KANSAS STATE
Department of Agricultural Economics
Jan. 2022 Summary Report

MDM: Meat Demand Monitor

The MDM tracks U.S. consumer preferences, views, and demand for meat with separate analysis for retail and food service channels. MDM is a monthly online survey with a sample of over 2,000 respondents reflecting the national population.

Multi-Month Summary Report: July - December 2021

Executive Summary

In February 2020, the Meat Demand Monitor (MDM) project was launched collecting data from over 2,000 U.S. consumers each month. The MDM project is funded in-part by the beef and pork checkoffs and tracks U.S. consumer preferences, views, and demand for meat with separate analysis for retail and food service channels.[1]

In this report, insights from the MDM surveys conducted between July and December 2021 are outlined, providing the project's fourth multi-month, summary report. Data from over 12,000 survey respondents are used to examine trends for these six months.

Key insights over the final six months of 2021 include:

- Both retail (grocery) and food service (restaurant) demand for each evaluated beef and pork was higher in December than in July.
- The relative importance of factors influencing protein purchasing decisions remain steady with Taste, Freshness, Safety, and Price persistently ranking highest in importance.
- At-home versus away-from-home meal prevalence was broadly steady. The up-tick in at-home rates in December from November should be monitored as we progress into 2022.
- Examining restaurant traffic, Fast Casual lost share for breakfast and gained for dinner. Meanwhile Casual Dining restaurants generally lost share for all three meals.
- Grocery Stores continue to lead as the protein source for at-home consumption.
- Inclusion rates of beef and pork in prior day meals remained steady overall.
- Consumer meat knowledge was steady to slightly improving during the period.
- A larger share self-declare to regularly consume animal product with Flexitarian rates declining slightly.

The foregoing provides additional details on the above findings as well as new findings and analysis. We offer a multitude of focused insights from monthly ad hoc questions listed at the end of this report. Modeling of beef and pork demand determinants, by market channel and product, is also provided.

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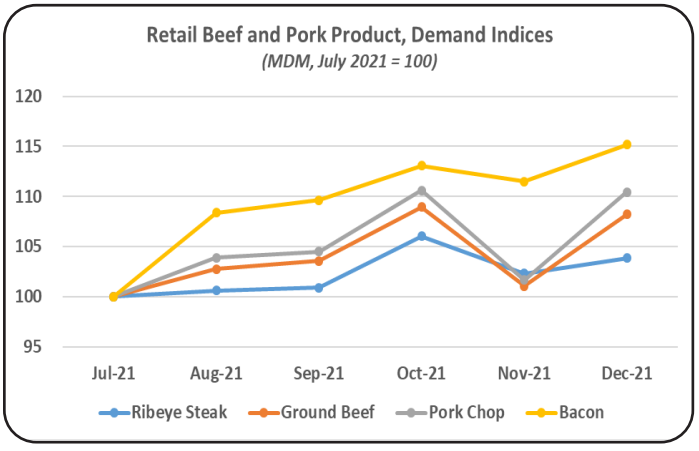
Meat Demand: Willingness to Pay Trends

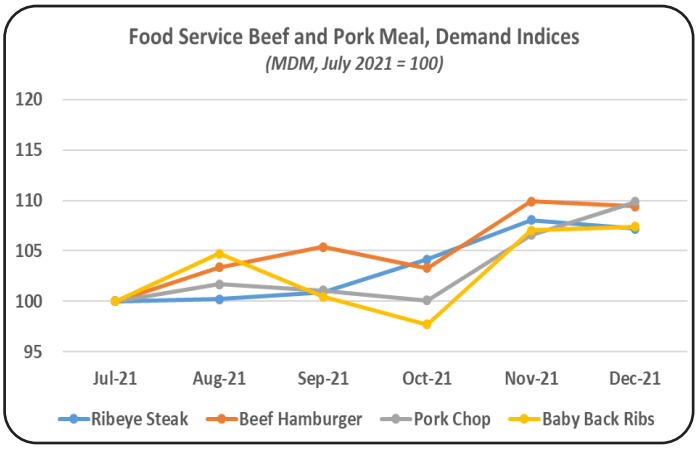
Maximum willingness-to-pay (WTP) for eight different items and meals was calculated each month. WTP is shown separately for retail (grocery) and food service (restaurant, away-from-home) channels in the following table.

RETAIL		Ribeye Steak	Ground Beef	Pork Chop	Bacon	Chicken Breast	Plant-Based Patty	Shrimp	Beans and Rice
Jul-21	WTP ($/lb)	$17.54	$8.58	$7.14	$5.76	$8.13	$8.86	$9.90	$2.79
Aug-21	WTP ($/lb)	$17.65	$8.81	$7.42	$6.24	$8.53	$9.21	$9.67	$2.76
Sep-21	WTP ($/lb)	$17.70	$8.88	$7.47	$6.31	$8.57	$9.16	$10.14	$3.15
Oct-21	WTP ($/lb)	$18.60	$9.35	$7.90	$6.51	$8.84	$8.97	$10.33	$3.30
Nov-21	WTP ($/lb)	$17.94	$8.67	$7.26	$6.42	$8.55	$9.31	$10.04	$3.88
Dec-21	WTP ($/lb)	$18.22	$9.28	$7.89	$6.63	$9.01	$8.98	$9.32	$3.32

FOOD SERVICE		Ribeye Steak	Beef Ham-burger	Pork Chop	Baby Back Ribs	Chicken Breast	Plant-Based Patty	Shrimp	Salmon
Jul-21	WTP ($/meal)	$26.00	$18.96	$15.46	$18.08	$17.12	$12.91	$17.46	$17.55
Aug-21	WTP ($/meal)	$26.06	$19.60	$15.72	$18.93	$18.04	$14.15	$17.92	$18.58
Sep-21	WTP ($/meal)	$26.24	$19.98	$15.62	$18.16	$17.77	$13.04	$17.66	$18.27
Oct-21	WTP ($/meal)	$27.08	$19.58	$15.47	$17.66	$17.33	$13.40	$17.21	$17.78
Nov-21	WTP ($/meal)	$28.10	$20.84	$16.48	$19.35	$19.07	$13.79	$18.19	$19.76
Dec-21	WTP ($/meal)	$27.87	$20.74	$16.98	$19.41	$18.45	$13.94	$19.16	$19.75

The following figures present WTP estimates as index values relative to July 2021. As an example, the retail WTP index for bacon peaked at 115 in December meaning retail demand was 15% stronger in December than in July. Similarly, the November food service WTP index for beef hamburger meals was 110 indicating food service demand was 10% stronger in November than in July. More broadly, both retail and food service beef and pork demand was higher in the fourth quarter of 2021 than in the third quarter.





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As noted in previous multi-month reports, the number of times a given respondent selects each good can be used as a measure of product demand. This is viable as prices are exogenously set for the choice experiment and are held constant across respondents and time such that changes in product selection rates correspond with demand changes. As an example, differences in the frequency between respondents A and B in picking pork chops in a retail setting cannot be attributed to prices and hence reflect differences in demand.

It is useful to first summarize product selection frequency. As shown in the following tables, chicken breast is the most common Retail selection and beef hamburger is the most common Food Service selection. The "something else" selection rate declining from early in 2021 reflects overall protein demand growth.

Summary of Choices, Retail Setting

Item	Mean Number of Times Chosen	Percent of Times Chosen
Ribeye Steak	0.81	9.00%
Ground Beef	2.05	22.74%
Pork Chop	1.25	13.85%
Bacon	0.78	8.71%
Chicken Breast	2.13	23.70%
Plant-Based Patty	0.29	3.24%
Shrimp	0.46	5.10%
Beans and Rice	0.68	7.55%
Would Buy Something Else	0.55	6.11%

Summary of Choices, Food Service Setting

Item	Mean Number of Times Chosen	Percent of Times Chosen
Ribeye Steak	1.36	15.14%
Beef Hamburger	2.05	22.78%
Pork Chop	0.47	5.26%
Baby Back Ribs	0.94	10.41%
Chicken Breast	1.25	13.90%
Plant-Based Patty	0.45	5.00%
Shrimp	1.19	13.24%
Salmon	0.75	8.28%
Would Buy Something Else	0.54	5.98%

While these summary statistics are useful from a simple, aggregate perspective additional analysis is needed to understand determinants of these consumer selections. Here we are interested in the two beef and two pork products presented as available to respondents, separately for the Retail and Food Service channels. The following tables summarize model results.

Characteristics of respondents with stronger ribeye steak, retail demand include being under 55 years of age, being male, and having household income over $100,000.[2] Those placing higher importance on Price have weaker demand.[3] Respondents who had prior day meals including beef hold stronger demand for ribeye steak. There is no trending pattern over the six evaluated months (demand in October was statistically higher than July) or day of the week.

Factors Impacting Retail Meat Demand, Regression Models (July-Dec. 2021 MDM Data)

	Ribeye Steak		*Ground Beef*		*Pork Chop*		*Bacon*	
Parameter	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value
Intercept	**0.356**	**0.050**	**1.747**	**<.0001**	**1.343**	**<.0001**	**0.576**	**<.0001**
Flexitarian	-0.202	0.074	-0.196	0.106	-0.183	0.042	**-0.131**	**0.028**
Regulalry Consume Animal Products	-0.182	0.067	**0.219**	**0.037**	0.080	0.310	0.050	0.338
Vegan Vegetarian or Vegetarian	-0.046	0.710	-0.148	0.248	0.149	0.128	-0.053	0.413
Age, Under 35	**0.463**	**<.0001**	0.066	0.325	**-0.156**	**0.002**	**0.244**	**<.0001**
Age, 35 to 55	**0.242**	**<.0001**	0.113	0.060	**-0.211**	**<.0001**	**0.201**	**<.0001**
Male	**0.138**	**0.001**	-0.017	0.732	**0.070**	**0.052**	**0.057**	**0.027**
Married	0.077	0.055	-0.033	0.518	**0.074**	**0.047**	0.002	0.951
Children under Age of 12 in Household	0.067	0.214	0.000	0.997	0.066	0.125	0.003	0.924
College, 4-Year Degree	0.044	0.396	**-0.227**	**<.0001**	-0.011	0.796	-0.051	0.098
Income, Above $100k	**0.228**	**0.000**	-0.102	0.171	-0.014	0.797	-0.024	0.531
Hispanic, Latino, or Spanish Origin	0.084	0.241	-0.118	0.128	-0.052	0.357	-0.036	0.376
Race, White	-0.057	0.255	0.022	0.694	0.059	0.154	**0.100**	**0.001**
Political Party Affiliation, Democratic	0.027	0.513	-0.081	0.086	0.025	0.491	-0.010	0.707
Region, Northeast	-0.071	0.254	**0.177**	**0.016**	0.032	0.575	-0.005	0.904
Region, Midwest	-0.014	0.820	**0.285**	**<.0001**	0.034	0.512	0.004	0.917
Region, South	-0.075	0.166	**0.130**	**0.032**	0.012	0.792	-0.005	0.886
PV, Freshness	**0.094**	**0.013**	**-0.138**	**0.001**	-0.020	0.554	-0.002	0.950
PV, Taste	**0.086**	**0.036**	-0.065	0.142	-0.035	0.319	0.006	0.821
PV, Safety	**0.085**	**0.020**	-0.075	0.064	-0.051	0.090	0.008	0.741
PV, Convenience	**0.156**	**<.0001**	-0.061	0.153	-0.020	0.518	0.026	0.299
PV, Nutrition	**0.092**	**0.016**	**-0.118**	**0.005**	-0.041	0.184	-0.016	0.508
PV, Health	**0.086**	**0.021**	**-0.122**	**0.002**	-0.096	0.001	-0.007	0.763
PV, Origin/Traceability	**0.298**	**<.0001**	-0.056	0.190	-0.006	0.854	0.011	0.647
PV, Hormone/Antibiotic-Free	**0.092**	**0.008**	-0.066	0.076	-0.029	0.340	-0.004	0.869
PV, Animal Welfare	**0.092**	**0.011**	**-0.088**	**0.024**	**-0.065**	**0.032**	-0.010	0.632
PV, Environmental Impact	**0.139**	**0.000**	**-0.092**	**0.033**	-0.024	0.457	0.003	0.895
PV, Appearance	**0.149**	**<.0001**	0.028	0.487	0.010	0.763	0.015	0.529

Factors Impacting Retail Meat Demand, Regression Models (July-Dec. 2021 MDM Data)

	Ribeye Steak		*Ground Beef*		*Pork Chop*		*Bacon*	
Parameter	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value
Grocery Shopping in Household, Solely or Primarily Responsible	0.084	0.325	0.082	0.453	-0.084	0.323	-0.044	0.466
Grocery Shopping in Household, Typically at least One-Half	-0.051	0.566	0.080	0.483	-0.063	0.484	-0.006	0.927
Prior Day Meals, Number Including Beef	**0.286**	**<.0001**	**0.364**	**<.0001**	0.011	0.668	0.009	0.653
Prior Day Meals, Number Including Pork	-0.011	0.751	-0.059	0.103	**0.234**	**<.0001**	**0.177**	**<.0001**
Prior Day Meals, Number Including Chicken	0.065	0.055	-0.019	0.568	0.021	0.423	**-0.053**	**0.008**
Prior Day Meals, Number Including Fish/Seafood	**0.123**	**0.003**	**-0.225**	**<.0001**	-0.051	0.099	0.012	0.642
Prior Day Meals, Number Including Alternative Proteins	-0.045	0.212	**-0.225**	**<.0001**	**-0.142**	**<.0001**	**-0.047**	**0.026**
Prior Day Meals, Number Including Other or No Protein	-0.026	0.470	-0.029	0.382	**-0.085**	**0.002**	-0.040	0.055
August	0.055	0.406	0.031	0.701	-0.016	0.798	-0.017	0.724
September	-0.007	0.914	0.081	0.320	-0.056	0.365	-0.039	0.376
October	**0.145**	**0.041**	0.063	0.446	0.007	0.916	-0.051	0.243
November	0.034	0.633	0.019	0.809	**-0.148**	**0.021**	-0.033	0.486
December	0.099	0.141	0.071	0.401	-0.050	0.420	-0.053	0.229
Sunday	-0.016	0.808	-0.091	0.220	-0.097	0.105	0.045	0.332
Tuesday	-0.022	0.760	0.013	0.886	**-0.163**	**0.019**	0.062	0.208
Wednesday	0.004	0.956	-0.102	0.198	-0.062	0.326	0.045	0.299
Thursday	0.003	0.972	-0.030	0.743	0.013	0.861	0.013	0.780
Friday	-0.032	0.708	0.178	0.076	**-0.186**	**0.009**	-0.012	0.803
Saturday	0.005	0.950	0.015	0.860	-0.076	0.273	0.046	0.352
Adjusted R-square	0.1029		0.0730		0.0377		0.0328	
Number of Observations	8,609		8,609		8,609		8,609	

Moving to ground beef, retail demand is stronger for individuals who are younger, do not have a 4-year college degree, and reside in the Northeast, Midwest, or South (rather than West). Those placing higher importance on Freshness, Nutrition, Health, Animal Welfare or Environmental Impact have weaker demand.[4] Individuals with prior day meals including beef hold stronger ground beef demand.

Combined, difference in retail beef demand across categories include steak demand being strongest for higher-income households who place less weight on Price, and ground beef demand being strongest for those more concerned with Price. Differences in the impact of prior day meal patterns indicates ground beef demand may be more sensitive to proteins outside the red-meat sector. These patterns are consistent with those identified for the January-June 2021 period in an earlier report

Turning to pork we observe pork chop retail demand to be stronger for respondents over 55 years of age, Males, and are married. Those placing higher importance on Heath or Animal Welfare have weaker demand. Individuals with prior day meals including pork hold stronger pork chop demand and demand is weaker on Tuesday and Friday than on Monday.

Examining bacon retail demand reveals stronger demand for consumers under 35 years of age, Male, and are White. Individuals with prior day meals including pork hold stronger bacon demand.

Contrasting retail pork demand patterns reveals identified household characteristics have a larger impact on pork chop than bacon demand - another finding consistent with the earlier January-June 2021 assessment.

Transitioning to food service, stronger ribeye steak demand aligns with individuals who are under 55 years of age. Demand is higher for Males, households with children under the age of 12, those not affiliating with the Democratic party, and those residing in the West region rather than Northeast or South. Consumers placing lower importance on Price have higher demad. If beef was included more in prior day meals demand is higher and demand was higher in October, November, and December than in July.

Moving to beef hamburger, food service demand is weaker as expected by those declaring Flexitarian or Vegan Vegetarian diets, those with children under 12 at home, those who hold a 4-year college degree, and those with incomes over $100,000. Demand is stronger for those under 55 years of age and White respondents. Those placing higher importance on Price have stronger demand. Individuals with prior day meals including beef hold stronger beef hamburger demand and demand was higher in September and November than in July.

Factors Impacting Food Service Meat Demand, Regression Models (July-Dec. 2021 MDM Data)

	Ribeye Steak		*Beef Hamburger*		*Pork Chop*		*Baby Back Ribs*	
Parameter	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value
Intercept	**1.028**	**<.0001**	**1.786**	**<.0001**	**0.466**	**<.0001**	**0.717**	**<.0001**
Flexitarian	-0.232	0.056	**-0.590**	**0.000**	0.065	0.296	-0.106	0.192
Regulalry Consume Animal Products	0.196	0.078	-0.183	0.192	-0.046	0.310	**0.189**	**0.007**
Vegan Vegetarian or Vegetarian	-0.083	0.533	**-0.536**	**0.001**	**0.242**	**0.001**	-0.094	0.249
Age, Under 35	**0.246**	**0.001**	**0.907**	**<.0001**	0.026	0.504	-0.081	0.125
Age, 35 to 55	**0.282**	**<.0001**	**0.447**	**<.0001**	-0.019	0.551	-0.076	0.141
Male	**0.122**	**0.022**	-0.066	0.258	**0.129**	**<.0001**	**0.232**	**<.0001**
Married	0.029	0.610	-0.104	0.082	0.003	0.922	0.009	0.824
Children under Age of 12 in Household	**0.139**	**0.050**	**-0.207**	**0.005**	**0.161**	**<.0001**	**0.127**	**0.008**
College, 4-Year Degree	-0.044	0.478	**-0.142**	**0.022**	-0.001	0.983	-0.038	0.391
Income, Above $100k	0.065	0.366	**-0.175**	**0.020**	**0.139**	**0.002**	-0.019	0.719
Hispanic, Latino, or Spanish Origin	-0.046	0.591	0.095	0.291	0.033	0.393	0.037	0.509
Race, White	-0.070	0.257	**0.177**	**0.008**	0.052	0.097	-0.040	0.353
Political Party Affiliation, Democratic	**-0.126**	**0.017**	0.043	0.458	0.044	0.120	0.013	0.733
Region, Northeast	-0.148	0.073	0.057	0.526	-0.007	0.871	0.042	0.466
Region, Midwest	-0.064	0.441	0.074	0.391	-0.061	0.091	0.027	0.626
Region, South	**-0.186**	**0.009**	-0.055	0.446	0.004	0.909	0.036	0.454
PV, Freshness	**0.177**	**0.000**	**-0.175**	**0.001**	-0.002	0.920	0.049	0.133
PV, Taste	0.015	0.766	**-0.178**	**0.001**	0.001	0.962	0.054	0.096
PV, Safety	0.034	0.458	-0.052	0.295	0.009	0.703	0.017	0.607
PV, Convenience	**0.169**	**0.001**	0.021	0.688	**0.058**	**0.018**	0.014	0.675
PV, Nutrition	**0.128**	**0.006**	**-0.222**	**<.0001**	0.017	0.453	-0.028	0.376
PV, Health	0.000	0.994	**-0.238**	**<.0001**	0.008	0.720	0.020	0.544
PV, Origin/Traceability	**0.184**	**0.000**	-0.051	0.336	**0.084**	**0.003**	0.007	0.838
PV, Hormone/Antibiotic-Free	0.078	0.072	**-0.114**	**0.016**	0.026	0.257	-0.042	0.176
PV, Animal Welfare	**0.106**	**0.017**	**-0.110**	**0.024**	**0.057**	**0.021**	-0.046	0.142

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Factors Impacting Food Service Meat Demand, Regression Models (July-Dec. 2021 MDM Data)

	Ribeye Steak		*Beef Hamburger*		*Pork Chop*		*Baby Back Ribs*	
Parameter	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value	Estimate	p-Value
PV, Environmental Impact	**0.166**	**0.000**	**-0.112**	**0.025**	**0.052**	**0.030**	0.031	0.318
PV, Appearance	**0.145**	**0.002**	-0.064	0.208	0.043	0.082	0.028	0.410
Prior Day Meals, Number Including Beef	**0.321**	**<.0001**	**0.399**	**<.0001**	0.007	0.721	0.053	0.069
Prior Day Meals, Number Including Pork	0.045	0.320	-0.010	0.825	**0.112**	**<.0001**	**0.143**	**<.0001**
Prior Day Meals, Number Including Chicken	0.004	0.924	-0.014	0.736	0.013	0.501	-0.014	0.631
Prior Day Meals, Number Including Fish/Seafood	**-0.104**	**0.021**	**-0.311**	**<.0001**	0.027	0.260	0.027	0.469
Prior Day Meals, Number Including Alternative Proteins	**-0.161**	**<.0001**	**-0.125**	**0.002**	-0.021	0.373	**-0.090**	**0.000**
Prior Day Meals, Number Including Other or No Protein	**-0.078**	**0.046**	0.000	0.991	**-0.075**	**<.0001**	-0.024	0.386
February	-0.033	0.706	0.134	0.172	**-0.106**	**0.039**	0.020	0.778
March	0.019	0.831	**0.231**	**0.018**	-0.078	0.149	-0.080	0.232
April	**0.229**	**0.015**	0.124	0.196	-0.067	0.147	-0.113	0.088
May	**0.201**	**0.026**	**0.231**	**0.017**	**-0.125**	**0.022**	-0.107	0.099
June	0.179	0.056	0.155	0.116	**-0.123**	**0.009**	-0.067	0.320
Sunday	0.041	0.625	-0.004	0.966	-0.087	0.067	-0.057	0.323
Tuesday	0.025	0.802	0.056	0.598	-0.077	0.113	0.014	0.852
Wednesday	0.037	0.688	-0.147	0.107	-0.071	0.124	-0.012	0.850
Thursday	0.063	0.546	-0.005	0.966	-0.096	0.081	-0.081	0.244
Friday	0.082	0.447	0.077	0.505	0.012	0.873	-0.088	0.220
Saturday	0.058	0.552	0.085	0.464	-0.079	0.118	-0.051	0.461
Adjusted R-square	0.052		0.082		0.092		0.029	
Number of Observations	8,623		8,623		8,623		8,623	

We observe pork chop food service demand to be stronger for male respondents and those who self-declare their diet as Vegan Vegetarian or Vegan. Stronger demand is held by those who have children at home. and have incomes over $100,000. Those placing more importance on Convenience, Origin/Traceability, Animal Welfare, and Environmental Impact (vs. Price) have stronger demand. Individuals with prior day meals including beef, pork, or fish/seafood hold stronger pork chop demand.

Examining baby back ribs, food service demand reveals stronger demand for consumers sharing they regularly consume animal products, are Male, or have children at home. Individuals with prior day meals including pork hold stronger baby back ribs demand.

Protein Values Trends

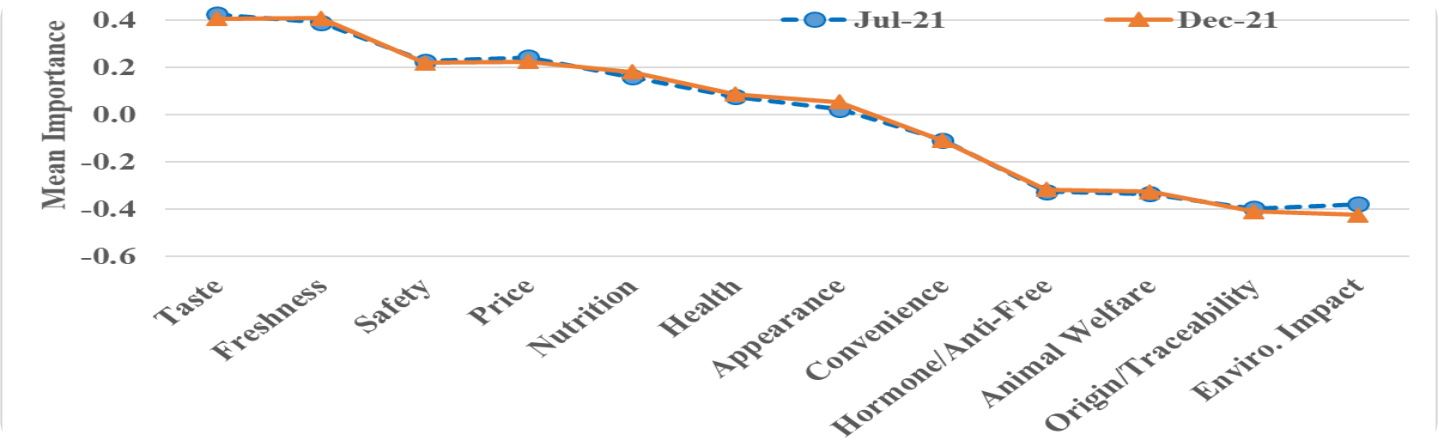
Given a list of 12 protein values, respondents are asked to indicate the four "most important" and four "least important" in importance when purchasing protein items.[5] Relative importance is conveyed by calculating the proportion of times a protein value was selected as "most important" minus the times selected "least important." A higher, positive number implies greater importance in making protein purchasing decisions.

The following table reports average importance scores for each month. Taste, Freshness, Safety, and Price remain top protein values. Hormone/Antibiotic-Free, Animal Welfare, Origin/Traceability, and Environmental Impact regularly rank lower. Beyond ordinal information, these scale values convey relative magnitude insights. For instance, in December, for the average respondent, Safety is 4.05 times as important as Appearance (0.22/0.05 = 4.05).

It is also worth noting that these relative importance patterns are consistent with those found over the 2013-2018 period in the Food Demand Survey (FooDS) project.[6] While framed generally to the broader food category, monthly FooDS reports regularly found Taste, Safety, and Price to be among the most important values for consumers; a finding consistent here since the Meat Demand Monitor project was launched in Feb. 2020.

PROTEIN VALUES	Taste	Freshness	Safety	Price	Nutrition	Health	Appear-ance	Conve-nience	Hormone/ Anti-Free	Animal Welfare	Origin/ Traceability	Enviro. Impact
Jul-21	0.42	0.39	0.23	0.24	0.16	0.08	0.02	-0.11	-0.33	-0.33	-0.40	-0.38
Aug-21	0.41	0.43	0.21	0.20	0.16	0.10	0.07	-0.12	-0.31	-0.32	-0.43	-0.40
Sep-21	0.43	0.39	0.24	0.21	0.19	0.09	0.03	-0.10	-0.30	-0.33	-0.42	-0.43
Oct-21	0.40	0.41	0.22	0.27	0.17	0.13	0.04	-0.11	-0.30	-0.35	-0.43	-0.44
Nov-21	0.38	0.42	0.22	0.21	0.19	0.11	0.04	-0.11	-0.31	-0.33	-0.42	-0.40
Dec-21	0.41	0.41	0.22	0.22	0.18	0.09	0.05	-0.11	-0.32	-0.32	-0.41	-0.42

The relative importance of these protein values has been rather steady. The following figure compares January and June values.

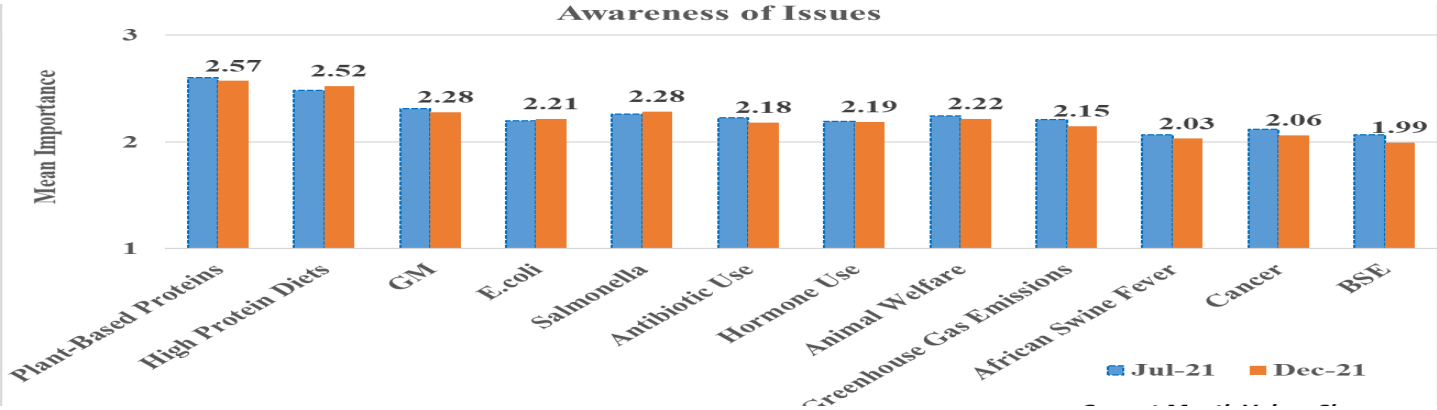


Issue Awareness Trends

A list of 16 topics is presented to respondents who indicate on a 5-point scale (1-Nothing, 2-A Little, 3-A Moderate Amount, 4-Quite a Bit, 5-A Great Deal) how much they have heard or read on each in the past two weeks. The following table reports mean scores for each month. Plant-based Proteins, High Protein Diets, Genetically Modified (GM) foods, E.coli in meat, and Salmonella in meat regularly are the topics most heard or read about.

Issue Awareness	Plant-Based Proteins	High Protein Diets	GM	E.coli	Salmonella	Antibiotic Use	Hormone Use	Animal Welfare	Greenhouse Gas Emissions	Cancer	BSE	Bird Flu	Cloned Animals	Battery Cages	Gestation Stalls	African Swine Fever
Jul-21	2.60	2.48	2.31	2.20	2.26	2.23	2.19	2.24	2.21	2.12	2.07	2.07	1.98	1.92	1.89	2.07
Aug-21	2.60	2.50	2.27	2.20	2.29	2.19	2.20	2.22	2.16	2.06	2.04	2.00	1.88	1.81	1.80	2.02
Sep-21	2.59	2.45	2.27	2.22	2.28	2.20	2.16	2.23	2.16	2.10	2.03	2.04	1.93	1.86	1.83	2.06
Oct-21	2.61	2.58	2.37	2.28	2.34	2.22	2.24	2.27	2.21	2.12	2.07	2.04	1.95	1.87	1.86	2.10
Nov-21	2.62	2.50	2.32	2.23	2.30	2.18	2.21	2.21	2.17	2.02	2.00	1.97	1.85	1.72	1.73	2.00
Dec-21	2.57	2.52	2.28	2.21	2.28	2.18	2.19	2.22	2.15	2.06	1.99	1.98	1.88	1.78	1.76	2.03

As shown in the following figure, comparing December with July 2021, most awareness scores have been steady.

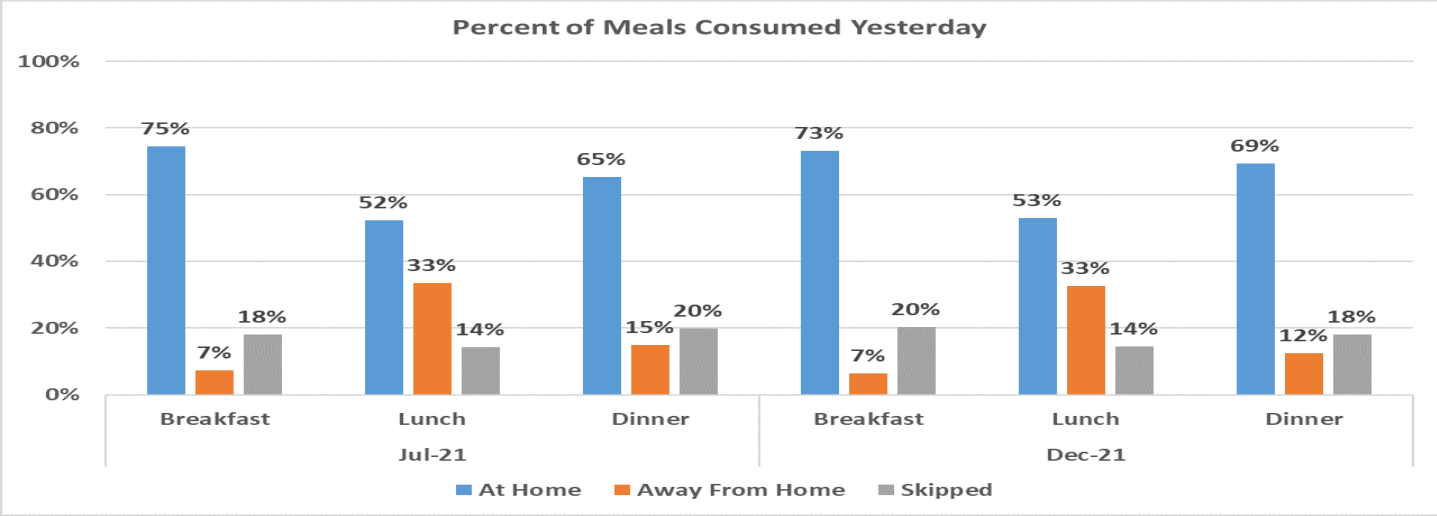


Prior Day Meal Location Trends

The prevalence of at home, away from home, and skipping each of yesterday's three main meals is captured for each respondent. The following table reports mean scores for each month. The increase from November to December in at-home prevalance is worth watching as the latest COVID developments continue into 2022.

Meal Location	Breakfast	Lunch	Dinner	Breakfast	Lunch	Dinner	Breakfast	Lunch	Dinner
		At Home			*Away From Home*			*Skipped*	
Jul-21	75%	52%	65%	7%	33%	15%	18%	14%	20%
Aug-21	75%	54%	65%	7%	31%	18%	19%	14%	18%
Sep-21	75%	52%	66%	7%	35%	15%	18%	13%	18%
Oct-21	74%	51%	67%	7%	34%	15%	19%	15%	18%
Nov-21	73%	51%	69%	6%	33%	15%	21%	16%	17%
Dec-21	73%	53%	69%	7%	33%	12%	20%	14%	18%

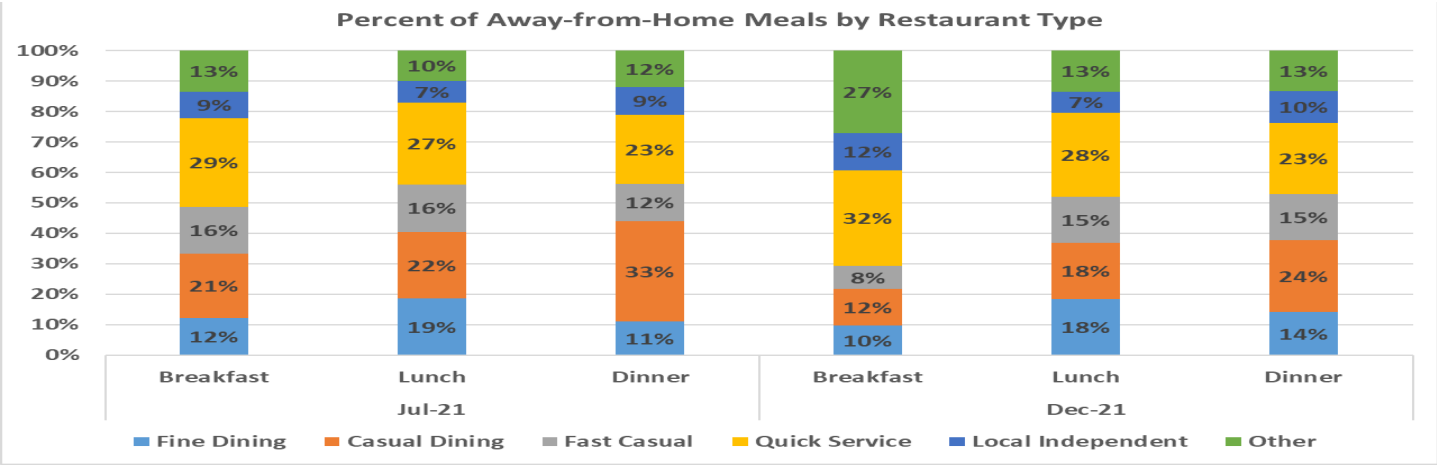
The following figure compares July and December values.



If respondents indicating consuming a meal away from home yesterday, they received a follow-up question to identify the type of restaurant from these six options: Fine Dining Restaurant (such as Ruth's Chris Steak House, The Capital Grille, Morton's Steakhouse, etc.), Casual Dining Restaurant (such as Applebee's, Olive Garden, Outback, etc.), Fast Casual Restaurant (such as Panera, Chipotle, Panda Express, etc.), Quick Service Restaurant (such as McDonald's, Subway, Chick-fil-A, etc.), Local Independent Restaurant (non-chain), and Other. The following table reports the share of visits for each restaurant type, by meal for each month.

Restaurant Type	Fine Dining	Casual Dining	Fast Casual	Quick Service	Local Independent	Other
			Breakfast			
Jul-21	12%	21%	16%	29%	9%	13%
Aug-21	6%	20%	13%	36%	10%	15%
Sep-21	12%	18%	11%	26%	16%	18%
Oct-21	12%	18%	12%	34%	6%	19%
Nov-21	5%	14%	15%	39%	7%	20%
Dec-21	10%	12%	8%	32%	12%	27%
			Lunch			
Jul-21	19%	22%	16%	27%	7%	10%
Aug-21	19%	19%	15%	29%	8%	9%
Sep-21	15%	23%	14%	30%	8%	10%
Oct-21	16%	21%	18%	28%	7%	10%
Nov-21	15%	20%	15%	32%	8%	11%
Dec-21	18%	18%	15%	28%	7%	13%
			Dinner			
Jul-21	11%	33%	12%	23%	9%	12%
Aug-21	13%	29%	12%	20%	13%	14%
Sep-21	9%	29%	15%	23%	15%	9%
Oct-21	13%	30%	15%	25%	12%	4%
Nov-21	12%	29%	15%	23%	9%	12%
Dec-21	14%	24%	15%	23%	10%	13%

To interpret properly and fully, note the December breakfast meal estimate of 32% for Quick Service Restaurant. Combined with the earlier estimate that 7% of breakfast meals were consumed away-from-home implies that over all breakfast meals in December, 2.2% (0.32*0.07) occurred at a Quick Service Restaurant.



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If respondents indicate consuming a meal at home yesterday, they received a follow-up question to identify the source where the protein was purchased.[7] The 11 options presented are: Grocery Store (such as Kroger, Safeway, etc.), Ordered Online & Picked Up from Local Grocery Store, Ordered Online from Local Grocery Store and Delivered to Your Home, Mass Merchandiser (such as Wal-Mart, Target, etc.), Club Store (such as Costco, Sam's Club, etc.), Order Online from Online Service (such as Amazon, Peapod, Fresh Direct, etc.), Farmer's Market, Butcher Shop or Meat Market, Natural Foods Store (such as Whole Foods, Sprouts, etc.), Meal Kits (such as Blue Apron, Hello Fresh, etc.) , and Other. The following table reports the share for each source, by meal for each month. The subsequent figure compares July and December values.

The Grocery Store group (considering in-store, online, and deliver modes collectively) remained the leading source of protein for at-home meals. The Ordered Online from Local Grocery Store group's share generally declined since July. While widely discussed in the general media, the combined sourcing of protein from Farmer's Markets, Butcher Shops or Meat Markets, and Natural Foods Stores remains small at 6% or less in each month.

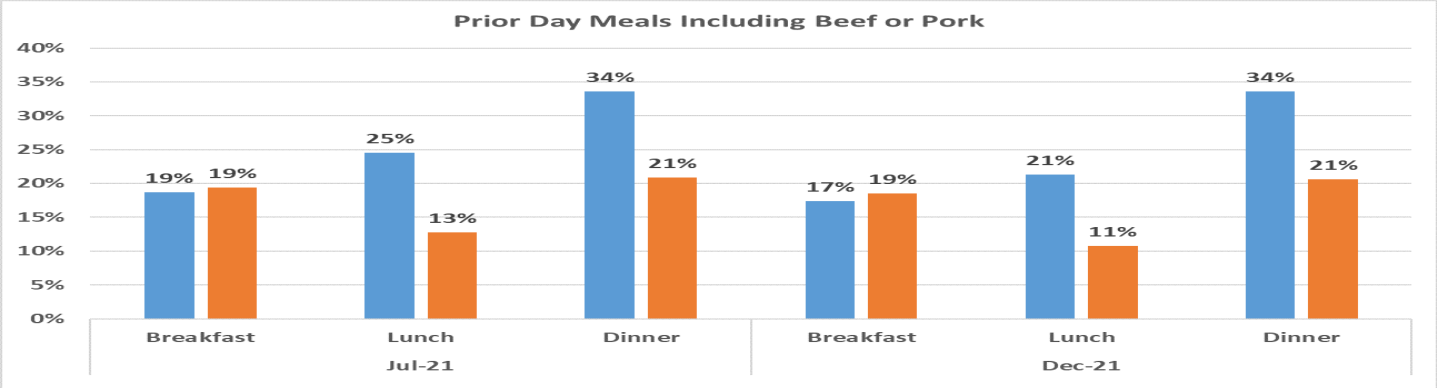
Protein Source, At-Home Meal	Grocery Store (such as Kroger, Safeway, etc.)	Ordered Online & Picked Up from Local Grocery Store	Ordered Online from Local Grocery Store and Delivered	Mass Merchandiser (such as Wal-Mart, Target, etc.)	Club Store (such as Costco, Sam's Club, etc.)	Order Online from Online Service (such as Amazon, Peapod, Fresh Direct, etc.)	Farmer's Market	Butcher Shop or Meat Market	Natural Foods Store (such as Whole Foods, Sprouts, etc.)	Meal Kits (such as Blue Apron, Hello Fresh, etc.)	Other
Breakfast											
Jul-21	50%	6%	5%	20%	5%	5%	1%	1%	4%	0%	2%
Aug-21	50%	6%	6%	21%	6%	4%	1%	1%	2%	0%	2%
Sep-21	48%	6%	5%	25%	5%	5%	1%	1%	2%	0%	2%
Oct-21	52%	5%	5%	22%	6%	5%	1%	0%	3%	0%	1%
Nov-21	55%	5%	5%	20%	5%	2%	1%	2%	2%	0%	3%
Dec-21	57%	6%	4%	18%	6%	3%	1%	1%	3%	0%	1%
Lunch											
Jul-21	55%	4%	2%	22%	5%	2%	1%	0%	2%	1%	5%
Aug-21	54%	4%	4%	20%	7%	3%	1%	0%	2%	0%	5%
Sep-21	54%	4%	3%	22%	5%	2%	1%	1%	3%	0%	5%
Oct-21	58%	5%	3%	19%	6%	2%	1%	1%	2%	0%	4%
Nov-21	60%	2%	3%	17%	6%	1%	1%	1%	1%	1%	7%
Dec-21	54%	3%	4%	21%	6%	2%	1%	1%	2%	0%	5%
Dinner											
Jul-21	55%	4%	3%	20%	5%	2%	1%	2%	2%	0%	5%
Aug-21	56%	3%	3%	18%	5%	2%	1%	2%	2%	0%	7%
Sep-21	54%	3%	4%	21%	7%	2%	1%	1%	2%	0%	5%
Oct-21	58%	2%	3%	18%	5%	3%	0%	1%	2%	0%	5%
Nov-21	60%	3%	3%	16%	6%	2%	1%	1%	2%	1%	5%
Dec-21	57%	3%	2%	19%	5%	1%	1%	2%	2%	1%	7%

Protein Consumption Frequency Trends

The rate beef and pork are included in prior day meals, separately for breakfast, lunch, and dinner, is captured for each respondent. The following table reports mean prevalence for each month. Both beef and pork remain steady as common center-of-plate items in each meal.

Beef & Pork Inclusion	Breakfast	Lunch	Dinner	Breakfast	Lunch	Dinner
		Beef			*Pork*	
Jul-21	19%	25%	34%	19%	13%	21%
Aug-21	17%	22%	32%	19%	12%	20%
Sep-21	17%	24%	34%	20%	13%	20%
Oct-21	17%	23%	33%	19%	12%	19%
Nov-21	17%	23%	33%	21%	11%	20%
Dec-21	17%	21%	34%	19%	11%	21%

The following figure compares July and December values.

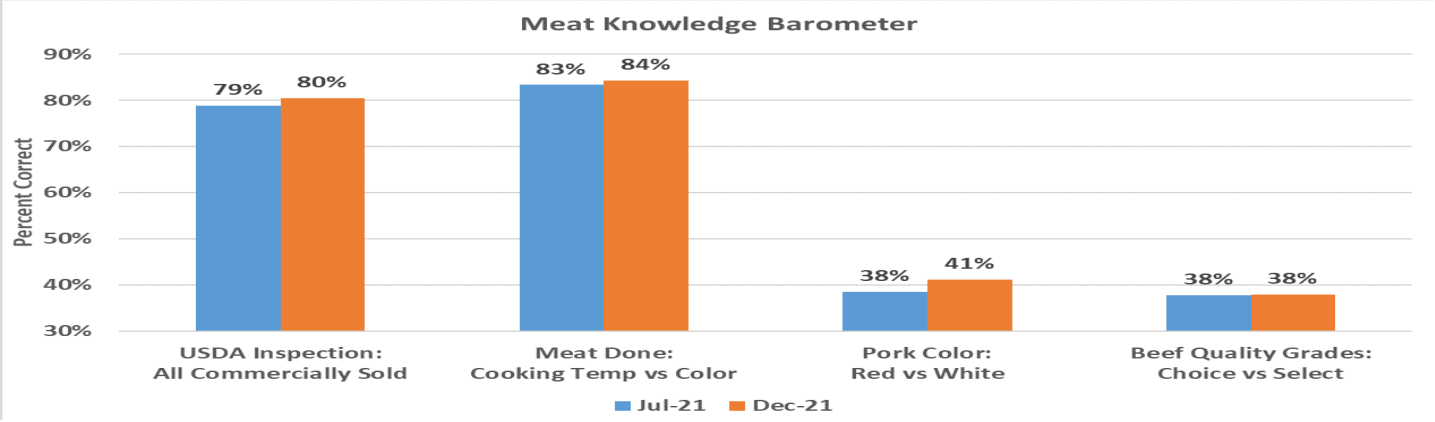


Meat Knowledge Trends

Four measures of meat knowledge are included in each month's survey. The following table reports mean prevalence of correct responses to these True/False questions. No clear trend is apparent currently regarding these four assessments of consumer meat knowledge.

Meat Knowledge	USDA Inspection: All Commercially Sold	Meat Done: Cooking Temp vs. Color	Pork Color: Red vs. White	Beef Quality Grades: Choice vs. Select
Jul-21	79%	83%	38%	38%
Aug-21	79%	82%	41%	38%
Sep-21	80%	84%	42%	37%
Oct-21	82%	83%	41%	39%
Nov-21	78%	84%	41%	38%
Dec-21	80%	84%	41%	38%

The following figure compares July and December values.

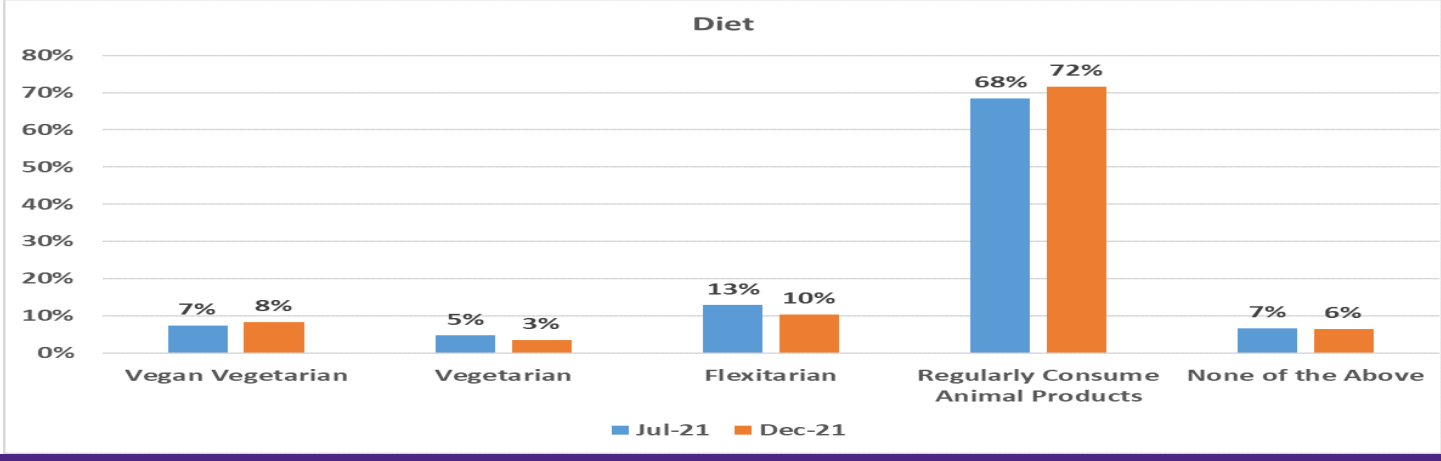


Personal Diet Trends

Each respondent answers a multiple-choice question allowing self-identification of personal diets. Presented options are Vegan Vegetarian (do not eat meat, fish, dairy, eggs, honey or any food derived from animals), Vegetarian (do not eat meat or fish, but do eat dairy and eggs), Flexitarian/Semi-Vegetarian (mostly follow a vegetarian diet, but occasionally eat meat or fish), Regularly consume meat, fish/seafood, or products derived from animals, and None of the above. The following table reports mean prevalence of each diet.

Diet	*Vegan Vegetarian*	*Vegetarian*	*Flexitarian*	*Regularly Consume Animal Products*	*None of the Above*
Jul-21	7%	5%	13%	68%	7%
Aug-21	7%	5%	12%	69%	8%
Sep-21	7%	4%	12%	71%	7%
Oct-21	7%	3%	11%	72%	6%
Nov-21	6%	3%	11%	75%	5%
Dec-21	8%	3%	10%	72%	6%

The following figure compares July and December values.



Ad Hoc Questioning Insights

Each month, a unique set of ad hoc questions is included. The specific wording of each ad hoc question is available in the full survey instruments posted online.

Below is a list by month of these questions with response frequencies included in parentheses.[8] Given the multitude of questions here, readers are encouraged to draw top-line conclusions from base frequencies that are reported. At times, questions are intentionally repeated from prior months and in other instances questions are only asked in one month.

July

Have you, or someone in your family obtained the coronavirus?

Yes (23.52%)

No (76.48%)

How would you describe the amount of meat your household currently has on-hand at home (e.g. in refrigerator or freezer)?

More meat on-hand than normal (20.05%)

Same amount as normal (67.57%)

Less meat on-hand than normal (12.38%)

Thinking of the last time you were buying food for at-home consumption, which of the following best describes the set of meat options available?

The volume and type of meat options available seemed normal and consistent with the past (78.48%)

The volume and type of meat options available did not seem normal and consistent with the past(21.52%)

Those selecting "did not seem normal" received a corresponding follow-up question: Please indicate which of the following would describe your observation (check all that apply):

- Lower overall volume of beef available (13.74%)
- Lower overall volume of pork available (7.89%)
- Lower overall volume of chicken available (9.94%)
- Different variety of beef cuts/products available (6.15%)
- Different variety of pork cuts/products available (2.28%)
- Different variety of chicken cuts/products available (2.13%)
- Other (1.09%)

August

Have you, or someone in your family obtained the coronavirus?

Yes (26.25%)

No (73.75%)

How would you describe the amount of meat your household currently has on-hand at home (e.g. in refrigerator or freezer)?

More meat on-hand than normal (20.34%)

Same amount as normal (65.79%)

Less meat on-hand than normal (13.87%)

Thinking of the last time you were buying food for at-home consumption, which of the following best describes the set of meat options available?

The volume and type of meat options available seemed normal and consistent with the past (74.23%)

The volume and type of meat options available did not seem normal and consistent with the past(25.77%)

Those selecting "did not seem normal" received a corresponding follow-up question: Please indicate which of the following would describe your observation (check all that apply):

- Lower overall volume of beef available (16.71%)
- Lower overall volume of pork available (10.64%)
- Lower overall volume of chicken available (11.70%)
- Different variety of beef cuts/products available (7.26%)
- Different variety of pork cuts/products available (2.25%)
- Different variety of chicken cuts/products available (2.59%)
- Other (1.39%)

September

Have you, or someone in your family obtained the coronavirus?

Yes (28.23%)

No (71.77%)

How would you describe the amount of meat your household currently has on-hand at home (e.g. in refrigerator or freezer)?

More meat on-hand than normal (19.53%)

Same amount as normal (66.21%)

Less meat on-hand than normal (14.27%)

Thinking of the last time you were buying food for at-home consumption, which of the following best describes the set of meat options available?

The volume and type of meat options available seemed normal and consistent with the past (70.11%)

The volume and type of meat options available did not seem normal and consistent with the past(29.89%)

Those selecting "did not seem normal" received a corresponding follow-up question: Please indicate which of the following would describe your observation (check all that apply):

- o Lower overall volume of beef available (19.59%)
- o Lower overall volume of pork available (13.78%)
- o Lower overall volume of chicken available (13.71%)
- o Different variety of beef cuts/products available (7.74%)
- o Different variety of pork cuts/products available (3.15%)
- o Different variety of chicken cuts/products available (3.28%)
- o Other (1.32%)

October

Have you, or someone in your family obtained the coronavirus?

Yes (31.67%)

No (68.33%)

How would you describe the amount of meat your household currently has on-hand at home (e.g. in refrigerator or freezer)?

More meat on-hand than normal (22.52%)

Same amount as normal (63.56%)

Less meat on-hand than normal (13.92%)

Thinking of the last time you were buying food for at-home consumption, which of the following best describes the set of meat options available?

The volume and type of meat options available seemed normal and consistent with the past (69.73%)

The volume and type of meat options available did not seem normal and consistent with the past(30.27%)

Those selecting "did not seem normal" received a corresponding follow-up question: Please indicate which of the following would describe your observation (check all that apply):

- o Lower overall volume of beef available (20.20%)
- o Lower overall volume of pork available (12.73%)
- o Lower overall volume of chicken available (14.93%)
- o Different variety of beef cuts/products available (7.95%)
- o Different variety of pork cuts/products available (3.09%)
- o Different variety of chicken cuts/products available (3.06%)
- o Other (1.69%)

November

Have you, or someone in your family obtained the coronavirus?

Yes (34.64%)

No (63.36%)

How would you describe the amount of meat your household currently has on-hand at home (e.g. in refrigerator or freezer)?

More meat on-hand than normal (21.55%)

Same amount as normal (61.98%)

Less meat on-hand than normal (16.46%)

Thinking of the last time you were buying food for at-home consumption, which of the following best describes the set of meat options available?

The volume and type of meat options available seemed normal and consistent with the past (66.77%)

The volume and type of meat options available did not seem normal and consistent with the past(33.23%)

Those selecting "did not seem normal" received a corresponding follow-up question: Please indicate which of the following would describe your observation (check all that apply):

- Lower overall volume of beef available (22.51%)
- Lower overall volume of pork available (14.89%)
- Lower overall volume of chicken available (16.65%)
- Different variety of beef cuts/products available (8.42%)
- Different variety of pork cuts/products available (3.02%)
- Different variety of chicken cuts/products available (4.03%)
- Other (1.49%)

December

Have you, or someone in your family obtained the coronavirus?

Yes (33.25%)

No (66.75%)

How would you describe the amount of meat your household currently has on-hand at home (e.g. in refrigerator or freezer)?

More meat on-hand than normal (19.72%)

Same amount as normal (63.74%)

Less meat on-hand than normal (16.55%)

Thinking of the last time you were buying food for at-home consumption, which of the following best describes the set of meat options available?

The volume and type of meat options available seemed normal and consistent with the past (67.09%)

The volume and type of meat options available did not seem normal and consistent with the past(32.91%)

Those selecting "did not seem normal" received a corresponding follow-up question: Please indicate which of the following would describe your observation (check all that apply):

- o Lower overall volume of beef available (22.75%)
- o Lower overall volume of pork available (15.15%)
- o Lower overall volume of chicken available (14.62%)
- o Different variety of beef cuts/products available (10.43%)
- o Different variety of pork cuts/products available (3.83%)
- o Different variety of chicken cuts/products available (3.78%)
- o Other (1.82%)

Endnotes

1) MDM project details including survey instruments and individual monthly reports are available here: https://www.agmanager.info/livestock-meat/meat-demand/monthly-meat-demand-monitor-survey-data

2) Meat demand determinants modeling results are summarized here to immediately follow from the previously presented information on choice experiment based mean willingness-to-pay and respondent selection frequency. Regression results should be interpreted relative to omitted, base case characteristics. For instance, the impact of age is interpreted relative to the base group which is respondents over 55 years of age. Protein values (PV) are effects coded (+1 if selected to be in the most important group, -1 if in the least important group, and 0 if not selected implying moderate importance) with Price being omitted.

3) The 12 Protein Values examined each month are summarized in the next section of this report.

4) The impact of Price importance is implied by the negative sum of parameter estimates on the other 11 Protein Values.

5) Note also that in a December 2019 pre-launch, trial run of the Meat Demand Monitor base survey instrument, one-half or respondents were asked to reveal "protein" values as shown here and the other one-half were presented "meat" values. The cardinal and ordinal conclusions were the same, supporting use of "protein" as utilized since full project launch in February 2020.

6) Additional details on the now concluded FooDS project are available here: http://www.agecon.okstate.edu/agecon_research.asp

7) This follow-up is omitted for respondents indicating "Other or No Protein" was consumed.

8) Note presented frequencies reflect respondent weights derived over the entire study period. Accordingly, small differences may appear from values reported in individual, base month reports where respondent weights for a given month are used.

Additional MDM Project details including survey questions, past report releases, and a description of methods are available online at: https://www.agmanager.info/livestock-meat/meat-demand/monthly-meat-demand-monitor-survey-data

The MDM Project is funded in-part by the beef checkoff and the pork checkoff.