**Appendices**

**Table A1**

*General Findings About Each Label Included in the Study*

|  |  |  |
| --- | --- | --- |
| Seal or Claim | General Findings | Source |
| American Grassfed | The benefits of this seal include that cattle graze on pasture, allowing them to eat only grass their entire life, and animals are not treated with antibiotics or growth hormones. There are strict criteria for obtaining this seal. The nonprofit American Grassfed Association oversees the seal. Farms are inspected every 15 months to ensure that cattle are fed only grass (no grain) and that the animals are not given any antibiotics or growth-promoting hormones. | Consumer Reports [CR], 2019d |
| Animal Welfare Approved | The benefits of this seal include animals being raised on a pasture, small cages and close confinement are prohibited, all animals are allowed to engage in their natural behaviors, and painful procedures are prohibited. There are strict criteria for obtaining this seal from A Greener World (AGW), the nonprofit organization that oversees this seal. The AGW has specific animal welfare guidelines for beef cattle, dairy cows, poultry raised for meat, laying hens, and pigs. Farms and slaughterhouses are inspected annually to ensure all standards are being met, including animals are always treated humanely, animals are allowed to engage in their natural behaviors, growth-promoting drugs are not used, and antibiotics cannot be used to prevent diseases. | Consumer Reports [CR], 2019f |
| Non-GMO Project Verified | The benefits of this seal include that the food must contain no or less than 0.9% genetically modified organisms (GMOs), and the product must be verified using independent certification companies. There are strict criteria for obtaining this seal from the Non-GMO Project. The strict verification system consists of the food product being tested frequently for genetically modified organisms. Products containing this seal cannot be made with ingredients made from crops grown with genetically engineered seed or genetically engineered animals. The inspection process includes onsite inspections, paperwork reviews, and regular testing of ingredients. | Consumer Reports [CR], 2019h |
| USDA Organic | The benefits of this seal include that the standards are backed by federal law, annual on-farm inspections, minimal pesticide use, animals are raised without antibiotics or added hormones, and no genetically modified organisms. The only limitation of this seal is that it has weak animal welfare requirements. The USDA Organic seal has strict criteria for obtaining the seal. Products with the Organic claim or the USDA Organic seal must meet the USDA standards for crops, how animals are raised, how the food is processed, and the ingredients that can be used in the product. The criteria for obtaining this seal include minimal standards for animal welfare because the animals must be provided living conditions that allow them to perform their natural behaviors. Farms or facilities are inspected annually by USDA approved certifying agencies to obtain this seal. | Consumer Reports [CR], 2019j; Fortin, 2016 |
| Certified Humane Raised and Handled | There are many benefits to this seal, including animal abuse is prohibited, animals are provided comfortable living conditions, animals must be allowed to move freely, employees are trained in animal welfare practices, and inspectors with knowledge about animal welfare conduct annual inspections. The nonprofit organization, Humane Farm Animal Care, oversees this seal. To obtain this seal, companies must ensure that animals are allowed to move and engage in natural behaviors, all farmworkers must be trained in humane animal care, antibiotics can be used to treat illness, and growth-promoting drugs are prohibited. There are some limitations to this seal, including that beef and dairy cows are not required to have access to a pasture, and outdoor access is not mandatory for all animals. | Consumer Reports [CR], 2019g |
| American Humane Certified | The benefits of this seal include strict policies prohibiting animal abuse, animals' basic physical needs must be met, employees trained in animal welfare, and annual inspections are used to ensure standards are met. The American Humane Association sets the standards and oversees this seal. The main criteria for the seal include meeting the animals' basic needs, humane treatment on the farm, and humane treatment during transport or slaughter. It is important to note that a farm can be certified if it adheres to "85% of the criteria at the time of inspection" (para. 3). The downfall is that consumers do not know which criteria were met and which were not. Another limitation of this seal is that providing comfortable living conditions is limited and is not applied to every animal. The farms and slaughterhouses are inspected annually by independent certifying agencies with trained inspectors. However, not every requirement has to be met for the farm to pass inspection. | Consumer Reports [CR], 2019e |
| One Health Certified | This seal was developed by meat and poultry industry experts and is only used on chicken and turkey products. The label is meant to demonstrate the “company’s commitment to animal welfare, environmental issues, and responsible antibiotic use" but there are no strict animal welfare requirements or any limitations on antibiotics or air and water pollution (para. 3). The standards for the seal "largely reflect the industry norm of raising animals in crowded indoor conditions" (para. 3). The paperwork is audited annually, facility visits are announced, and not every facility housing animals are inspected. | Consumer Reports [CR], 2019i |
| Certified B Corporation | The B Corporation certification includes many social and environmental attributes, including community service, fair trade, human rights, carbon/GHG emissions, energy production, recycling, and water quality, to name a few. The B Corporation certification is awarded by completing the B Impact Assessment (BIA). The BIA evaluates a company's interaction with "workers, customers, community, and environment" (B Corporation, 2021, Complete the Assessment section). The B Lab staff verifies the score from the BIA to ensure the company meets the 80-point bar for certification. To maintain certification, the BIA must be updated and verified every three years (B Corporation, 2021). The certification process is conducted through its own organization, which is considered a second-party verification. | Ecolabel Index, 2021a; B Corporation, 2021 |
| Food Alliance Certified | Food Alliance Certification ensures safe and fair working conditions, humane treatment of animals, and careful stewardship of natural resources. The certification is independently verified and is considered a third-party verification. This voluntary certification that "food-based businesses can use to differentiate and add value to products" (Food Alliance 2016a, sec. Is Food Alliance a policy organization). The application process includes the initial application, site inspection, inspection report, certification decision, and maintaining certification. The certification for farmers and ranchers can be used for three years. Food Alliance can conduct unscheduled audits, and farmers and ranchers complete annual updates to maintain certification. | Food Alliance, 2016a; Ecolabel Index, 2021 |
| All Natural or Natural | This marketing term lacks a definition in food law. There are no benefits to the All Natural or Natural claim because it has no clear meaning on most foods. To obtain the claim on meat and poultry, the USDA only requires a “one-time review of an application by the producer but does not require any additional verification” (Verification section). For all other foods, the claim can be used and is not verified by any government agency. | Fortin, 2016; Consumer Reports [CR], 2019a |
| No Antibiotics | The only benefit of using this claim is to hopefully reduce antibiotic use in animals, which will benefit public health. However, as a stand-alone claim on a food label, *no antibiotics*, *raised without antibiotics*, and *no antibiotics ever* does not have a "consistent meaning across different foods," and the "verification requirements are weak" (para. 3). For meat and poultry, the USDA requires that companies "submit a copy of their label for approval," and the application is reviewed one time "based on the supporting documentation provided by the producer, without independently verifying or inspecting any farms or facilities" (Verification section). The FDA oversees dairy products and egg cartons. Suppose a dairy product or egg carton contains the "no antibiotics" claim. It does not mean that the animals were not given antibiotics because the claim does not have to be verified before going on the market. | Consumer Reports [CR], 2019b |
| Non-GMO | This claim has no benefits because it does not "have any consistent standards or rules" (para. 2). Testing is not required to verify the claim, and third-party verification is only required for meat, poultry, and egg products. For products made with vegetables, fruits, grains, or other plant foods, the FDA has issued guidance for food manufacturers that states, "food or ingredients derived from plants in products bearing a Non-GMO claim should not be produced through the use of genetic engineering" (Non-GMO Plant Foods section). However, while the guidance is meant to explain the FDA's view on the topic, "companies are not legally bound to follow any recommendations in the guidance" (Non-GMO Plant Foods section). The USDA requires that meat, poultry, and egg product producers submit a copy of their label for approval if it includes a Non-GMO claim. However, the application is only approved once "based only on the supporting documentation provided by the producer" and "no such verification is required for other types of foods" (Verification section). | Consumer Reports [CR], 2019c |

*Note.* These 12 seals and claims were included in the study. These general findings explain the criteria for obtaining the seal or claim, the verification procedures, and what the claim or seal represents.

**Table A2**

*Food Labels and Food Values Comparison*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Food Label & Definition** | **Food Value (or Attribute)** | | | | |
| **Naturalness** | **Safety** | **Environmental impact** | **Animal welfare** | **Fairness** |
| **American Grassfed:**  The logo determines that animals were fed a lifetime diet of 100% forage; were raised on pasture, not in confinement; and were never treated with hormones or antibiotics. | X |  |  |  |  |
| **Non-GMO project verified:**  The non-GMO seal means that a product has been produced according to rigorous best practices for GMO avoidance, including testing of risk ingredients. | X |  |  |  |  |
| **USDA Organic:**  USDA Organic food is produced without using most conventional pesticides; fertilizers made with synthetic ingredients or sewage sludge; bioengineering; antibiotics; growth hormones; or ionizing radiation. | X | X | X |  |  |
| **One Health Certified:**  One Health Certified is a systems-based, industry-developed animal care program that enables farmers and producers to prioritize animal health and welfare while working toward safe, responsible and transparent animal care. |  |  | X |  |  |
| **Certified B Corporation:**  B Corporations are a new type of corporation which uses the power of business to solve social and environmental problems. |  |  | X |  | X |
| **Food Alliance Certified:**  Food Alliance Certification ensures safe and fair working conditions, humane treatment of animals, and careful stewardship of natural resources. |  |  | X | X | X |
| **Animal Welfare Approved:**  Animal Welfare Approved (AWA) is a standard for farm animal welfare - the basic premise is that animals must be able to behave naturally and be in a state of physical and psychological well-being. |  |  |  | X |  |
| **Certified Humane Raised and Handled:**  Designed to certify that animals raised for dairy, lamb, poultry, and beef products are treated humanely. |  |  |  | X |  |
| **American Humane Certified:**  The main criteria for the seal include meeting the animals' basic needs, humane treatment on the farm, and humane treatment during transport or slaughter. |  |  |  | X |  |

**Table A3**

*Each Label Image, Description, and Verification Statement Used in the Questionnaire*

|  |  |  |
| --- | --- | --- |
| Label Image | Description | Verification |
| American Grassfed logo | The logo determines that animals were fed a lifetime diet of 100% forage; were raised on pasture, not in confinement; and were never treated with hormones or antibiotics. | An independent organization (third party) |
| Animal Welfare Approved logo | Animal Welfare Approved (AWA) is a standard for farm animal welfare - the basic premise is that animals must be able to behave naturally and be in a state of physical and psychological well-being. | An independent organization (third party) |
| B Corporation logo | B Corporations are a new type of corporation which uses the power of business to solve social and environmental problems. | Own organization (second party) |
| Food Alliance Certified logo | Food Alliance Certification ensures safe and fair working conditions, humane treatment of animals, and careful stewardship of natural resources. | Independent organization (third party) |
| Non-GMO logo | The non-GMO seal means that a product has been produced according to rigorous best practices for GMO avoidance, including testing of risk ingredients. | An independent organization (third party) |
| USDA Organic logo | USDA Organic food is produced without using most conventional pesticides; fertilizers made with synthetic ingredients or sewage sludge; bioengineering; antibiotics; growth hormones; or ionizing radiation. | Independent organization (third party) |
| Certified Humane Raised & Handled | Designed to certify that animals raised for dairy, lamb, poultry, and beef products are treated humanely. | It is verified by its own organization (second party). |
| American Humane Certified | The main criteria for the seal include meeting the animals' basic needs, humane treatment on the farm, and humane treatment during transport or slaughter. | They are inspected annually by independent certifying agencies. Only 85% of the criteria must be met to be certified. |
| One Health Certified | One Health Certified is a systems-based, industry-developed animal care program that enables farmers and producers to prioritize animal health and welfare while working toward safe, responsible and transparent animal care. | Paperwork is audited annually by an independent third party. |
| Slide 1  No Antibiotics | The claims *no antibiotics*, *raised without antibiotics*, and *no antibiotics ever* do not have consistent meanings across foods. | Not verified |
| Slide 1Non-GMO | This claim has no benefits because it does not have consistent standards or rules. | Not verified |
| A picture containing text, athletic game, sport  Description automatically generated  All Natural or Natural | This claim has no clear meaning on most foods. | Meat, poultry, and eggs are reviewed once by the USDA. Other foods – natural has no clear meaning and is not verified. |

*Note.* All label images, descriptions, and verification information were retrieved from Consumer Reports (2019) and Ecolabel Index (2022). The control group only saw the label image during the label choice sets. Treatment 1 saw the label image and description during the label choice sets. Treatment 2 saw the label image, description, and verification statement during the label choice sets.

**Table A4**

*Food Labels Selected as Most Important and Least Important by Group*

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Food Label** | **Most Important** | | | | **Least Important** | | | |
| **Full Sample** | Control | T1 | T2 | **Full Sample** | Control | T1 | T2 |
| American Grassfed | 9.420% | 6.219% | 11.944% | 10.170% | 8.247% | 10.888% | 6.549% | 7.208% |
| American Humane Certified | 7.628% | 7.265% | 8.522% | 7.048% | 6.196% | 6.784% | 5.311% | 6.520% |
| Animal Welfare Approved | 8.132% | 7.538% | 8.459% | 8.425% | 5.368% | 5.758% | 4.807% | 5.556% |
| B-Corporation | 3.620% | 3.518% | 3.967% | 3.352% | 14.616% | 16.729% | 13.560% | 13.453% |
| Certified Humane Raised & Handled | 8.945% | 8.982% | 9.110% | 8.724% | 5.779% | 6.177% | 5.290% | 5.877% |
| Food Alliance Certified | 7.844% | 5.716% | 8.816% | 9.114% | 6.318% | 8.731% | 5.038% | 5.073% |
| Natural | 7.031% | 11.181% | 3.652% | 6.175% | 12.047% | 6.616% | 17.443% | 12.098% |
| No Antibiotics | 8.225% | 11.704% | 6.570% | 6.221% | 8.916% | 6.198% | 9.593% | 11.157% |
| Non-GMO | 4.901% | 6.721% | 3.484% | 4.454% | 13.910% | 10.972% | 15.764% | 15.106% |
| Non-GMO Project | 10.593% | 10.699% | 9.929% | 11.203% | 6.412% | 6.407% | 6.591% | 6.221% |
| One Health Certified | 11.219% | 9.611% | 12.552% | 11.524% | 5.361% | 6.491% | 4.303% | 5.280% |
| USDA Organic | 12.442% | 10.846% | 12.993% | 13.590% | 6.829% | 8.250% | 5.751% | 6.451% |

**Table A5**

*Preference shares for Food Labels by Treatment Group*

|  |  |  |  |
| --- | --- | --- | --- |
| **Food Label** | **Control** | **T1** | **T2** |
| **Seals** |  |  |  |
| Food Alliance | 0.052 | 0.107 | 0.109 |
| Animal Welfare Approved | 0.080 | 0.095 | 0.090 |
| Certified Humane Raised & Handled | 0.101 | 0.099 | 0.093 |
| American Humane Certified | 0.074 | 0.097 | 0.078 |
| American Grassfed | 0.047 | 0.126 | 0.106 |
| Non-GMO Project | 0.111 | 0.094 | 0.121 |
| USDA Organic | 0.112 | 0.146 | 0.154 |
| One Health Certified | 0.096 | 0.143 | 0.121 |
| B Corporation | 0.016 | 0.022 | 0.026 |
| **Claims** |  |  |  |
| No Antibiotics | 0.143 | 0.045 | 0.041 |
| Natural | 0.121 | 0.011 | 0.036 |
| non-GMO | 0.049 | 0.016 | 0.024 |

Table A6

*Preference Shares for Food Labels based on Infrequent vs. Frequent Shopping by Treatment Groups*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Food Label** | **Control** | | **T1** | | **T2** | |
| **Frequent** | **Infrequent** | **Frequent** | **Infrequent** | **Frequent** | **Infrequent** |
| **Seals** |  |  |  |  |  |  |
| Food Alliance | 0.060 | 0.043 | 0.101 | 0.113 | 0.105 | 0.111 |
| Animal Welfare Approved | 0.081 | 0.077 | 0.091 | 0.097 | 0.092 | 0.089 |
| Certified Humane Raised & Handled | 0.095 | 0.103 | 0.095 | 0.102 | 0.088 | 0.099 |
| American Humane Certified | 0.071 | 0.075 | 0.085 | 0.108 | 0.081 | 0.075 |
| American Grassfed | 0.051 | 0.041 | 0.116 | 0.136 | 0.104 | 0.107 |
| Non-GMO Project | 0.116 | 0.108 | 0.095 | 0.094 | 0.115 | 0.132 |
| USDA Organic | 0.122 | 0.098 | 0.162 | 0.132 | 0.160 | 0.151 |
| One Health Certified | 0.087 | 0.099 | 0.150 | 0.140 | 0.116 | 0.127 |
| B Corporation | 0.024 | 0.010 | 0.025 | 0.017 | 0.025 | 0.024 |
| **Claims** |  |  |  |  |  |  |
| No Antibiotics | 0.119 | 0.175 | 0.047 | 0.040 | 0.047 | 0.035 |
| Natural | 0.126 | 0.124 | 0.015 | 0.008 | 0.039 | 0.031 |
| non-GMO | 0.049 | 0.047 | 0.018 | 0.013 | 0.027 | 0.020 |

**Figure A1**

*Food Label Choice Set Example for Control Group Participants*

A picture containing diagram

Description automatically generated