unclear [26,27]. Analyses are highly sensitive to the region studied and the dynamics of the predominant food system in place, as well as to the types of markets that form an alternative to the dominant food

system. In this article, we propose segmenting consumers with alternative food purchasing practices in order to better understand the heterogeneity of their characteristics, including their motivations and the barriers they face in alternative food purchases. We studied agroecological consumers, on the one hand, and users of non-agroecological direct markets, on the other. The former are those who frequent agroecological markets, identified as such through their use of non-conventional participatory certification. The latter are those who buy directly from producers, but in non-agroecological markets. Our goal was to better inform policies and programs which seek to realize the potential of diverse alternative food procurement practices for promoting healthy eating for all.

2. Materials and Methods

This original research article combines complementary quantitative and qualitative methods. It uses data from a cross-sectional survey on food, nutrition, and health, as well as data from mini-ethnographies conducted with people living in Ibarra, Quito, and Riobamba. These three cantons, located in the central and northern Andean region of Ecuador, were chosen for two reasons: (1) they each host strong social movements for the adoption of responsible food behaviors among consumers [31]; and (2) the research team had a long history of relationship-building and community engagement with the people in these cantons. Our study is representative of the three cantons included in the survey, with a stronger influence from Quito, a metropolis with a population about ten and twelve times that of Riobamba and Ibarra, respectively. In Quito, the national capital, the influence of the food industry and globalization is much stronger than in Riobamba and Ibarra. According to the last national census, the prevalence of poverty, in terms of the non-satisfaction of basic needs, is lowest in Quito (29.7%), followed by Ibarra (39.8%) and Riobamba (46.5%). The latter is also the region where the prevalence of illiteracy is the highest (8.3%), compared to Ibarra (5.5%) and Quito (3.0%) Riobamba is where relatively more people who identify as indigenous live, forming about a quarter of the population, and where agriculture is the most important economic sector, while it is the service sector for the other two regions [32]. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committees of the Université de Montréal in Canada (project identification code: 17-080-CERES-D) and the University of San Francisco de Quito, Ecuador (project identification code: 2016-118E).

2.1. Quantitative Survey

The survey was administered between August and December 2017 by three teams of trained and supervised interviewers in a representative sample of households in the three surveyed cantons. Data were collected with a digital device and sent overnight to a confidential server. The survey included two sections for two adult members in each randomly selected household. A first section was intended for the members of the household who identified themselves as responsible for food decisions. It covered information on the socioeconomic situation of the household and their food acquisition habits. A second section was addressed to this person as well as to another adult member of the household, ideally of the opposite sex, and included questions and measures on their eating habits and their health status. For this analysis, we used the data of the people responsible for household food decisions ($n = 2914$).

2.2. Quantitative Measurement and Analysis Methods

2.2.1. Consumer Socioeconomic and Health Characteristics

Interviewers collected information on the participants' gender, age, level of education, monthly household income, main occupation of the head of household, diagnosis of chronic disease, and anthropometric measurements. For the analysis, age data were grouped into three age groups: young adults (18–29 years), middle-aged adults (30–59 years), and older adults (60 years and over). Data from six participants were excluded due to incomplete information on age. Level of education was

grouped into the three categories: absence of an educational degree, possession of a secondary school diploma, and higher education. Income category was defined according to the quartile of per-capita income (household income divided by the number of adult household members); quartiles were calculated separately for each of the three cantons. Occupation of the head of household was recorded as one of thirteen possible options, which were then dichotomized according to whether the participant was employed or not. To assess chronic disease, participants were asked if they had been diagnosed with or were taking medication to treat hypertension, high cholesterol, hypertriglyceridemia, hyperglycemia, diabetes, or cancer, or if they had suffered a heart attack. Participants' height, weight, and waist circumference were measured according to standard protocols [33]. According to the thresholds established by the WHO, participants with a body mass index of at least 30 kg/m² were characterized as obese, and abdominal obesity was established for participants with a waist circumference of more than 88 cm for women and 102 cm for men.

2.2.2. Consumer Behavior

Dietary habits were assessed using a 20-item questionnaire measuring the frequency of consumption of common foods or groups of foods in the past month, and a similar 3-item questionnaire about traditional foods. Participants could choose between six frequency categories (for common foods) and 15 frequency categories (for traditional foods), ranging from no consumption to daily consumption. For this study, seven common food groups were retained based on the evidence linking them to chronic diseases: fruits, vegetables, and five categories of processed foods. We constructed a dichotomous variable separating daily consumers of fruits or vegetables from non-daily consumers. With regard to processed food products, we asked the participants about their frequency of consumption of fast food, savory snacks, sweets and pastries, processed meats, and sweetened commercial drinks. A growing body of literature establishes that these food products are associated with the development of chronic diseases [34]. Thus, we created a variable to separate occasional consumers (at most twice per month of any one of the five food groups included) from more frequent consumers. The traditional foods included in the survey were chosen for their historic and cultural relevance to the study population, namely quinoa, amaranth, and lupine bean [35]. These three were grouped as a single variable indicating the tendency of participants to include traditional foods more or less often in their diet, given that traditional diets are recognized as positively related to people's health [36].

Survey participants were also asked if they were actively controlling their salt intake, as well as about their knowledge and use of the traffic light nutrition label mandated for industrially processed foods in Ecuador. The decision to not use the nutrition label may be associated with divergent motivations, such as the a priori decision not to buy industrially processed products (precluding the need to look at the label) or the deliberate ignoring of the label when buying these products. We therefore preferred to apply a dichotomous variable separating the participants according to their level of knowledge of the nutritional label, rather than their use of it. Participants were asked to explain what these labels are used for and how to interpret them. Interviewers ticked off the answers corresponding to the six expected elements, which were related to the three nutrients and the three colors that can appear on the label. Participants who stated at least four of the expected elements were classified in the high knowledge category. Regardless of whether consumers use the label or not, having good knowledge about it may indicate health awareness. Aside from dietary behaviors, survey participants were queried about their level of physical activity and whether they smoked tobacco during the past month. The variable on physical activity assessed whether they engaged daily in activities of moderate or vigorous intensity for at least 10 min continuously.

The relative contribution of various food acquisition venues to household food supply was assessed using a 17-item questionnaire. Participants could choose between five levels, ranging from "is not a source" to "is a major source of food". We categorized consumers into two mutually exclusive groups, according to their use of (1) four agroecological venues (fairs, shops, box schemes, and restaurants); and (2) two direct non-agroecological food purchasing venues (farmers' markets and

purchases directly at the point of production). A description of these channels is provided in Table 1, based on information collected by members of our research team from different sources, including the following: Fundación Heifer [15], Qué rico es [37], Ministerio de Agricultura y Ganadería [38].

2.2.3. Quantitative Analyses

The relative frequencies of geographic, socioeconomic, nutritional, and health outcomes of individuals and households were compared between groups. The application of weighting factors, which were computed according to the data of the most recent census available at the time of the study [32], made it possible to obtain results representative of the population of people responsible for food decisions for their households in the three cantons (Ibarra, Quito, and Riobamba). First, comparisons were made with weighted Rao–Scott chi-square tests between DMCs and the remainder of the study population, and between ACs and the remainder of the study population. The statistical significance of the associations was considered for *p* values less than 10%, 5%, and 1%. Second, weighted logistic regressions were used to measure the extent of significant associations. The associations of dietary habits with the two different direct markets groupings (AC and DMC) were also assessed using multivariable logistic regressions adjusted by canton of residence, composition of the household, sex, age group, income and education levels, obesity status, chronic diseases diagnosis, and the main occupation of the head of household.

Among participants who reported that one or more of the agroecological sources made at least a minor contribution to the household food supply, interviewers asked about participants' motivations. These were recorded as one or more of the following reasons: for health reasons, to avoid pesticides, to support farmers, because the products are cheaper, because the markets are close or convenient, because the products are fresh, tastier, or for some other organoleptic reason, for environmental reasons, for other reasons, and without any reason. When health reasons were cited, participants were asked to elaborate, with answer options: to stay healthy, because they or someone in their household was at risk of chronic diseases, because they or someone in their household was affected by a chronic disease, or for other reasons. These motivations entered into a weighted analysis of relative frequencies in order to assess the most and least common motivations in the studied population. All quantitative analyses were performed using SAS software, version 9.4.

2.3. Qualitative Data Collection and Analysis

Ethnographic data collection was conducted during three periods of time (February–March 2017, July–September 2017, March–June 2019). During the first two data collection periods, we conducted nine mini-ethnographies in homes with high consumption levels from agroecological purchasing channels (two in Ibarra, two in Riobamba, and five in Quito). Households were selected from a database of consumers that are connected to selected alternative food networks (AFNs). These, in turn, were selected for their relatively high prominence in their canton and for their connection to Ecuador's *Colectivo Agroecológico*, a group with which our research team has a history of collaboration. The third ethnographic data collection period occurred after the quantitative data collection and preliminary analysis was complete. This allowed us to identify a subsample of 94 households that make direct purchases from agroecological and non-agroecological purchasing channels in the three cantons. These households were convened for results feedback and validation workshops in Quito, Ibarra, and Riobamba (April and May 2019). Of the 94 households, eight participated in the workshop, and of these, six gave informed consent to participate in mini-ethnographies. As such, the 15 households together reflected the heterogeneity that exists among consumers that make agroecological or non-agroecological direct purchases through the six identified purchasing channels. Moreover, we aimed to maintain similar proportions of mini-ethnographies from each canton to the proportions of these types of consumers in their respective cantons. Table 2 summarizes the socioeconomic, geographic, and channel utilization characteristics of the selected participants and their households.

Table 1. Description of the four agroecological * and two non-agroecological direct purchase channels ** included in the survey.

Direct Purchase Channels	Location and Schedule	Food Supply	Prices	Other Observations
Agroecological or organic fairs *	In open spaces such as parks, squares, parking lots; weekly or every 15 days, usually in the morning	Offer a wide variety of plant foods, but also animal products (eggs, fresh and processed meats, milks, yogurts, and cheeses), alongside foods processed in an artisanal way (honey, bread, snacks, beverages) and non-edible handicrafts. The products, all agroecological or organic, are displayed on tables to be easily observed by consumers during the fair.	Prices vary according to an agreement system between producers and consumers in each fair. They can be comparable to conventional open markets or slightly higher [39]	Agroecological production has an internal collaborative monitoring process called the “sistema participativo de Garantía” (SPG) [18]. Organic production is certified according to Ecuadorian and international regulations [40].
Agroecological baskets *	Delivered at specific distribution points or at home; weekly or every 15 days	Similar to agroecological or organic fairs, except that products are not displayed but packed and directly delivered at meeting points or at home.	The cost of products is generally slightly higher than products sold in conventional markets.	The absence of points of sale or the scarcity of information is impeding citizens’ awareness of this type of purchase channel.
Agroecological stores *	Similar in appearance to conventional stores, they are mainly located in the urban sector; everyday, all day	Similar to agroecological or organic fairs, but food delivery and display occurs in a shop.	The products are generally slightly more expensive than those offered in popular or conventional markets	Small producers supply the store and receive a fair payment for their products.
Agroecological restaurants *	Similar in appearance to conventional restaurants, they are mainly located in the urban sector; everyday, all day	The preparation of the menu is characterized by the use of food from agroecological, organic, or small producer production. Their work dynamics are similar to those of agroecological stores.	Prices are generally comparable to those in popular restaurants which serve food with conventional products.	The services and benefits that these types of restaurants provide to consumers are still unknown to most people due to a lack of information and publicity. In addition to catering, they often offer related services such as tastings and culinary demonstrations.

Table 1. Cont.

Direct Purchase Channels	Location and Schedule	Food Supply	Prices	Other Observations
Farmers' markets **	In open, non-stationary areas (parks, squares, parking lots, next to popular markets); at least once a week	Similar to agroecological or organic fairs, with the exception that sellers and their products usually do not have any form of organic or agroecological monitoring process, or do not identify as such.	Food is usually cheaper than what is offered in popular or conventional markets, because it is sold in bulk and without intermediaries.	According to the CIALCOS project, some of the producer markets started as Citizen Fairs promoted by the Ministry of Agriculture and Livestock, but later became fairs for small farmers. These markets accommodate all types of producers, whether conventional, agroecological, organic, or in transition; they generally do not have SPG or certification. Sellers differentiate themselves from others through uniforms, cards, or other mechanisms.
Direct purchase from producers **	Producers access various non-stationary spaces to sell their food directly to consumers (farmers' markets, collection centers, farm stands); varied schedules	Fresh seasonal and regional foods	Prices vary depending on where they are offered. On farms, they can be cheaper than food sold at farmers' markets. Elsewhere, prices can be similar to those in popular markets.	The Pichincha government (city of Quito) has a solidarity basket program which functions as a center for collecting food from small producers on the outskirts of the city. This program sells food brought directly from farms, or surpluses from fairs.

Table 2. Characteristics of participants in the qualitative mini-ethnographies.

Variable	Category	Frequency of Answers; <i>n</i> = 15
Gender	Male	1
	Female	14
Age group	31–40	1
	41–50	8
	51–60	4
	Over 60	2
Education	Primary	1
	Secondary	6
	University	8
Locality	Ibarra	2
	Riobamba	4
	Quito	9
Most frequent direct purchase locations	Agroecological	11
	Farmers' market	6
	Fairs	2
	Box schemes	3
	Non-agroecological	4
	Farmers' market	3
	Fair trade stores	1

Ethnographic data collection was conducted by seven master's level students and one doctoral student connected to the project and supervised by MP, who also participated directly in two mini-ethnographies. Each student spent 7 days conducting participant observation on food purchases, preparation, and consumption, as well as any other activity related to food, such as working in the garden. Further, a life history activity was conducted with the adult in the household who was in charge of food matters. In this activity, we aimed to deepen the exploration of the person's history relating to food, beginning from childhood up to the present moment, in order to understand how this history influenced their current food practices. In addition, this same person participated in a semi-structured interview focused on food purchasing behaviors. Families were compensated with \$10 per day at the end of their participation in order to off-set the costs of feeding the ethnographer.

All data was analyzed using the software NVivo 11 (QSR International). The coding process explored the motivations for, and barriers to, households using forms of direct purchasing, including both agroecological and non-agroecological channels (see Table 1). We used a deductive analysis method based on the codes proposed by Zoll and Specht [23], who classify motivations into three categories: (a) *self-oriented motives*, i.e., those reasons related to the enhancement of the participants' own wellbeing and interests; (b) *community-oriented motives*, which are aspects related to social relationships, togetherness, and solidarity between alternative food networks (AFN) actors, particularly the local-based producers; and (c) *sociopolitical motives*, which refers to intentions to influence environmental, social, and political aspects of food networks such as using fewer pesticides or the establishment of fair wages.

3. Results

3.1. Survey Consumer Characteristics

Among our population, described in Table 3, the weighted proportion of non-agroecological direct market consumers (DMCs) was 12% ($N = 685$), and that of agroecological consumers (ACs) was 11% ($N = 315$). Obtaining food directly from producers, whether agroecological or not, was associated with the city of residence and composition of the household, and with the participants' age group, level of education, and eating habits (Table 3). No link was found with the participants' gender or income level. Compared to the rest of the population (including non-DMC and non-AC participants), the two groups of direct market consumers were less likely to be young adults and more likely to be in households with two or more adults and living in Riobamba. However, the likelihood of residing in Riobamba was higher among DMCs (Odds Ratio (OR), 95% confidence interval (CI), was 6.9, 4.8–10.0 for DMCs vs 1.6, 1.1–2.3 for ACs). Moreover, ACs were no less likely than others to reside in Quito, contrary to what was observed among DMCs. Regarding the age group of consumers, only ACs were more likely to be middle-aged adults (OR, 95% CI: 1.8, 1.1–2.9).

Table 3. Distribution of people responsible for household food purchases in Ibarra, Quito, and Riobamba (overall sample) according to geographic, socioeconomic, health, and dietary characteristics, and comparison of users of direct non-agroecological markets (DMCs) with the rest of the population, and agroecological consumers (ACs) with the rest of the population.

		Overall Sample %	DMCs (N = 685) %	ACs (N = 315) %
City of residence, $n = 2914$	Ibarra	7	12 ***	6
	Quito	84	57 ***	81
	Riobamba	9	30 ***	12 **
Sex, $n = 2914$	Female	80	78	83
Age group, $n = 2908$	18–29 years old	18	13 **	10 **
	30–59 years old	61	63	72 **
	60+ years old	21	25	17
Education, $n = 2914$	No educational degree	33	47 ***	17 ***
	High school degree	35	30	25 *
	Higher education	32	24	58 ***
Income, $n = 2914$	Lower	21	24	15
	Mid-low	14	16	16
	Mid-high	30	27	28
	Higher	35	33	41
Occupation, $n = 2914$	Unemployed	11	11	5 **
Household composition, $n = 2914$	At least two adults	84	90 **	90 *
Health, $n = 2704$	Chronic disease diagnoses or measured obesity	62	75 ***	70
Salt control, $n = 2877$		43	41	71 ***
High nutrition label knowledge, $n = 2914$		24	21	42 ***
Frequent traditional foods, $n = 2914$		37	33	55 ***
Processed foods never or rarely, $n = 2913$		85	86	77 **
Fruits or vegetables daily, $n = 2914$		81	74 **	88 **

Figures are weighted relative frequencies; *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively, according to weighted Rao–Scott chi-square tests.

Other differences between the two groups of direct market users were observed in education, employment, diet-related chronic diseases, and eating habits. The likelihood that DMCs were affected by a diet-related chronic disease was about two times higher than for the remainder of the study population (OR, 95% CI: 1.9, 1.2–3.0), whereas this variable was not associated with the use of agroecological markets. On the other hand, ACs were less likely to be unemployed than the remainder of the study population (OR, 95% CI: 0.4, 0.2–0.9), and they were 3.5 times (95% CI 2.1–5.9) more likely to have higher education, 3.9 times (95% CI 2.5–5.9) more likely to control their salt intakes, 2.5 times (95% CI 1.6–4.1) more likely to be highly knowledgeable about the nutrition label on processed foods, 2.3 times (95% CI 1.4–4.0) more likely to eat frequently traditional foods, 1.9 times (95% CI 1.1–3.2) more likely to eat daily fruits or vegetables, and 1.9 times (95% CI 1.1–3.2) more likely to have industrially processed foods never or rarely. For their part, DMCs were 1.9 times (95% CI 1.3–2.9) more likely than the remainder of the study population to have no educational degree and less likely to eat fruits or vegetables daily (OR, 95% CI: 0.7, 0.4–1.0).

As shown in Table 4, associations between the use of agroecological markets and indicators of eating habits persisted even when controlled for participants' geographical, socioeconomic, and health circumstances. However, for DMCs, the association with the consumption of fruits and vegetables disappeared. On the other hand, the adjusted logistic regression analyses revealed that DMCs were *less* likely than the remainder of the population to *never or rarely* consume industrially processed food products, i.e., more likely to consume such products.

Table 4. Stratified associations between consumers' dietary habits and their food purchasing profile, with and without adjustments for geographic, socioeconomic, and health variables.

Consumers' Dietary Habits	Users of Non Agroecological Direct Markets		Agroecological Consumers	
	OR (95% CI)	AOR (95% CI)	OR (95% CI)	AOR (95% CI)
Salt control, <i>n</i> = 2877	0.9 (0.6–1.4)	1.2 (0.8–1.9)	3.9 (2.5–5.9) ***	3.2 (1.9–5.2) ***
High nutrition label knowledge, <i>n</i> = 2914	0.8 (0.5–1.3)	1.2 (0.7–2.3)	2.5 (1.6–4.1) ***	2.8 (1.7–4.6) ***
Frequent traditional foods, <i>n</i> = 2914	0.8 (0.5–1.3)	0.9 (0.6–1.6)	2.3 (1.4–4.0) ***	1.9 (1.1–3.3) **
Processed foods on rare occasions, <i>n</i> = 2913	0.9 (0.6–1.3)	0.6 (0.4–0.9) **	1.9 (1.1–3.2) **	2.7 (1.5–4.8) ***
Fruits or vegetables daily, <i>n</i> = 2914	0.7 (0.4–1.0) **	1.4 (0.7–2.6)	1.9 (1.1–3.2) **	1.6 (1.0–2.8) *

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively, according to simple (OR: odds ratios) and multivariable adjusted (AOR: adjusted odds ratios) logistic regressions.

3.2. Consumer Motivations

Among DMCs and ACs, survey results show that the main motivation for their direct purchase practices was the concern for their health (see Table 5). This motivation also emerged as salient among mini-ethnography participants. In eight of these households (two in Riobamba and six in Quito), the obesity or chronic illness of a household member led the household to make dietary choices such as consuming more fresh, healthy foods. This was described as either being a personal decision aimed at improving their health or a physician's recommendation. Children's illnesses were a reason for two families (YM, AM) to seek healthier lifestyles. In these cases, they not only participated in direct food purchase but also produced some of their own food. Other healthy (non-chronically ill) DMC and AC participants said they chose these market channels to maintain their good health through high-quality foods associated with freshness and nutritional balance. In addition, ACs highly appreciated the taste of the food products obtained in these places and the fact that they did not contain pesticides. For example, one participant said that she made direct agroecological food purchases for "health and also the taste, although maybe it doesn't change much but I feel that these vegetables are crunchier" (PN, 29 March 2019). Agroecological consumers (YM, MB, AM) related agroecological food with the "pleasure", the "joy", and the "love" of preparing and eating healthy food in different combinations.

Table 5. Motivations for using direct markets among survey participants who reported doing so.

	Users of Non Agroecological Direct Markets (N = 685)	Agroecological Consumers (N = 315)
To avoid pesticides	35.8 (26.1–45.6)	50.1 (37.0–63.1)
For health	36.5 (24.3–48.7)	33.2 (22.1–44.3)
To stay healthy [†]	63.2 (46.6–79.9)	62.7 (47.8–77.7)
Because someone in the household suffers from a chronic disease [†]	30.8 (16.3–45.4)	42.1 (26.0–58.2)
Because someone in the household is at risk of a chronic disease [†]	8.8 (2.4–15.1)	7.7 (0.5–14.6)
Because of other health-related reasons [†]	0.8 (0.0–1.5)	0.7 (0.0–1.4)
For the freshness	38.4 (28.8–48.0)	30.7 (19.6–41.8)
For the good price	33.8 (24.9–42.8)	13.5 (6.7–20.2)
For other reasons	15.3 (8.6–21.9)	26.0 (13.2–38.7)
For the convenience	25.7 (15.4–36.0)	9.9 (3.7–16.1)
To support local farmers	7.6 (3.8–11.4)	4.1 (1.8–6.4)
For the environment	2.9 (0.7–5.0)	4.4 (0.3–8.6)
For no reason	1.1 (0.1–2.1)	1.8 (0–5.1)

Figures are weighted relative frequencies; [†] Sample sizes are different for the four choices specifying the reason for the motivation related to health, a choice of answer offered only to people who declared having this motivation, where N = 224 for users of non-agroecological direct markets and N = 143 for agroecological consumers.

Another self-oriented aspect that direct market purchase participants mentioned was food safety. They choose clean and tidy places to buy food and they believe that these qualities are present in most places of direct food purchase, whether they are agroecological or not. However, only ACs emphasized their trust in these products, which was related to knowing where the products come from and how they were produced. In this regard, they appreciated the transparency and security offered in these different direct purchase channels. Another motive that appeared among ACs that purchased from box schemes was linked to the learning opportunity that these spaces afforded them: “I really like the fact that I meet people with whom I can exchange ideas or ways of eating, preparing food. I have learned a lot about food in these spaces” (MW, 10 August 2017).

Finally, for most consumers from both groups, saving money on food was a key factor in their choice of food shopping location. For them, this was not incompatible with direct food purchases, including from agroecological markets. In our quantitative survey, around 13.5% of ACs did so for good prices. In the case of DMCs, about one third reported doing so for this reason (Table 5). Consumers pointed out that these spaces are reasonably priced because the food comes directly from the producers. In addition, in the case of agroecological food, they also appreciated its quality, for which they are willing to pay a little more if needed: “I don’t mind paying more because these are good quality products” (MM, 1 April 2019).

When it comes to community-driven motivations, most consumers from both groups recognized the difficult and risky work of local producers. Moreover, six ACs (MB, YM, AM, AC, GD-3, and FC) also had a vegetable garden, which made them appreciate the work of farmers. For example, a consumer from Riobamba commented:

“I respect the farmers because I have been in agriculture, I know how much work is involved in getting products out, I am aware of the risks (floods, droughts, pests) and I know how hard the work is. In the Sierra, you have to prepare the soil with a hoe, water and/or weed. I have been in the Andean

highlands' rural areas and I have bathed in the cold water of the tank, I know that farmers have to work in the cold and rain and also endure the heat in summer" (AC, 27 March 2019).

This testimony also illustrates the conditions under which peasant food production takes place in the Ecuadorian highlands. Andean peasants produce most of the food consumed in Ecuador. In general, this social group has very little access to land, irrigation, and credit [41]. Furthermore, they are very vulnerable to the exploitation of intermediaries who do not pay fair prices for their products and take advantage of the fact that farmers sometimes do not have the resources to sell their products themselves. This is why some consumers value direct food purchases: "there is no longer a need to be with the middlemen who exploit the producer the most. So it would be good to buy directly from the producer because he is the one who worked, who sowed, who assumed the costs" (AC, 29 March 2019). The previous comment reflects how direct purchasing participants want to be part of equitable exchanges between producer and consumer, supporting places that pay fair prices to the producers.

Other participants seek proximity with producers as a form of social interaction in which direct contact gives them the opportunity to get to know them, to assess the degree of producers' responsibility toward their products, and to directly address any concerns: "the producer is a person who reflects responsibility for what he sells and for his production, because there is a way to tell him [about the quality of the products] "you know this is not good".... Because they're the ones who produce and sell" (MC, 2 April 2019). The participants also valued fostering relationships of camaraderie between producers and consumers. In Ecuador, as in many Andean countries, when consumers establish these relationships of camaraderie, they begin to call their supplier "casero/a". This relationship of trust allows customers to request additional products at no additional cost for each purchase (known as "yapa") or to be able to test the quality of the products ("probana"). Finally, the interviews revealed that participants value the social interactions in which they participate with people sharing their ideas and intentions, as this testimony illustrates: "For me, going to the Pachamama fair is like a time to share and socialize with the neighbors and the casera. Over time I have made many friends in this place" (SC, 5 August 2017).

Our quantitative analyses revealed that sociopolitical and socioecological motives for making direct purchases were the least common (Table 5). However, environmental motivations were more salient among ACs. They recognized the importance of supporting agroecological practices and products that incorporate traditional knowledge such as the lunar calendar to determine when to plant, and methods to preserve soil and ecosystems (informal conversation with SC, 7 August 2017). Agroecology is considered to be a culturally appropriate mode of cultivation that preserves agri-food environments. In Ecuador, being a part of, and supporting, these agroecological networks and markets is seen as a way to resist the conventional industrialized food system, based on large companies that dominate the retail segment and large producers who rely on "green revolution" food technologies (informal conversations with CM and JQ, August 2017).

In the case of the nine ACs that participated in the ethnographic component, we found some tendencies that were not as evident among DMCs: (1) buying in agroecological markets was not just a purchasing pattern but part of a lifestyle that they framed as "responsible", "healthy", or "sustainable"; this meant that (2) most of these families were tied to AFNs (in their children's schools, in consumer organizations, educational campaigns, breastfeeding support groups); these also implied (3) sociopolitical and socioecological motivations to build a more locally and socially integrated food system, that allows access to healthy food while preserving agri-food ecosystems. In summary, while direct food purchase was mainly driven by self-oriented motivations, agroecological consumption entailed an interrelation of the three main motivations mentioned by Zoll and Specht [23]. The latter were an integral part of participants' lifestyles linked to AFNs and not just as a shopping pattern. These analyses help explain the significant differences in food practices observed between agroecological and non-agroecological direct market consumers in Tables 3 and 4.

3.3. Barriers to Increased Use of Direct Markets

Regarding barriers to increasing the use of direct markets, participants emphasized three aspects: inconvenience, price concerns, and lack of knowledge. Inconvenience was more associated with agroecological box schemes, agroecological fairs and farmers' markets. Regarding the first, some consumers commented on the impossibility of respecting the delivery deadlines:

"The problem was the schedule, one day they went to deliver the basket when my daughter was not there, now they ask us, if we want the basket, to go directly to the producers to pick it up, and that is complicated, because it is like a long walk, you have to go get the tomato, the chard, the beet, although it is very nice, they have their stands at home" (MM, 29 March 2019).

Regarding the latter two, the main barrier was that these places are concentrated only in some parts of the city, requiring many people to travel long distances. Farmers' markets and agroecological fairs normally take place once a week, making it difficult for participants to use them regularly. All participants wanted more convenient hours and more days of operation per week. Moreover, they would prefer for these venues to be closer to their neighborhoods, as many people do not have their own vehicle or prefer not to spend too much time traveling to buy their food.

Many consumers who participated in our mini-ethnographies were of low-middle income, with budget constraints for buying food. This implies that they participate in direct purchases as long as they have enough money to buy the amount of fresh produce they need. Additionally, some consumers believed that people do not use these direct selling points due to a lack of knowledge: "I think, firstly, that more people don't go because of lack of information [about the places], secondly because I think that there is a lack of publicity in the media, where most people learn about this" (PN, 25 March 2019). Another participant commented "I would be motivated by more information, to be told 'we are in such a place and such a day', and to be [located] close to me, of course" (CA, 6 April 2019). Participants like AM referred to the excess of publicity that processed food and sweetened drinks have: "At Christmas time there were always amazing offers, where you could get prizes (Christmas lights, cups, etc.) by collecting Coca Cola lids or bottles", which motivates children to buy such drinks instead of fresh food.

Finally, the feeling of physical insecurity was another factor limiting the use of direct popular markets, which some participants highlighted, mainly for farmers' markets. Some of them take place in unsafe conventional markets. These markets are managed by local authorities who, over the decades, have divested from infrastructural improvements and security measures, following a neoliberal agenda [42]. Some participants had felt unsafe or were robbed in these places, so they now prefer to spend a little more in exchange for physical security. Some of them said that safety is a determining factor in going to direct shopping locations and that they would not visit them if they felt unsafe.

4. Discussion

In middle-income countries, direct markets are the traditional forms of food sale, and they remain active forms, especially in rural and remote areas [43,44]. In our sample, direct market users, both agroecological and non-agroecological, were more likely to live in Riobamba, whose population is about ten times smaller than that of Quito. Moreover, the most important economic sector in Riobamba is agriculture, whereas for the other two cantons it is the service sector [32]. The increased physical access to on-farm kiosks and the stronger relationships with farmers enjoyed by residents of smaller, more rurally linked towns may explain why the use of direct markets is a greater part of purchasing habits than in more urban centers [21]. In this regard, our qualitative data showed the value that users of direct markets placed on nourishing their relationships with farmers in order to ensure the quality of their food. As per physical access, lack of convenience proved to be an obstacle to frequenting direct markets.

In urban centers, direct markets are largely displaced by capitalist, industrial, and globalized processes and cultures [13]. Consumers often have to make a special effort to get to alternative market spaces, an obstacle to their more frequent use, according to our qualitative data and previously

evidenced in the literature [22,45]. In addition to the involvement of the State, for example through the direct markets program called “Circuitos Alternativos de Comercialización” [38], it is common that regional farmers themselves organize spaces to sell their products in urban areas, since cities represent an important market. Hence, despite the involvement and strong influence of rural farming families in agroecology, market spaces are often found in urban areas, reaching out to city dwellers seeking an alternative to the modern, industrial food system in which they are immersed [13,39].

In a multitude of studies, socioeconomically advantaged consumers are those who can afford to spend more time, and in some cases money, to use agri-food channels labeled ecological, healthy, or fair [9,21,26–28]. Our quantitative data partially support this finding, showing that relatively more ACs than the remainder of the study population had jobs and higher education. However, our data suggest that direct markets, whether agroecological or not, are sufficiently accessible to peoples in diverse economic situations. In Ecuador, food prices linked to direct purchasing modalities may vary to some extent depending on the socioeconomic level of the neighborhoods where markets take place and the type of direct markets [39], as well as the market’s price-setting processes. When consumers are more involved with the administration of the spaces and the provisioning of the produce (transportation, distribution, packing), prices tend to be more affordable for low-income populations [46]. However, given the reduction of intermediaries, products sold in direct markets generally provide a fair income to the producer, while offering a price to the consumer equivalent to that of modern markets [7,18,39,47]. Our assessment of consumers’ motivations to turn to direct markets also supports the hypothesis that product prices are equivalent to non-direct markets, or only slightly higher. About a third of DMCs in our quantitative survey were motivated by the good prices they find there, although this proportion was lower among ACs (around 13%).

Our mixed-method design helped highlight nuances in the economics of direct markets, as some consumers found them to provide good prices, while others reported price as a barrier to increased use. For the lower income population, access to fresh food in the recommended amounts can be problematic [48]. Considering our findings, it would be interesting to push research further by measuring the experience of food insecurity, since the literature shows that food insecure people use a variety of strategies to try to meet their energy needs and those of their families, including shopping on sale, shopping for the most energy-dense and low-cost products, and using food donation programs [49]. In Ecuador, a community basket initiative has shown that low-income people can access fresh and agroecological products when they organize to buy in bulk [50]. However, the boundaries between “organic” and “agroecological” are not necessarily clear, and the terms are sometimes applied interchangeably, making it difficult for purchasers to differentiate the price policies between the two types. While the market for certified organic food is often more accessible to the most socioeconomically advantaged, due to high prices and social norms [28,51], our data suggest that this is not always the case for agroecology. More education and promotion are warranted, as high prices have often been cited as reasons not to buy from direct markets. This may be a misconception derived from organic and other niche markets and related to a lack of knowledge of direct markets. Our results caution against a focus on price alone as a way to promote food security and health, as has been the public policy of the Ecuadorian government in promoting “Ferias libres” as the main form of direct purchase [42]. Instead, food movements have been right in promoting overall responsible food consumption through agroecological production in order to tackle social, economic, and environmental concerns through lifestyles connected to AFNs [13,18,52].

Our study revealed that, while economic motivations were generally not the primary drivers for using direct markets, they appeared to be more common than social and environmental ones, a finding supported by previous research [23,25,26]. However, our data showed that 15–26% of survey respondents reported motivations to get food in direct markets other than the response options provided, indicating a limitation of a closed-ended quantitative approach alone. Qualitative data revealed that consumers also appreciate the rich social interactions within AFNs, as well as the safety of the places visited, two elements not captured using the quantitative questionnaire.

It is clear that consumers in our study used alternative food provisioning spaces mainly for health reasons, as has been reported elsewhere [25,45,53]. In fact, there is a strong perception that direct markets offer a better variety of fresh foods free of synthetic agrochemicals [9,54]. As our survey reveals, the people responsible for deciding on food purchases for the household are predominantly women. Women are reported elsewhere to be more concerned than men about the impact of food on their health and that of their families [55,56], which may explain why they use direct markets [21]. In addition, our study found that direct market users were less likely to be under 30 years old. Young adults are less concerned about adopting behaviors recognized as having a long-term impact on their health. They are less reluctant to consume unhealthy foods and are less willing to include healthy foods in their diet or to visit places where they can purchase healthy foods [56,57]. In addition, young adults are not fond of social interactions at the time of purchase, seeking a fast and independent shopping experience [58]. Other distinctive characteristics of direct market users such as their level of education, employment status, or state of health may explain their propensity to perceive these markets as options consistent with their concern for their health. The finding from our study that DMCs are more likely than the rest of the population to be affected by obesity or chronic diet-related diseases could explain why they tend to frequent these markets, that offer more fresh produce. This corroborates results of a study on personal illness and the use of farmers' markets or on-farm kiosks, which found various positive associations between the two, that depended on the type of market, the type of illness, and whether the person affected was the one making the purchases or others in their family [59].

Our results show a very clear distinction between ACs and DMCs in terms of dietary habits. ACs' eating behaviors were consistent with their health concerns. The ethnographic component demonstrated that ACs combine the three motivations mentioned by Zoll and Specht [23] because their purchasing pattern is part of a lifestyle linked to the AFNs in which they participate. In the constitution of AFNs, healthy dietary habits are encouraged not only by the provision of fresh produce free of synthetic agrochemicals, but also by increased opportunities for learning and sensory experiences, and through social support [19,52,53]. On the other hand, if health concerns motivate a majority of DMCs, this does not appear to translate into other health-promoting food behaviors. Given that purchasing from non-agroecological direct markets is not visibly related to healthy eating habits, and is in fact even linked to a higher consumption of industrially processed foods, it appears to be a purchasing behavior that is governed by convenience and the search for affordable products [60]. By definition, direct markets are unlikely to be the places where consumers buy industrially processed foods. Perhaps the use of some direct markets is linked to food patterns in which people obtain and eat more processed foods, but our unadjusted analyses showed no association, pointing to unmeasured factors potentially at play.

Our results were based on innovative questionnaires which measured eating habits while minimizing participant investment in time and cognitive effort. Validation of these instruments in other contexts is needed. Although the level of detail obtained through our quantitative instruments was limited, it was sufficient to highlight the heterogeneity across groups of consumers with alternative food provisioning practices, corroborated by our qualitative findings. Future studies should attempt to further clarify the impact of the use of direct markets on consumers' other dietary habits and nutritional outcomes, with longitudinal studies to improve explanation and better estimate effects. The latter could better guide strategies to optimize the nutritional potential of practices which contribute to sustainable and equitable food systems.

5. Conclusions

The separate examination of the characteristics of ACs and DMCs revealed some similarities and many significant differences between the two groups. Our data suggest that AC consumers shop in agroecological markets primarily out of concern for their health, as demonstrated in their motivations and their healthy eating habits. DMCs also report health as a motivator for adopting these types of purchasing practices, but such motivation was not reflected in their dietary habits.

For DMCs, convenience and good prices were more important motivations to source from direct markets. Overall, our study highlights that although personal motivations (health, convenience, and lower prices) are important, altruistic reasons such as better conditions for farmers and less impact on the environment were also part of consumers' motivations to engage in alternative food provisioning practices, particularly for agroecological consumers who had integrated their purchasing patterns into their lifestyles.

The preconception that alternative food provisioning practices are of interest only to wealthier people is challenged by our results. The use of both direct purchasing approaches was evenly distributed across income subgroups, limited more by the perception of high prices. Consumers in certain less favorable socioeconomic situations were however less engaged in agroecological markets. Overall, our results can inform the development of strategies to scale in and up these different practices. Strategies to increase the impact and equity of direct food marketing channels could include information and education campaigns to engage more people in diverse socioeconomic circumstances. These campaigns could also raise awareness to the assets of agroecological direct marketing channels favoring healthy eating, such as the provision of a wide variety and quantity of cheaper or similarly priced fresh foods.

The negative impacts of modern food systems that depend on many intermediaries, often geographically distant, have unfortunately been triggered by social and health crises that reduce possible exchanges among actors of the food system within a country, let alone across countries. These crises are nevertheless stimulating important and rapid changes, particularly within civil society. All actors in the food system must work to increase its equity and resilience in the face of natural environmental hazards, viral epidemics, and social conflict. Our study confirms the alternative nature of direct marketing channels, still reaching a minority of the population. We argue for increased support for local and sustainable food systems to facilitate consumer behavior change, through restructuring social norms, physical environments, and incentives for direct purchasing.

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