

DETERMINANTS OF RURAL HOUSEHOLDS' PARTICIPATION AND EXPENDITURE ON FOOD-AWAY-FROM-HOME IN SOUTH AFRICA: A DOUBLE-HURDLE MODEL APPROACH

Mapula Hildah Lefophane 

 hildajie@gmail.com

Mokibelo Elsie Legong 

Victor Mbulaheni Mmbengwa 

University of Limpopo, South Africa

Abstract. This study employs a double-hurdle model to examine the factors influencing rural households' participation in, and expenditure on, food away from home (FAFH) in South Africa post-lockdown. Using face-to-face interviews, data were collected from 360 rural households in Ga-Molepo through simple random sampling. Descriptive analysis revealed a significant shift in FAFH participation and spending after lockdown. Probit model results showed that employment status, household size, income, the number of employed household members, and social grants significantly influenced FAFH participation, with gender and marital status also playing key roles. The OLS model identified employment status, household size, household income, employed household members, and social grant recipients as primary determinants of FAFH expenditure, alongside educational, household structure, and social relief of distress (SRD) grants. These findings underscore the critical role of employment, income, and social grants in FAFH consumption. Policy efforts should prioritize job creation, income growth, and efficient grant distribution, while also promoting gender-inclusive employment and targeted relief programs to support the growth of the FAFH sector.

Keywords: food away from home, double-hurdle model, rural households, expenditure, South Africa

INTRODUCTION

Following the World Health Organization's (WHO) declaration of COVID-19 as a global pandemic on 11 March 2020, countries worldwide implemented lockdown measures to mitigate its spread (WHO, 2020; Singh and Tembo, 2022). In South Africa, these measures included the closure of schools and workplaces, restrictions on non-essential activities, bans on social gatherings, and limitations on movement. The food service industry in particular was subject to regulations such as social distancing, curfews, and restricted opening hours (South African Government, 2020). These restrictions significantly altered household food expenditure patterns, shifting spending from food-away-from-home (FAFH) to food-at-home (FAH)¹.

¹ FAFH establishments encompass sit-down restaurants, quick service restaurants, pubs, bars, cafes and other dining venues. In contrast, FAH refers to food purchased from retail outlets, or other food stores for preparation and consumption at home (U.S. Department of Agriculture, Economic Research Service, 2025).

Accepted: 24.03.2025

Published: 30.06.2025

Cite as: Lefophane, M.H., Legong, M.E., Mmbengwa, V.M. (2025). Determinants of rural households' participation and expenditure on food-away-from-home in South Africa: A double-hurdle model approach. *J. Agribus. Rural Dev.*, 2(76), 136–150. <http://dx.doi.org/10.17306/J.JARD.2025.00007R1>



Copyright: © 2025 by the authors. Licensee Wydawnictwo Uniwersytetu Przyrodniczego w Poznaniu. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

The decline in FAFH expenditure can be attributed to both macro- and micro-level impacts of lockdown measures. At the macro level, the closures of schools, workplaces, and event venues, coupled with the cancellation of large gatherings, reduced opportunities for FAFH consumption in these settings. At the micro level, social distancing, curfews, and restricted operating hours further limited FAFH consumption at restaurants and other eateries (Barrientos-Gutiérrez et al., 2020). As a result, households redirected their spending toward FAH, in line with global consumption shifts in consumption patterns observed during the pandemic.

Globally, the consumption of FAH rose due to restaurant closures, movement restrictions, and heightened health concerns. As a result, many consumers shifted toward purchasing foods with longer shelf lives. For example, in Italy, Denmark, Germany, and Slovenia, consumption of fresh produce and meat declined, while demand for frozen and shelf-stable foods surged as consumers prioritized longer-lasting items (Fanelli, 2021; Janssen et al., 2021). Similarly, in the United States, fast food consumption dropped, while home-prepared meals became more common (Chenarides et al., 2020). In contrast, Qatar exhibited a different trend, with an increase in the consumption of fresh produce and dairy products during the pandemic (Hassen et al., 2020).

Mirroring global trends, South Africa saw a decline in FAFH consumption, particularly in fast food, as restaurants and other FAFH establishments closed during the hard lockdown (Mkasi and Lefophane, 2023). In response, households increasingly turned to home-prepared meals, and the consumption of staple foods grew as consumers prioritized products with longer-lasting items to minimize shopping trips. This shift toward home cooking during the lockdown reflected similar patterns seen in countries like Italy, Denmark, and Germany (Fanelli, 2021; Janssen et al., 2021).

However, the intake of fresh produce declined as restrictions on informal trading curbed households' access to fresh food (Mkasi and Lefophane, 2023). Additionally, dairy and meat consumption fell, largely due to price increases during the pandemic (Stats SA, 2021; Fin24, 2021). These shifts highlight the profound impact of the pandemic on food consumption patterns, with long-term consequences for both household diets and the food service industry.

Empirical studies have identified four key shifts in food purchasing, consumption, and expenditure patterns among households during the COVID-19 pandemic. First, to minimise shopping trips and avoid long queues at grocery stores, households stockpiled food due to concerns about contracting the virus (Hassen et al., 2020; Pappalardo et al., 2022; Truong and Truong, 2022). Second, while spending on FAFH decreased, online grocery shopping saw a notable increase (Ellison et al., 2021). Third, pandemic-induced price shocks reduced both the likelihood of spending on food and the tendency to purchase FAFH (Codjia and Saghaian, 2022). Finally, there was a clear shift from FAFH to FAH, reflected in a rise in FAH sales and demand, alongside a decline in FAFH sales and expenditure. This shift occurred as FAFH establishments were closed for being non-essential, while grocery stores remained open as essential services (Hobbs, 2020; Beckman and Countryman, 2021; Marchesi and McLaughlin, 2022; Codjia and Saghaian, 2022).

While these studies offer valuable insights into food expenditure behaviour during the pandemic, they primarily focus on periods of strict restrictions and high virus transmission. Consequently, household spending patterns likely shifted with the easing of lockdown measures, vaccination rollouts, and a decline in COVID-19 cases. For example, data from Statistics South Africa revealed increased spending on restaurants and hotels, along with a revenue rebound in takeaway and fast-food outlets after the lockdown (Pawson, 2023). This indicates that households may have shifted some of their grocery spending back to FAFH as eateries reopened at full capacity.

Nevertheless, these observations remain tentative, highlighting the need for empirical analysis to better understand FAFH behaviour post-COVID-19 and the factors that drive it. Previous studies (Labadarios et al., 2011; D'Haese et al., 2013; Thamaga-Chitja and Morojele, 2014) have largely overlooked post-lockdown trends, rural household behaviour, and socio-economic factors. Blick et al. (2018) focused primarily on pre-pandemic FAFH expenditure determinants at the national level using time-series data but did not address post-lockdown changes, rural dynamics, or a detailed socio-economic analysis. This reveals a gap in the literature that requires further investigation.

This study aims to address this gap by examining FAFH expenditure among rural households in South

Africa after the COVID-19 lockdown restrictions. It contributes to the existing literature in three key ways: First, it focuses on the rural context, acknowledging that the impact of lockdown restrictions varies across geographic areas over time (Richards and Rickard, 2020; Sheth, 2020; Ko et al., 2023). Second, it provides a more comprehensive analysis by incorporating 16 socio-economic factors, overcoming the limitations of previous studies, such as Blick et al. (2018), which relied on national time-series data and only included seven socio-economic variables. Third, the study uses cross-sectional data to capture the rapid shifts in consumption behaviour brought on by the pandemic (Ellison et al., 2021), enabling a more nuanced understanding of FAFH expenditure changes among rural households post-lockdown.

In sum, this study contributes empirical evidence on whether FAFH expenditures among rural households in South Africa have rebounded post-lockdown and identifies the key factors driving these changes. By doing so, it enhances the understanding of rural household food economics in the post-pandemic landscape.

This paper is organized as follows: The next section reviews the lockdown restrictions imposed on South Africa's food service industry and their effects on households' food purchasing, consumption, and expenditure patterns. The following section details the study area, justifies the focus on rural households, and outlines the data collection and sampling methods, while also exploring the application of the double-hurdle model in the empirical analysis. The subsequent section presents and interprets the descriptive and empirical findings. Finally, the paper concludes with key insights, implications, and recommendations.

OVERVIEW OF LOCKDOWN RESTRICTIONS IN SOUTH AFRICA'S FOOD SERVICE INDUSTRY

South Africa's lockdown restrictions were implemented under the "National State of Disaster," declared on 15 March 2020 (ENSafrica, 2020). A five-level "COVID-19 Alert System" was introduced, ranging from Alert Level 5 (starting 26 March 2020) to Alert Level 1 (ending 5 April 2022). Alert Level 5 (26 March–30 April 2020), the most stringent, imposed severe movement restrictions, including a ban on inter-provincial travel, non-essential activities, social gatherings, and

street vending. Under this level, schools, non-essential workplaces, and FAFH establishments (such as restaurants and fast-food outlets) were closed, as they were deemed non-essential (South African Government, 2020; Mkasi and Lefophane, 2023). In contrast, grocery stores, classified as essential, were permitted to remain open but prohibited from selling prepared food, alcohol, and snacks (Mkasi and Lefophane, 2023). As a result, these measures dampened FAFH expenditure while driving an increase in FAFH spending, as households were limited to purchasing groceries for home preparation.

During Alert Level 4 (1 May–31 May 2020), FAFH establishments were allowed to reopen for online ordering and delivery, although operating hours, curfews, and a ban on alcohol sales remained. Financial viability became a concern as delivery revenue failed to cover operational costs. For example, Nando's initially hesitated to reopen due to anticipated financial losses (Lefophane, 2020). Despite these challenges, chains such as Nando's, Chicken Licken, Debonairs, KFC, McDonald's, and Steers reopened selected outlets (Reuters, 2020). Household spending on FAFH likely increased but remained constrained by ongoing restrictions.

Alert Level 3 (1 June–17 August 2020) saw further easing, with FAFH establishments allowed to offer sit-down services alongside delivery. The relaxation of movement restrictions and resumption of most economic activities likely boosted FAFH expenditure. By Alert Level 2 (18 August–20 September 2020), most economic activity restrictions were lifted, curfews were shortened, and movement restrictions eased, further stimulating FAFH spending. Finally, Alert Level 1 (21 September 2020–28 December 2020) removed curfews and most COVID-19 regulations, culminating in the termination of the National State of Disaster on 5 April 2022.

With the full reopening of FAFH establishments, fast-food and takeaway outlets saw a rapid recovery, with FAFH expenditure rising 41% above pre-COVID-19 levels from 2019 (Pawson, 2023). This sharp rebound signals a strong recovery in FAFH spending post-lockdown. As a result, many of the COVID-19-related factors that previously influenced FAFH expenditure may no longer be relevant. Therefore, it is crucial to examine the current factors influencing FAFH expenditure in South Africa during the post-lockdown period.

MATERIAL AND METHODS

Study Area

The study was conducted in Ga-Molepo village, located within the Polokwane Local Municipality, approximately 52.6 km from Polokwane, the capital of Limpopo Province. South African fast-food chains have increasingly targeted consumers in townships and rural areas, expanding beyond traditional urban centres. Consequently, several fast-food outlets are now accessible in nearby Mankweng Township (24.0 km from Ga-Molepo) and Paledi Mall (23.1 km from Ga-Molepo). Table 1 presents the top 12 fast-food chains in South Africa by the number of stores. While these fast-food outlets are not currently operating in Ga-Molepo, they are easily accessible to households in the village, particularly in Mankweng, Paledi Mall, and Polokwane.

For this study, FAFH is specifically defined to include only fast-food outlets listed in Table 1, reflecting the unique motivations for fast-food consumption, which prioritize convenience, affordability, and speed. This definition excludes other types of eateries, such as sit-down restaurants, pubs, bars, and cafes, which are typically chosen for social dining or leisurely experiences that often involve higher spending and cater to different consumer demographics.

Table 1. Top fast-food chains in South Africa

No.	Fast food chain (owner)	No. of stores
1	KFC (Yum! Brands)	1,057
2	Debonairs (Famous Brands)	710
3	Steers (Famous Brands)	652
4	Wimpy (Famous Brands)	458
5	McDonald's (McDonald's Corp.)	377
6	Nando's (Nando's Group)	302
7	Chicken Licken (Golden Fried Chicken Pty Ltd)	286
8	Roman's Pizza (Roman's Catering Enterprises)	250
9	Fishaways (Famous Brands)	242
10	Hungry Lion (Hungry Lion Fast Food Pty Ltd)	204
11	Kauai (Real Foods)	200
12	Burger King (Restaurant Brands International)	130

Source: BusinessTech, 2024.

Data Collection

Primary data were collected through face-to-face interviews conducted between November 2022 and January 2023, after the lifting of COVID-19 lockdown restrictions. The study used a simple random sampling method to select respondents from a sampling frame of households in Ga-Molepo. A list of potential respondents was provided by the tribal authority of Ga-Molepo, which maintains household records for the area. A total of 360 households were selected from a population of 4,048 households, using Yamane's (1967) sample size formula. Household numbers were written on slips of paper and randomly drawn for interviews. Respondents were individuals responsible for food consumption decisions within the household, including purchasing, cooking, preparing, and serving food. This approach ensured that the data accurately reflected the perspective and behaviours of the primary food decision-makers.

Empirical Model

This study used a double-hurdle model to analyse rural households' participation in and spending on FAFH. The double-hurdle model assumes that households make two separate decisions when it comes to purchasing FAFH: a participation decision (whether to purchase FAFH) and an expenditure decision (how much to spend on FAFH). Each decision is influenced by a distinct set of explanatory variables. To observe a positive level of expenditure, households must pass through both hurdles. Accordingly, two latent variables were used to model each decision process: a binary choice model (Probit model) for the participation decision and an uncensored model (OLS model) for the expenditure decision (Blundell and Meghir, 1987).

The first hurdle involves the decision to participate in FAFH. Respondents were asked: "Did you or any of your family members purchase FAFH post-lockdown restrictions?" The participation decision can be modelled as:

$$y_1^* = X_1\beta_1 + \varepsilon_1 \quad (1)$$

where y_1^* is the unobserved (latent) variable representing the propensity to participate, X_1 is a vector of predictor variables, β_1 is a vector of coefficients, and ε_1 is the error term. The observed participation decision, y_1 , can be written as:

$$y_1 = \begin{cases} 1 & \text{if } y_1^* > 0 \\ 0 & \text{if } y_1^* \leq 0 \end{cases} \quad (2)$$

In line with previous studies (Aguiar and Hurst, 2005; Gao et al., 2021; Davis and You, 2009; Nguyen and Nguyen, 2023), respondents were asked the following question after their participation decision: “How much money did you or any of your family members spend on FAFH per month after the lockdown restrictions were lifted?” If a household decided to participate in FAFH (i.e. $y_1 = 1$), the second decision hurdle model concerns the level of expenditure. The expenditure decision is modelled as follows:

$$y_2^* = X_2\beta_2 + \varepsilon_2 \quad (3)$$

where: y_2^* is the unobserved (latent) variable representing the expenditure level, X_2 is a vector of predictor variables, β_2 is a vector of coefficients, and ε_2 is the error term. The general equation representing the multiple linear regression model (i.e., the expenditure equation), which is estimated by OLS through the minimization of the sum of squared residuals (the differences between observed and predicted values), is as follows:

$$y_i = \beta_0 + \beta_1x_{i1} + \beta_2x_{i2} + \dots + \beta_kx_{ik} + \varepsilon_i \quad (4)$$

where y_i is the dependent variable (outcome) for observation i , β_0 is the intercept (constant term), $\beta_1, \beta_2, \dots, \beta_k$ are the coefficients of the independent variables, $x_{i1}, x_{i2}, \dots, x_{ik}$ are the independent variables for observation i , and ε_i is the error term, representing unobserved factors affecting y_i .

Households that did not spend on FAFH were reported to have zero expenditures. Based on Angulo et al. (2002), zero expenditure can be attributed to three factors: (1) households were unable to afford FAFH at prevailing prices and income levels (i.e., corner solutions), (2) the survey period may have been too short to capture the expenditure amount (i.e., infrequent purchases), or (3) households may not have had an interest in purchasing FAFH. The double-hurdle model is appropriate for this study because it accounts for zero expenditures while modelling two separate decision processes for households.

An alternative to the double-hurdle model is the Heckman two-step model (Cragg 1971; Heckman, 1979). However, the Heckman model is not suitable for this study, as it assumes a quasi-absence of zero

expenditure in the second hurdle once the first hurdle is passed (Codjia and Saghaian, 2022). Therefore, the double-hurdle model was employed in this study.

RESULTS

Descriptive Statistics for Rural Households

This section presents the descriptive statistics for rural households, providing an overview of the demographic and socio-economic characteristics of the sample population. These characteristics serve as explanatory variables that may influence both participation in and expenditure on food away from home (FAFH) in the double-hurdle model analysis. Table 2 shows these explanatory variables, along with their categories, frequencies, and percentages for categorical variables, and the minimum, maximum, mean, and standard deviation for continuous variables.

Table 2. Descriptive statistics for explanatory variables

Variable	Outcome	Frequency (N)	Percentage (%)
1	2	3	4
Age	Less than 18	0	0
	18–35	62	17.2
	35–60	180	50.0
	Above 60	118	32.8
Gender	Male	168	46.7
	Female	192	53.3
Marital status	Single	171	43.0
	Married	124	38.9
	Divorced	37	10.3
	Widowed	28	7.8
Level of education	No formal education	97	26.9
	Primary education	99	27.5
	Secondary education	106	29.4
	Tertiary education	58	16.1
Employment status	Unemployed	215	59.7
	Full-time employed	119	33.1
	Part-time employed	26	7.2

Table 2 – cont.

1	2	3	4
Source of income	Business	22	6.1
	Grant	131	36.4
	Salary	94	26.1
	Pension	35	9.7
	Farm income	11	3.1
	Other income sources	67	18.6
Household income level	< ZAR 5000	196	54.4
	ZAR 5000–8000	84	23.3
	ZAR 8000–10 000	47	13.1
	> ZAR 10 000	33	9.2
Household structure	Single parent	120	33.3
	Extended family	27	7.5
	Grandparent family	110	30.6
	Both parents' family	103	28.6
Changes in household income	Decreased	24	7.5
	Increased	66	19.2
	Constant	270	73.3
Social grants	Yes	113	31.4
	No	247	68.6
Type of sector	Formal	60	41.4
	Informal	85	58.6
Employment sector	Agriculture	25	17.2
	Government	40	27.6
	Education	30	20.7
	Health	20	13.8
	Retail	15	10.3
	Finance	08	5.5
	Others	07	4.8

Continuous variables				
Variable	Minimum	Maximum	Mean	St. deviation
Household size	1	14	6	3.25
Number of employed people in the household	0	8	1	2.00
Households' members receiving social grant	0	6	1	1.53
Households' members receiving SRD grant	0	3	1	1.50

Note: R18.46 = 1 USD (average exchange rate during the data collection period, November 2022 to January 2023)

Source: own elaboration.

The results show that the largest proportion of respondents (50%) were aged between 35 and 60 years, while a smaller proportion (17.2%) were in the 18–35 age group. This confirms that the study focused exclusively on the adult population, with no respondents under 18 years of age. In terms of gender, females represented a slightly higher proportion (53.3%) than males (46.7%).

Regarding marital status, the largest group of respondents were single (43%), followed by those who were married (38.9%). Smaller proportions were divorced (10.3%) or widowed (7.8%). Concerning educational attainment, 26.9% of respondents had no formal education, while 27.5% completed primary education, 29.4% had secondary education, and only 16.1% attained tertiary education.

Employment status revealed that the majority of respondents were unemployed (59.7%), while 33.1% were employed full-time and 7.2% were employed part-time. Among those with a source of income, social grants (36.4%) were the most common, followed by salaries (26.1%). Other income sources included pensions (9.7%), business activities (6.1%), and farm income (3.1%), while 18.6% reported earnings from unspecified sources.

Household income distribution showed that the majority (54.4%) earned less than ZAR 5,000 per month, with 23.3% earning between ZAR 5,000 and ZAR 8,000. Smaller proportions earned between ZAR 8,000 and ZAR 10,000 (13.1%) or more than ZAR 10,000 (9.2%) per month. The average income was approximately ZAR 5,748 per month, with a median income of ZAR 6,500. This suggests that half of the households earned less than ZAR 6,500 per month, while the other half earned more.

Regarding household structure, 33.3% of respondents lived in single-parent households, 30.6% in grandparent-headed households (where one or both grandparents act as primary caregivers for their grandchildren), 28.6% in two-parent households, and 7.5% in extended family households (including additional relatives, such as aunts, uncles, or cousins).

Income stability data revealed that 73.3% of households reported stable income, 19.2% experienced an increase and 7.5% reported a decrease. Additionally, 31.4% of respondents received social grants, while 68.6% did not. The number of household members receiving social grants varied from zero to six, with an average of one per household.

Employment sector data showed that 58.6% of employed respondents worked in the informal sector, while 41.4% were employed in the formal sector. Among these, 27.6% worked in public administration, 20.7% in education, 17.2% in agriculture, 13.8% in health, 10.3% in retail, 5.5% in finance, and 4.8% in other sectors.

The household size ranged from one to 14 members, with an average of six people per household. The number of employed individuals per household ranged from zero and eight, with an average of one. Similarly, the number of household members receiving social relief of distress (SRD) grants ranged from zero to three, with an average of one².

Participation and Expenditure Results

Table 3 presents the participation rates (first hurdle) and expenditure patterns (second hurdle) in food-away-from-home (FAFH) during and after the COVID-19 lockdown restrictions.

To address the first hurdle, respondents were asked whether they had purchased FAFH during and after the lockdown. The results show that 29.7% of households bought FAFH during the lockdown, while 70.3% did not. This suggests that most rural households in the sample did not participate in FAFH during the lockdown, likely due to the shutdown of FAFH establishments during Alert Level 5 (26 March to 30 April 2020), the partial reopening with restrictions during Alert Level 4 (1 May to 31 May 2020), and conditional operations during Alert Level 3 (1 June to 17 August 2020) (South African Government, 2020). These findings align with Codjia and Saghaian's (2022) study, which observed a similar decline in FAFH purchases in the United States during the pandemic.

Post-lockdown, households' participation in FAFH increased by 28.4%, rising from 29.7% during lockdown to 58.1%. Meanwhile, the percentage of non-participating households decreased by the same margin, from 70.3% to 41.9%. This suggests that the relaxation of restrictions and the full reopening of eateries contributed to higher participation. These findings are consistent

Table 3. Participation and expenditure results

During COVID-19 lockdown restrictions (First hurdle)				
Variable	Outcome	Frequency (N)	Percentage (%)	
Did you purchase FAFH during COVID-19 lockdown restrictions?	Yes	107	29.7	
	No	253	70.3	
Did you purchase FAFH post-COVID-19 lockdown restrictions?	Yes	186	58.1	
	No	174	41.9	
Post COVID-19 lockdown restrictions (Second hurdle)				
Variable	Minimum	Maximum	Mean	St. deviation
Amount spent on FAFH during lockdown restrictions	0	250	136,07	53.95
Amount spent on FAFH post lockdown restrictions	0	300	149,25	59,625

Note: Average exchange rate during data collection (Nov 2022–Jan 2023): R18.46 = 1 USD

Source: own elaboration.

with data from Statistics South Africa, which showed an increase in household spending on restaurants and hotels after restrictions were lifted (Pawson, 2023).

After addressing participation, respondents were asked about their FAFH expenditures during and after the lockdown. During the lockdown, the average expenditure was ZAR 136.07, with a maximum of ZAR 250 and a minimum of ZAR 0 for households that did not purchase FAFH. Post-lockdown, the average spending increased slightly to ZAR 149.25, with the maximum reaching ZAR 300, and ZAR 0 for those not purchasing FAFH. This suggests that the easing of restrictions and the full reopening of eateries led to an increase in household spending on FAFH. This trend is supported by the 41% revenue growth observed in takeaway and fast-food outlets compared to pre-COVID-19 levels.

Overall, the results highlight a significant shift in both participation and expenditure on FAFH following the lockdown. While most households refrained from FAFH during the lockdown, the post-lockdown period saw a notable increase in both participation and spending. The rise in household expenditure further suggests that lifting restrictions facilitated a return to

² The Social Relief of Distress (SRD) grant is a temporary financial assistance program provided by the government to support individuals facing extreme economic hardship, particularly those who are unemployed and do not receive other forms of social grants or Unemployment Insurance Fund (UIF) payments (SASSA, 2025).

pre-pandemic consumer behaviour, including increased spending on discretionary items like FAFH. Given these findings, it is important to further investigate the factors driving participation and expenditure in FAFH after the lockdown, particularly in rural areas. Understanding these factors will help inform strategies and policies to support the recovery and growth of the FAFH sector in the post-pandemic period.

Double-Hurdle Model Results

Table 4 presents the results of the double-hurdle model, which examines the factors influencing household

participation in food-away-from-home (FAFH) and subsequent expenditure post-lockdown. The probit model results identify variables affecting rural households' decisions to purchase FAFH, while the OLS results highlight factors influencing the amount spent on FAFH.

The model's pseudo-R-squared value of 0.78 suggests that the probit model explains a substantial portion of the variation in the decision to purchase FAFH. The significant chi-square value ($p < 0.0001$) confirms the model's overall statistical significance, indicating that the independent variables collectively influence FAFH participation. The predicted probability of 0.65 suggests

Table 4. Double-hurdle model results

Variables	Decision to purchase FAFH (Probit model results)			Expenditure on FAFH (OLS results)	
	β	t-statistics	marginal effects	β	t-statistic
1	2	3	4	5	6
Age	-0.764 (0.235)	-3.251 0.001***	-0.01	-0.020 (0.018)	-1.111 0.249
Gender	-0.667 (0.304)	-2.194 0.028**	-0.60	-0.030 (0.012)	-2.500 0.087*
Marital status	0.346 (0.169)	2.047 0.053*	0.15	0.025 (0.014)	1.786 0.949
Level of education	-0.055 (0.139)	-0.396 0.692	-0.02	-0.727 (0.162)	-4.488 0.000***
Employment status	0.212 (0.098)	2.163 0.050**	0.40	0.049 (0.018)	2.722 0.040**
Household size	-0.108 (0.054)	-2.000 0.044**	-0.05	-0.932 (0.278)	-3.353 0.001***
Source of income	-0.137 (0.095)	-1.442 0.147	0.35	0.013 (0.012)	1.083 (0.279)
Household income	0.198 (0.069)	2.869 0.068*	0.25	0.095 (0.040)	2.375 0.020**
Households' members employed	0.201 (0.075)	2.680 0.089*	0.20	-0.020 (0.018)	4.880 0.001***
Households' members receiving social grant	0.459 (0.200)	2.295 0.022**	0.075	0.371 (0.184)	2.473 0.044**
Social grant received	0.218 (0.085)	2.565 0.011**	0.08	-0.025 (0.019)	-1.315 0.184
Type of sector	-0.101 (0.085)	-0.532 0.594	0.45	0.008 (0.016)	0.500 0.593

Table 4 – cont.

	1	2	3	4	5	6
Employment sector		0.116 (0.115)	1.009 0.312	−0.10	−0.011 (0.024)	−0.458 0.639
SRD grant		0.182 (0.078)	1.051 0.143	0.18	0.093 (0.034)	2.735 0.090*
Household structure		0.096 (0.119)	0.807 0.422	−0.03	0.048 (0.022)	2.181 0.030**
Changes in household's income		−0.080 (0.146)	−0.548 0.582	0.12	−0.004 (0.018)	−0.207 0.836
Predicted probability			0.65			
Probit model summary				OLS model summary		
(−2) Log-likelihood			54.665	R-Square		0.759
Pseudo R-square			0.78	Adjusted R-Square		0.744
Prob > chi ²			0.0000	F-Statistic		0.0000

Note 1. Values in parentheses represent standard errors. *, **, and *** denote $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

Note 2. For non-dichotomous variables, one category is used as the base category, with the other categories treated as non-base categories in comparison. The coefficients for these non-base categories indicate the difference in the probability of FAFH participation for each category relative to the base category.

Source: own elaboration.

that the probit model correctly predicts household participation in FAFH approximately 65% of the time. The R-squared value of 0.759 indicates that the OLS model explains approximately 76% of the variation in FAFH expenditures. The adjusted R-squared value of 0.744 confirms a good model fit while accounting for the number of predictors. Finally, the F-statistic ($p < 0.0001$) confirms the overall significance of the OLS model, indicating that the independent variables have a statistically significant relationship with FAFH expenditures.

Key Findings

- **Age** has a negative and significant effect on FAFH participation post-lockdown, with older households being 1 percentage point less likely to purchase FAFH than younger ones, *ceteris paribus*. However, among households who do participate, age does not significantly impact FAFH expenditure, suggesting that the household head's age has little influence on spending.
- **Gender** significantly affects both FAFH participation and expenditure, with female-headed households being 60 percentage points less likely to participate in FAFH than male-headed households. Among those that do participate, the negative and statistically significant coefficient for gender indicates that female-headed households spend less on FAFH than their male-headed counterparts, *ceteris paribus*.
- **Marital status** has a positive and significant effect on FAFH participation, with married individuals being 15 percentage points more likely to participate compared to single, widowed, or divorced individuals, *ceteris paribus*. However, marital status does not significantly impact FAFH expenditure among rural households.
- **Education** has no significant effect on FAFH participation, suggesting that education level does not strongly influence the decision to purchase FAFH. However, it has a positive and significant effect on FAFH expenditure, with higher-educated households spending more than those with lower educational levels.
- **Employment status** positively and significantly influences both FAFH participation and expenditure. Employed individuals (either full-time or part-time) are 40 percentage points more likely to engage in

FAFH than unemployed individuals, *ceteris paribus*. Furthermore, the positive and significant coefficients for employment status indicate that both full-time and part-time employed individuals spend more on FAFH than unemployed individuals, *ceteris paribus*. This effect on expenditure suggests that employed individuals allocate more to FAFH, likely due to greater financial stability and higher disposable income.

- **Household size** has a negative and significant effect on both FAFH participation and expenditure. Each additional household member reduces the likelihood of FAFH participation by five percentage points, *ceteris paribus*. Among participating households, FAFH expenditure decreases by 0.932 units per additional household member.
- **Household income** has a positive and significant effect on both participation and expenditure. Higher-income households are 25 percentage points more likely to purchase FAFH and tend to spend more on it, *ceteris paribus*.
- **The number of employed household members** significantly increases the likelihood of FAFH participation, with each additional employed person raising the probability by 20 percentage points, *ceteris paribus*. However, expenditure decreases by 0.02 for each additional employed household member.
- **Social grants** positively and significantly affect FAFH participation, increasing the likelihood by 8 percentage points, *ceteris paribus*. However, social grants do not significantly influence FAFH expenditure once a household participates.
- **The number of household members receiving social grants** has a positive and significant effect on both FAFH participation and expenditure. Each additional grant recipient increases the likelihood of FAFH participation by 7.5 percentage points, reflecting the expanded consumption possibilities provided by higher aggregate social grant income (Aguilar-Lopez and Kuhar, 2022). In terms of expenditure, as the number of grant recipients rises, FAFH spending increases by 0.371.
- **SRD grant recipients**, in contrast, have no significant effect on participation but have a positive and significant effect on FAFH expenditure. The absence of a significant effect on participation suggests that the SRD grant does not directly influence the decision to engage in FAFH, likely due to its temporary and

limited nature, designed to address immediate financial distress rather than provide sustained disposable income. However, the positive and significant effect on expenditure shows that SRD grant recipients who participate in FAFH tend to spend more than those without the grant. Specifically, for each additional person receiving the SRD Grant, FAFH expenditure increases by 0.093 units, *ceteris paribus*.

- **Household structure** does not significantly impact FAFH participation, suggesting that household composition does not affect the likelihood of engaging in FAFH. However, it has a positive and significant effect on FAFH expenditure, suggesting that different household compositions influence the amount spent on FAFH.

DISCUSSION

This section expands on the double-hurdle model results by exploring how socio-economic factors influence both participation in and expenditure on FAFH post-lock-down. It compares the findings with existing literature, contextualises observed trends, and offers insights into post-pandemic consumer behaviour. Since the study specifically focuses on fast-food outlets, its implications are more relevant to fast-food eateries than sit-down restaurants, which may be driven by different consumption factors.

The finding that age negatively affects FAFH participation is consistent with Liu et al. (2015) and Aguilar-Lopez and Kuhar (2022), who found that younger households in China and Mexico were more likely to consume FAFH due to socialising and lifestyle factors. However, the absence of a significant effect on expenditure contrasts with Aguilar-Lopez and Kuhar (2022), who reported that older households reduced both participation and expenditure during COVID-19 due to vulnerability and restrictions. This discrepancy may be explained by post-pandemic recovery, increased vaccine availability, and diminished health concerns (Gallo Marin et al., 2021).

The significant negative effect of gender on both FAFH participation and expenditure aligns with findings from Blick et al. (2018) in South Africa and Fernández and Agüero (2018) in Argentina, who found higher FAFH expenditures in male-headed households. Despite increased female labour force participation (Stats SA, 2021), persistent income disparities and gender pay

gaps (McKenzie, 2023) may explain the lower FAFH spending among female-headed households. This aligns with earlier studies (Nayga and Capps, 1992; Ham et al., 2004) which found that male-headed households tend to spend more on FAFH, even as female labour force participation rises (Blick et al., 2018).

The positive effect of marital status on FAFH participation supports the work of Ham et al. (2004) and Binkley (2006), who observed higher FAFH participation in dual-income households in the U.S. and Korea. However, the lack of a significant effect on expenditure contrasts with Nayga and Capps (1992), who found that married households tend to spend more on FAFH due to greater financial stability. Post-pandemic economic constraints may have tempered FAFH expenditure despite continued participation, as noted by Venn et al. (2018) in Australia.

The positive relationship between education and FAFH expenditure aligns with Langellier (2015) and Abebe et al. (2022), who found that higher education levels are associated with increased FAFH spending in Mexico and Canada. However, since fast-food consumption is more common among lower-educated individuals, the higher expenditure among educated households may stem from time constraints and work demands, rather than education itself. This is consistent with Abebe et al. (2022) who found that educated Canadians were more likely to spend on FAFH due to work-related lifestyle pressures.

The positive and significant effect of employment status on both FAFH participation and expenditure aligns with Venn et al. (2018) in Australia and Aguilar-Lopez and Kuhar (2022) in Mexico. Both studies showed that full-time employment increases reliance on FAFH due to factors like time constraints and financial stability. Full-time employment typically involves longer working hours, limiting time for home meal preparation. As a result, employed individuals are more likely to purchase ready-made meals to save time and ensure convenience. These findings align with Goolsbee and Syverson (2021), who highlighted the impact of COVID-19 and shifts in labour dynamics.

The negative relationship between household size and FAFH participation and expenditure supports Aguilar-Lopez and Kuhar (2022) and Blick et al. (2018), who found that larger households tend to reduce FAFH spending due to economies of scale and preferences for

home cooking. This suggests that the higher FAFH expenditure among educated households may be driven more by time constraints, demanding work schedules, and convenience than by education itself. Educated individuals, especially those employed full-time, may rely on fast food as a quick and accessible meal option, despite potential health concerns. This is consistent with earlier findings (Blick et al., 2018; Aguilar-Lopez and Kuhar, 2022).

The significant effect of income on both FAFH participation and expenditure supports Engel's Law, which posits that as household income increases, spending on FAH decreases, while spending on FAFH rises (Lusk and McFadden, 2021). The findings align with pre-pandemic studies such as Stewart et al. (2004) and Blick et al. (2018), which found that higher-income households allocate more resources to FAFH. This is consistent with Saksena et al. (2018), who suggest that FAFH is considered a luxury good.

The mixed effects of social grants on FAFH participation and expenditure align with Waidler and Devereux (2019), who found that while grants improve access to food, they may not necessarily lead to increased spending on FAFH due to financial constraints. However, the significant effect of SRD grants on expenditure, as supported by Aguilar-Lopez and Kuhar (2022), suggests that temporary income boosts may facilitate increased spending on FAFH. This is further corroborated by Mkasi and Lefophane (2023), who observed that while SRD grant recipients reduced overall food consumption, they were still able to maintain food security during the pandemic.

Finally, the significant effect of household structure on FAFH expenditure, particularly for extended households, aligns with Lozada-Urbano et al. (2022), who found that extended households in Peru tend to consume more FAFH. This increase in consumption is primarily due to pooled incomes, where multiple earners contribute to a greater collective disposable income. As a result, extended households – comprising not only nuclear families but also extended family members – are better able to purchase meals away from home. The financial pooling within these households allows for greater flexibility in spending on discretionary items like FAFH. This is supported by Bezerra et al. (2013), who highlighted the impact of household composition on FAFH spending.

CONCLUSIONS

This study employs a double-hurdle model to analyse the factors influencing rural households' participation in, and expenditure on, food away from home (FAFH) in South Africa post-lockdown. The descriptive analysis reveals a significant shift in FAFH behaviour post-lockdown, with both participation and expenditure increasing notably. This resurgence is attributed to the lifting of restrictions, widespread vaccination, and the return to normal operations of eateries. These findings provide empirical evidence that FAFH expenditures among rural households have rebounded, highlighting how eased restrictions and the reopening of eateries have played a key role in boosting both participation and spending.

The empirical analysis utilized a probit model in the first hurdle to identify the determinants of FAFH participation and an OLS model in the second hurdle to assess the factors influencing expenditure levels. Both models indicate that employment status, household size, household income, the number of employed household members, and the number of social grant recipients are significant predictors of both FAFH participation and expenditure. Additionally, gender and marital status influence participation decisions, while education level, household structure, and SRD grants have a significant impact on expenditure levels. By identifying these determinants, this study fills a critical gap in the literature on rural household dynamics in the post-pandemic era and provides valuable empirical insights into the factors shaping FAFH behaviour in a shifting socio-economic landscape.

Policy Implications

Based on these findings, several policy strategies are recommended to improve food security, enhance access to nutritious food, and support vulnerable households, particularly those in low-income and informal sectors:

- **Income and Employment Support:** Policies should prioritize job creation, skills development, and financial literacy training to enhance household income and financial stability. This would lead to higher employment rates, improved financial security, and greater access to diverse and nutritious food options.
- **Strengthening Informal Food Systems:** Supporting small-scale food vendors, promoting affordable, healthy meal alternatives, and expanding nutrition education initiatives can improve the

availability of nutritious foods while fostering local food economies.

- **Targeted Food Assistance Programs:** Subsidies, meal programs, and direct cash transfers should focus on vulnerable households, particularly children and the elderly, to reduce food insecurity and ensure access to balanced meals.

Future Research Directions

- While this study provides meaningful insights, several limitations highlight opportunities for further research:
- Expanding the scope to include urban areas would allow for a broader understanding of post-pandemic FAFH trends and regional disparities.
- Investigating the role of food prices in FAFH decisions, particularly through income elasticity estimates, could provide deeper economic insights.
- A longitudinal approach could track how FAFH consumption and spending patterns evolve as economic conditions stabilise.
- Exploring additional factors such as marketing strategies, cultural influences, health perceptions, digital food ordering trends, and the impact of social grants would offer a more nuanced understanding of FAFH behaviour in diverse rural contexts.
- The lack of detailed data on SRD grant recipients in the study area limits direct comparisons between the sample and the broader beneficiary population. Future research should address this gap by collecting more granular data at the village level, possibly through collaboration with local authorities or community-based surveys.

REFERENCES

- Abebe, G.K., Charlebois, S., Music, J. (2022). Canadian consumers' dining behaviors during the COVID-19 pandemic: Implications for channel decisions in the food service industry. *Sustainability*, 14(9), 4893. <https://doi.org/10.3390/su14094893>
- Aguilar-Lopez, A., Kuhar, A. (2022). Food-away-from-home expenditure in Mexico during the COVID-19 pandemic: A micro-econometric analysis. *Agriculture*, 12(2), 172. <https://doi.org/10.3390/agriculture12020172>
- Angulo, A.M., Gil, J.M., Mur, J. (2002). Spanish demand for food away from home: A panel data approach. *J. Agric. Econ.*, 58(2), 289–307. <https://doi.org/10.1111/j.1477-9552.2007.00106.x>

- Barrientos-Gutiérrez, T., Alpuche-Aranda, C., Lazcano-Ponce, E., Pérez-Ferrer, C., Rivera-Dommarco, J. (2020). La salud pública en la primera ola: Una agenda para la cooperación ante COVID-19. *Salud Públ. Mex.*, 62(5), 598–606. Retrieved from: https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0036-36342020000500598
- Beckman, J., Countryman, A.M. (2021). The importance of agriculture in the economy: Impacts of COVID-19. *Am. J. Agric. Econ.*, 103(5), 1595–1611. <https://doi.org/10.1111/ajae.12212>
- Bezerra, I.N., Souza, A.M., Pereira, R.A., Sichieri, R. (2013). Consumption of foods away from home in Brazil. *Rev. Saúd. Públ.*, 47(Suppl. 1), 200–211. <https://doi.org/10.1590/S0034-89102013000700005>
- Binkley, J.K. (2006). The effect of demographic, economic, and nutritional factors on the frequency of eating away from home. *J. Consum. Aff.*, 40(2), 372–391. <https://doi.org/10.1111/j.1745-6606.2006.00062.x>
- Blick, M., Abidoye, B.O., Kirsten, J.F. (2018). Investigation of food away-from-home consumption in South Africa. *Dev. South. Afr.*, 35(1), 39–52. <https://doi.org/10.1080/0376835X.2017.1412295>
- Blundell, R., Meghir, C. (1987). Bivariate alternatives to the Tobit model. *J. Economet.*, 34(1–2), 179–200. [https://doi.org/10.1016/0304-4076\(87\)90072-8](https://doi.org/10.1016/0304-4076(87)90072-8)
- BusinessTech (2024). The biggest fast-food franchises in South Africa in 2024. Retrieved from: <https://www.safanchisebrands.co.za/article/the-biggest-fast-food-franchises-in-south-africa-in-2024/>
- Chenarides, L., Grebitus, C., Lusk, J.L., Printezis, I. (2020). Food consumption behavior during the COVID-19 pandemic. *Agribusiness*, 37(1), 44–81. <https://doi.org/10.1002/agr.21679>
- Codjia, C.O., Saghaian, S.H. (2022). Determinants of food expenditure patterns: Evidence from US consumers in the context of COVID-19 price shocks. *Sustain.*, 14(13), 8156. <https://doi.org/10.3390/su14138156>
- Cragg, J.G. (1971). Some statistical models for limited dependent variables with application to the demand for durable goods. *Econometrica*, 39(5), 829–844. <https://doi.org/10.2307/1909582>
- Davis, G.C., You, W. (2009). The time cost of food at home: General and food stamp participant profiles. *Appl. Econ.*, 42(20), 2537–2552. <https://doi.org/10.1080/00036840801964468>
- D'Haese, M., Vink, N., van Rooyen, J., Staelens, L., Vandamme, E. (2013). Improving food security in the rural areas of KwaZulu-Natal province, South Africa: Too little, too slow. *Dev. S. Afr.*, 30(4–5), 468–490. <https://doi.org/10.1080/0376835X.2013.836700>
- Ellison, B., McFadden, B., Rickard, B.J., Wilson, N.L. (2021). Examining food purchase behavior and food values during the COVID-19 pandemic. *Appl. Econ. Perspect. Policy*, 43(1), 58–72. <https://doi.org/10.1002/aep.13118>
- ENSafrica (2020). South Africa: national state of disaster declared in response to Coronavirus. Retrieved from: <https://www.ensafrica.com/news/detail/2347/south-africa-declares-national-state-of-disas>
- Fanelli, R.M. (2021). Changes in the food-related behaviour of Italian consumers during the COVID-19 pandemic. *Foods*, 10(1), 169. <https://doi.org/10.3390/foods10010169>
- Fernández, A.E., Agüero, J.V. (2018). Desfamiliarización del cuidado: Un puente desde el malestar individual hacia el bienestar social. *Millcayac Rev. Digit. Cienc. Soc.*, 5, 189–206. Retrieved from: <https://www.redalyc.org/journal/5258/525866306009/html/>
- Fin24 (2021). Inflation heats up fuel as meat prices rise. Retrieved from: <https://www.news24.com/amp/fin24/economy/south-africa/inflationheats-up-as-meat-prices-rise>
- Gallo Marin, B., Aghagoli, G., Lavine, K., Yang, L., Siff, E.J., Chiang, S.S., et al. (2021). Predictors of COVID-19 severity: A literature review. *Rev. Med. Virol.*, 31(1), 1–10. <https://doi.org/10.1002/rmv.2146>
- Gao, C.L., Zhao, N., Shu, P. (2021). Breakfast consumption and academic achievement among Chinese adolescents: A moderated mediation model. *Front. Psychol.*, 12, 700989. <https://doi.org/10.3389/fpsyg.2021.700989>
- Goolsbee, A., Syverson, C. (2021). Fear, lockdown, and diversion: Comparing drivers of pandemic economic decline 2020. *J. Publ. Econ.*, 193, 104311. <https://doi.org/10.1016/j.jpubeco.2020.104311>
- Ham, S., Hwang, J.H., Kim, W.G. (2004). Household profiles affecting food-away-from-home expenditures: a comparison of Korean and US households. *International Int. J. Hosp. Manag.*, 23(4), 363–379. <https://doi.org/10.1016/j.ijhm.2004.01.001>
- Hassen, T.B., El Bilali, H., Allahyari, M.S. (2020). Impact of COVID-19 on food behavior and consumption in Qatar. *Sustain.*, 12(17), 6973. <https://doi.org/10.3390/su12176973>
- Hawk, W. (2011). Household spending by single persons and married couples in their twenties: A comparison. *Consumer Expenditure Survey Anthology*, 40, 46. Retrieved from: https://www.bls.gov/cex/research_papers/pdf/hawk-household-spending-by-single-persons-and-married-couples-in-their-twenties.pdf
- Heckman, J.J. (1979). Sample selection bias as a specification error. *Econometrica*, 47(1), 153–161. <https://doi.org/10.2307/1912352>
- Hobbs, J.E. (2020). Food supply chains during the COVID-19 pandemic. *Can. J. Agric. Econ./Revue canadienne*

- d'agroeconomie, 68(2), 171–176. <https://doi.org/10.1111/cjag.12237>
- Janssen, M., Chang, B.P.I., Hristov, H., Pravst, I., Profeta, A., Millard, J. (2021). Changes in food consumption during the COVID-19 pandemic: Analysis of consumer survey data from the first lockdown period in Denmark, Germany, and Slovenia. *Front. Nutr.*, 8, 635859. <https://doi.org/10.3389/fnut.2021.635859>
- Ko, Y.H., Son, J.H., Kim, G.J. (2023). An exploratory study of changes in consumer dining-out behavior before and during COVID-19. *J. Foodservice Bus. Res.*, 26(5), 700–718. <https://doi.org/10.1080/15378020.2022.2036569>
- Labadarios, D., Steyn, N.P., Nel, J. (2011). How diverse are the diets of adult South African people? *Nutr. J.*, 10(1), 33. <https://doi.org/10.1186/1475-2891-10-33>
- Landais, E., Miotto-Plessis, M., Bene, C., Maitre d'Hotel, E., Truong, M.T., Somé, J.W., Verger, E.O. (2023). Consumption of food away from home in low-and middle-income countries: A systematic scoping review. *Nutr. Rev.*, 81(6), 727–754. <https://doi.org/10.1093/nutrit/nuac085>
- Langellier, B.A. (2015). Consumption and expenditure on food prepared away from home among Mexican adults in 2006. *Salud Pública de Méx.*, 57(1), 4–13. Retrieved from: https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0036-36342015000100003
- Lefophane, M.H. (2020). COVID-19 and South Africa's Food Industry: Challenges, Trends, and the Way Forward. *Mzansi Agriculture Talk*. Retrieved from: <https://www.mzansiagritalk.com/archives/4240>
- Liu, H., Wahl, T.I., Seale, J.L. Jr., Bai, J. (2015). Household composition, income, and food-away-from-home expenditure in urban China. *Food Pol.*, 51, 97–103. <https://doi.org/10.1016/j.foodpol.2014.12.011>
- Lozada-Urbano, M., Huamán, F., Xirinachs, Y., Rivera-Lozada, O., Alvarez-Risco, A., Yáñez, J.A. (2022). Poverty, household structure and consumption of foods away from home in Peru in 2019: A cross-sectional study. *Foods*, 11(17), 2547. <https://doi.org/10.3390/foods11172547>
- Lusk, J.L., McFadden, B.R. (2021). Consumer food buying during a recession. *Choices*, 36(3), 1–9.
- Marchesi, K., McLaughlin, P. W. (2022). COVID-19 Working Paper: Impact of the COVID-19 pandemic on food-away-from-home spending. Retrieved from: <https://ageconsearch.umn.edu/record/327337/?v=pdf>
- McKenzie, B. (2023). South Africa: Bridging the pay gap through transparency. Retrieved from: <https://insight-plus.bakermckenzie.com/bm/employment-compensation/south-africa-bridging-the-pay-gap-through-transparency#:~:text=According%20to%20the%20latest%20World,about%2030%25%20across%20the%20board>
- Mkasi, F.N., Lefophane, M.H. (2023). Households' food consumption behaviour during COVID-19 pandemic: Evidence from rural households in South Africa. *Appl. Stud. Agribus. Commer.*, 17(2). <https://doi.org/10.19041/AP-STRACT/2023/2/4>
- Nayga, Jr, R.M., Capps, Jr, O. (1992). Analysis of food away from home and food at home consumption: A systems approach. *J. Food Distrib. Res.*, 23(3), 1–10. 10.22004/ag.econ.26649
- Pappalardo, G., Selvaggi, R., Pittalà, M., Bellia, C. (2022). Purchasing behavior in rural areas for food products during the COVID-19 pandemic. *Front. Sustain. Food Syst.*, 6, 1042289. <https://doi.org/10.3389/fsufs.2022.1042289>
- Pawson, N. (2023). South Africans continue to spend more on restaurants – Stats SA. Retrieved from: <https://www.sapeople.com/business-and-finance/south-africans-continue-to-spend-more-on-restaurants-stats-sa>
- Reuters (2020). Reopening South Africa's economy may be especially painful. Retrieved from: <https://www.aljazeera.com/economy/2020/5/1/reopening-south-africas-economy-may-be-especially-painful>
- Richards, T. J., Rickard, B. (2020). COVID-19 impact on fruit and vegetable markets. *Can. J. Agric. Econ./Rev. Canad. d'Agroec.*, 68(2), 189–194. 10.1111/cjag.12231
- Saksena, M.J., Okrent, A.M., Anekwe, T.D., ..., Hyman, J. (2018). America's eating habits: Food away from home (No. 281119). Retrieved from: <https://www.ers.usda.gov/publications/pub-details/?pubid=90227>
- SASSA (South African Social Security Agency) (2025). Social Relief of distress. Retrieved from: <https://www.sassa.gov.za/SitePages/Social-Relief-of-Distress-Grant.aspx#:~:text=Social%20relief%20of%20distress%20is,their%20families%20most%20basic%20needs>
- Sheth, J. (2020). Impact of COVID-19 on consumer behavior: Will old habits return or die? *J. Bus. Res.*, 117, 280–283. <https://doi.org/10.1016/j.jbusres.2020.05.059>
- Singh, A., Tembo, S. (2022). Constitutionalism and public health emergencies: COVID-19 regulations in South Africa and the slippery constitutional and human rights slope. *Potchefstroom Electron. Law J.*, 25(1), 1–31. <https://doi.org/10.17159/obiter.v43i1.13508>
- South African Government. (2020). About alert system. Retrieved from: <https://www.gov.za/covid-19/about/about-alert-system>
- Stats SA (Statistics South Africa) (2021). Consumer price inflation hits a 14-month high. Retrieved from: <https://www.statssa.gov.za/?p=14336>
- Stewart, H., Blisard, N., Bhuyan, S., Nayga Jr, R.M. (2004). The demand for food away from home: full service or fast food? (No. 1473-2016-120777). doi: 10.22004/ag.econ.33953

- Thamaga-Chitja, J.M., Morojele, P. (2014). The context of smallholder farming in South Africa: Towards a livelihood asset-building framework. *J. Hum. Ecol.*, 45(2), 147–155. 10.31901/24566608.2014/45.02.06
- Truong, D., Truong, M.D. (2022). How do customers change their purchasing behavior during the COVID-19 pandemic? *J. Retail. Consum. Serv.*, 67, 102963. <https://doi.org/10.1016/j.jretconser.2022.102963>
- U.S. Department of Agriculture, Economic Research Service, 2025. Food expenditure series—documentation. Retrieved from: <https://www.ers.usda.gov/data-products/food-expenditure-series/documentation>
- Venn, D., Dixon, J., Banwell, C., Strazdins, L. (2018). Social determinants of household food expenditure in Australia: The role of education, income, geography, and time. *Publ. Health Nutr.*, 21(5), 902–911. 10.1017/S1368980017003342
- Waidler, J., Devereux, S. (2019). Social grants, remittances, and food security: Does the source of income matter? *Food Sec.*, 11, 679–702. <https://doi.org/10.1007/s12571-019-00918-x>
- WHO (World Health Organization). (2020). WHO Director-General's opening remarks at the media briefing on COVID-19—March 25, 2020. Retrieved from: <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---25-march-2020>
- Yamane, T. (1967). *Statistics: An Introductory Analysis* (2nd ed.). New York: Harper & Row.
- Zeballos, E., Dong, X. (2022). Effect of COVID-19 on food sales. *Appl. Econ. Perspect. Polic.*, 44(4), 2131–2144. <https://doi.org/10.1002/aepp.13201>