Online sales of meat, poultry, game, and seafood products with home delivery are growing.
Background

Reasons for growth in the sector:

- Ability to purchase items not (easily) available locally
  - Gourmet items
  - Kosher and Halal items
  - Regional specialties
  - Game products
  - Exotics

“the specialty item effect”
Background

Reasons for growth in the sector:

- Popular gifts
Background

Number of US online vendors offer raw meat, poultry, game and seafood products with direct delivery to consumers using FedEx®, UPS®, and even the USPS®.

More than 500
Background

Number of US online vendors offering raw meat, poultry, game and seafood products with direct delivery to consumers using FedEx®, UPS®, and even the USPS®.

More than 500

There are few barriers to entry to the market
Background

Number of Americans who purchased or received perishable meat, poultry, game or seafood from an online purveyor in the last year:

About One-in-Ten
Nature of the Problem

- Marketing and shipping perishable products directly to consumers poses food safety challenges
TSU / RU Collaborative Study

- USDA-funded study that:
  - Examined food safety information on 427 domestic vendor websites of raw meat, poultry, game, and seafood and examined their delivery policies.
  - Measured delivery and food safety parameters of 169 shipments of these items.
  - Examined 684 products from these shipments for the presence of indicator organisms and specific pathogens.
  - Examined the food safety information included with these shipments.
  - Surveyed 1,002 U.S. consumers about their experiences and expectations regarding perishable products ordered online.
  - Provides recommendations for consumers and the industry to improve food safety.
Today’s Session

- Presentation of:
  - Website Analysis
  - Shipping and Delivery
  - Consumer Survey
  - Recommendations
Analysis of Vendor Websites
Websites Examined

- 516 purveyors identified using Google searches
  - Search terms:
    - Online, delivery, meat, poultry, game, fish, shellfish, seafood
    - Specific products, such as: beef, bison, buffalo, chicken, deer, duck, lamb, pork, fish, crab, lobster, etc.
  - Inclusion criteria:
    - US-based
    - Selling one or more uncooked perishable meat, poultry, game, or seafood products directly to consumers
    - Shipping to consumers using a common carrier such as FedEx®, UPS®, or the US Postal Service (USPS®)
    - Currently accepting orders
Websites Examined

Resulting Sampling frame of 427 online vendors

- Exclusion of 89 vendors:
  - 51 did not meet the inclusion criteria
  - 24 either inactive or not working
  - 14 websites (URL) no longer existed

✓ Illustrates the impermanence of vendors
After leaving the custody of the company which packs them, individual parcels containing perishable foods are treated no differently than any other package handled by FedEx®, UPS®, or USPS®.
Concerns

For example, FedEx® warns those shipping perishable goods that

“… Highs can reach 140°F (60°C) in closed, parked carrier vehicles during the summer in southern climates.”

This lack of control over the cold chain gets amplified by the common delivery policy of signature release.
Delivery Policies

Signature required vs. Signature release

Signature release:

Delivery **without** requiring the recipient’s signature
- packages may be left at an exterior door

- Packages may be left outside for long periods, which can result in temperature abuse
Delivery Policies

Of 427 purveyor websites:

- Only 5% specifically require a signature
- 27% of the purveyors explicitly state that their packages are shipped signature release
- 68% provided no information on their websites concerning a signature requirement
- This translates into signature release
Question of Liability

Who is responsible if perishable products arrive spoiled?

FedEx® and UPS®:

- **Disclaim responsibility** if the perishable products become spoiled or damaged during the delivery process
- It is the vendor’s responsibility to ensure that their perishable goods reach their customers safely
Question of Liability

Some vendors (n=33) add specific disclaimers on their websites, such as:

- “Cape Porpoise Lobster Co. is **not responsible** for the misuse, accidental breakage of products or product that is left outside in adverse weather conditions.” (Cape Porpoise Lobster Co.)

- “We **cannot guarantee** the freshness of your order if it sits outside unattended for more than an hour after delivery.” (Cook Bison Ranch)

- “Due to conditions beyond our control, once the package leaves our facility it is the **responsibility of the customer** to take the necessary steps to insure the quality of the product within.” (Sagaya Seafood)

- “If no one is there to receive the order, the driver will leave the order at the door. This signifies acceptance of the order (the same as a signature). **You will be responsible for full payment** of the order.” (Fresh from the Boat)

- “No Refunds.” (Exotic Meats)
Proper Packaging
(example: FedEx®)

“We are not liable for perishable articles unless packaged for a minimum transit time of at least 12 hours greater than our delivery commitment time for the shipment . . . Your failure to use proper packaging releases us from any liability for spoiled perishables that we would otherwise assume.”
Food Safety Information

Categories

Websites were coded regarding guidance on:

- Safe handling
- Storage
- Thawing
- Cooking including safe cooking temperatures
Food Safety Information on Websites

- Only 42% (n = 180) provide some food safety information:
  - 72% suggest best methods for cooking their products.
  - 58% give guidance regarding product storage.
  - 54% provide instructions regarding how to handle their products.
  - 38% give thawing advice.
  - 22% indicate safe internal cooking temperatures.
Food Safety Information on Websites

**WHERE** can you find this information? (Number of mouse clicks was used as a proxy) \( N = 180 \)

- Mean of 1.7 \( (SD = 0.8) \) clicks to access information relevant to food safety.

- **However**, it is often not made obvious.
  - Most (22%) list food safety instructions under a Frequently Asked Questions (FAQ) tab on their main page.
  - Only four (1%) explicitly use the term “food safety.”

- Other terminology used on tabs:
  - “Customer Service,” “Shipping,” “Recipes,” “About Us,” “Seafood Facts,” “They’ve arrived.”
Example of useful display of food safety information on website
Inaccurate Food Safety Advice

- **Thawing**

  “If you need to defrost it quickly, we recommend submerging the bird in a tub of hot water.” (Pheasant for Dinner)

  “All meat must be at room temperature before cooking. ... About **four hours** before cooking time, put the chops on the kitchen counter to finish thawing and reach room temperature.” (Lobel’s of New York)
Inaccurate Food Safety Advice

Temperature

“We recommend cooking pork to an internal temp of between 140-150F (USDA recommends 160-170F).
We recommend cooking lamb to an internal temp of between 120-145F (USDA recommends 145-170F).
We recommend cooking beef to an internal temp of between 120-140F (USDA recommends 145-170F).”
(8 o’clock Ranch)

Problems:
- Advising customers to ignore USDA advice.
- The temperatures ascribed to USDA are incorrect.
  - Beef, pork, veal, lamb should be cooked to a minimum of 145°F
Potential presence of pathogens:

Grass Fed Beef -

“Because it comes from cows not raised in feedlots, the likelihood of E. coli contamination is extremely low; it’s much safer to eat rare than conventional beef.” (Rocky Mountain Organic Meat)
Inaccurate Food Safety Advice

“Cool to the touch”

“Your bison meat may be thawed by the time it gets to you. Touch the meat and if it is cool to the touch your order is in good condition.” (Gunpowder Bison)

“Yes, it is safe to eat the meat as long as it is cool to the touch, according to USDA standards.” (Exotic Meats USA)
Inaccurate Food Safety Advice

“Cool to the touch”

Touch is a poor indicator of whether a product is at a safe temperature.

- Products may feel “cool” and be well above 40°F.
- Pathogens, such as L. monocytogenes, can multiply at temperatures as low as 4°C (39°F).
- The USDA specifically instructs customers to check the temperature of food items immediately upon delivery using a food thermometer, and not to consume the product if its temperature is above 40 degrees.
“Cool to the touch” advice is unsafe. It might pose a potentially serious health risk, especially to consumers whose health might be compromised, especially the elderly, young children, or pregnant women.
Consumer Safety: Implications and Recommendations

- Food safety information should be easy to find on these websites
  - Food safety information should be displayed either on the home page (i.e., first page), or in conjunction with the individual food products
- Adopting more consistent terminology for food safety information
  - “Food safety” tab
- Purveyors need to establish reasonable reimbursement policies
  - These need to be clearly stated on their websites.
Shipping and Delivery
A two-stage sampling design was used to permit an evaluation of both purveyors and products as units of analysis.

A random sample of 427 online purveyors was selected at stage 1, and then a quasi-random sample of the food products offered by each vendor at stage 2.

The stage 2 sampling strategy employed several criteria:
- No single order could exceed $200, including shipping;
- No single order could exceed more than five items – unless it was a variety pack with a fixed number of items of more than five;
- Because of their presumed low level of risk, pasteurized, canned, and retorted products were excluded;
- Because they are typically boiled or steamed by the consumer, live crabs, lobsters and mussels were excluded.
Shipping & Delivery

Types of Food ordered

Based on our survey data and literature stressing “the specialty effect” primarily high-end meats and gourmet items, such as “surf and turf” (i.e. lobster and filet mignon) products were selected to reflect purchasing behavior as well as gift-receiving patterns of the US customers surveyed.
Types of Food ordered

Samples of raw meat, game, poultry, and seafood were purchased online from 160 US purveyors between January and October 2013, and shipped using common carriers.

Overall, 169 shipments were received and 684 food items tested:

- 271 meat
- 39 poultry
- 133 game
- 235 seafood
- 6 other products
Shipping & Delivery

**Shipping carriers**
- 59% of the shipments were sent via FedEx®
- 40% were shipped by UPS®
- 1% were sent via United States Postal Service (USPS®)

**Shipping services**
- 32% “overnight”
- 29% “2nd day”
- 27% “standard/ground”

Mean transit time was 32.35 hours (SD=14.83).
Vendor Shipping Locations
Delivery Protocol

- 160 orders were placed; 80 were shipped to TSU and 80 to RU
- Upon arrival, boxes were examined for food safety labels and integrity
- Pictures were taken of the unpacking process
- Coolants and products were weighed
- Product surface temperatures were taken (10 readings per product)
- Products were sealed in labeled plastic bags and frozen
- Product samples were analyzed for presence of indicator organism and specific pathogens
Shipping and Delivery
Internet Food Safety - Delivery Protocol
Phase 2 (Delivery)

Delivery Information

Overall Delivery Information
Codes with asterisks in front of them mean they have been used already.

Cod: [redacted] * required

Package Delivery Date: 10/30/2013 * required

Package Delivery Time (ex. 12:01): 12:42 PM * required

Package Opened Date: 10/30/2013 * required

Package Opened Time (ex. 12:01): 03:22 PM

Tracking Number: 7971239379860

Final Tracking Information:

Other Label Descriptions on Package:

The packaging for this shipment includes:

- [ ] An outer cardboard box?
- [x] A styrofoam box?
- [ ] Interior unit boxes?
- [ ] Newspaper?
- [ ] Product Wrapping?
- [ ] Other (Please describe):

Other Packaging Comments:

- [ ] Paper towel on the top and bottom of the products
- [ ] Packing list, thank you card with the warning consuming raw or undercooked

About the package:

- [ ] Package integrity:
- [ ] Package integrity comments:
- [ ] Cooling label on package?
- [ ] Cooling Material:
- [ ] Gel Packs * required
- [ ] If other, please describe:

Add a Gel/Ice pack Temperature

Gel/Ice pack temperature: 22.0

Cooling material locations (Check all that apply):

- [x] On top of product?
- [ ] Under product?
- [x] On the side of the product?
- [ ] In between food items?
- [ ] Total Weight of Remaining Cooling Material: 0.00 * required
- [ ] Remaining Cooling Material units: lbs * required

Other Information:

Additional comments: one gal pack
<table>
<thead>
<tr>
<th><strong>Individual Package Information</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item Description:</strong></td>
</tr>
<tr>
<td><strong>LOT #:</strong></td>
</tr>
<tr>
<td><strong>Establishment #:</strong></td>
</tr>
<tr>
<td><strong>Top Temperatures:</strong></td>
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<tr>
<td>Center Temperature:</td>
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<tr>
<td>North Temperature:</td>
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<td>East Temperature:</td>
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<td>South Temperature:</td>
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<td>West Temperature:</td>
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<td><strong>Bottom Temperatures:</strong></td>
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<td>Center Temperature:</td>
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<td>South Temperature:</td>
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<td>West Temperature:</td>
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<td><strong>Weight:</strong></td>
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<tr>
<td>Weight:</td>
</tr>
<tr>
<td>Weight Units:</td>
</tr>
<tr>
<td><strong>Item Additional Comments:</strong></td>
</tr>
</tbody>
</table>
Shipping & Delivery

Packaging integrity - outside of package

- Almost all of the packages arrived intact (93%).
- Six packages were slightly or partially damaged
  - (e.g., polystyrene box or lid was broken or cracked), and one package arrived damp and wet.
Shipping & Delivery

Packaging integrity - inside of package

Six different packages showed signs of leakage:

Predominantly meat juices leaking into the inside and, in one case, leaked also onto the outside of the package.
Shipping & Delivery

Dunnage

- The purpose of dunnage or filler material is twofold:
  - It prevents the food items from shifting around in the box, therefore protecting them from potential damage.
  - It improves temperature stability by reducing the amount of air to be kept within temperature range.

- A wide variety of dunnage was used; no consistent usage of filler material was observed.

In 63% of the shipments no dunnage was present at all.
Examples of Dunnage
Shipping & Delivery

Coolants

- The majority (56%) of the packages contained gel packs.
- 42% contained dry ice.
  - 4% of the packages contained both gel packs and dry ice.
- 2% included conventional wet ice.
Dry ice - 72 packages

- Less than half (43%) included labeling that the shipment contained dry ice.
- Only a third (36%) provided information on safe handling and disposing of dry ice.
- This lack of labeling might pose a health risk to consumers - Dry ice can cause severe skin damage upon touch.
Shipping & Delivery

Product Shipments

- 76% of the perishable items ordered were shipped frozen
- 21% were transported fresh
- 4% of the items were (cold)smoked
Delivery Temperatures

- Ten temperatures were taken for each product in a prescribed pattern:
  - 5 on top: Center, N, E, S, W
  - 5 on Bottom: Center, N, E, S, W

- Arrival temperatures ranged from -23ºF to 75ºF

- Surface temperatures varied significantly:
  - among products in the same shipment
  - even at different locations on the same product

- These variations are attributable to the type of coolant used and the proximity of the coolant to the product
Delivery Temperatures

Nearly half of the products (47%) arrived with a surface temperature above 40°F!
Cooling Capacity

Gel packs were clearly inferior to dry ice in keeping perishable products below 40°F
Food Safety Labels on Packages and Information Included in Packages

- Only 37% displayed food safety information on the outside of the box.
- Only 25% had any food safety information inside the package.
Other Problems

Pieces of nuts at bottom of box
Other Problems

Loose dry ice; no dry ice label
Other Problems

Unlabeled Products
Other Problems

PotentiallyMislabeledProducts

Filet mignon (?)
Conclusions

- The product temperature measured upon opening of the packages is one indication of whether the food product can be safely consumed.
- This measure does not provide information regarding:
  - Temperatures during transit
  - Temperature fluctuations during transit
  - Duration of exposure to unsafe temperatures.
Conclusions

Bottom Line:

- In this study, almost half of the samples arrived in the danger zone and should therefore be considered NOT safe to consume.

This, combined with a lack of food safety information accompanying the packages, places consumers at increased risk for foodborne illness.
Consumer Safety: Implications and Recommendations

- Online purveyors of perishable meats, poultry, game, and seafood products should be required to:
  - Clearly post food safety information on their websites to reduce the risk of foodborne illness
    - how to best handle and store their perishable products upon delivery
    - how to safely thaw them
    - how to properly cook them, ideally with temperature guidelines
Consumer Safety: Implications and Recommendations

- Requiring registration of online vendors
- Adding temperature sensors to packages
- Educating shippers on best packaging practices
  - Providing educational material
  - Training on proper amount of coolants to be added
- Resolving liability issue
  - Consumers should not be left hanging
Consumer Survey
Methods

Survey Instrument

- Designed to determine consumers’ experiences with ordering and receiving fresh meat, seafood, game and poultry products from online vendors and delivered by common carriers such as FedEx® and UPS®

- Emphasis was placed on self-reports of:
  - Food safety and other information provided by vendor websites and within product packaging
  - Receipt and handling of the raw products
Methods

Survey sample

- Selected from KnowledgePanel®
  - Large scale online panel developed and maintained by GfK Custom Research
  - Panel consists of a probability-based sample of ~55,000 US households
- Random sample selected to participate in the survey
- Only participants who purchased or received products within the past 12 months were qualified to participate
- Conducted in May 2013
Methods

- Survey sample
  - Of 9,911 panelist screened, 1,002 were eligible (10.1% qualification rate)
  - 51 removed due to problems with their reported data
    - Example - participants who ordered only prepared/cooked food items

- Data Analysis
  - Data were analyzed using IBM SPSS Software
Methods

- Survey Instrument
  - Two pathways
    1. Examining the ordering of products online
    2. Examining the receiving of delivered products

Diagram:

- Purchased products as a gift
- Purchased products for yourself
- Received products as a gift

Survey A
Online ordering of products

Survey B
Receiving the delivered products
Results of Survey
Consumer Survey

- 1 in 10 Americans is in this market.
  - 52% purchased products for themselves
  - 46% received products as a gift
  - 23% purchased products for someone else
Consumer Survey

- Who are they?
  - 75% White
  - 54% Male
  - 70% have completed some college
    - (41% Bachelors or higher)
  - Median age is 53
  - Median household income: $60-75K

- 49% - single order or gift
  - (Mean 2.5 orders or gifts received)
  - 25% 3 or more orders or gifts received
Online Ordering of Products

- A majority of the participants had placed their last order within 6 months of participating in the survey (73%).
  - The orders ranged from:
    - Pre-selected products (such as gift pack or sampler pack) (40%)
    - Individual items that they selected (43%)
    - Combination of both (16%)
  - These items were to arrive:
    - Fresh (15%)
    - Frozen (67%)
    - Combination of both fresh and frozen (10%)
    - Did not recall (8%)
Online Ordering of Products

Some popular reasons participants chose to shop for products online

- Better quality products than in local stores (30%)
- Someone recommended the company (25%)
- Could not find the products in local stores (21%)
- More convenient than going to local stores (20%)

- Most of the participants would order from the online company again (88%)
Online Ordering of Products

- About half (53%) recalled seeing contact information for the company on its website

  - 41% contacted the company
  - 77% wanted additional information
  - 14% wanted to report a problem

- 47% product offered
- 48% shipping
- 30% product packaging
- 31% product costs
- 2% length of time for delivery
- 2% product details

- 22% order did not arrive at scheduled time
- 17% order was incorrect
- 17% unhappy with delivered products
- 17% billing problems
- 11% product appeared spoiled
- 6% package appeared damaged
- 6% product was not cold enough
Online Ordering of Products

Most of the participants believe:

- Purchasing fresh or frozen meat, poultry, and/or seafood products online and having them delivered is safe (95%)
- Companies selling meat, poultry, and/or seafood products online and that ship the items using a delivery service should provide food safety information on their websites (89%)
Online Ordering of Products

- But, only about one-third (35%) recalled seeing any food safety information on the company’s website.

<table>
<thead>
<tr>
<th>Percentage of food safety tips/instructions respondents recalled seeing on company websites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product storage instructions</td>
</tr>
<tr>
<td>Instructions on how to safely prepare the raw product before cooking</td>
</tr>
<tr>
<td>Refrigerator/freezer storage times</td>
</tr>
<tr>
<td>Cooking temperature instructions</td>
</tr>
<tr>
<td>Thawing instructions</td>
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<tr>
<td>Warning about eating raw or undercooked products</td>
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<tr>
<td>Handling instructions for the cooked product</td>
</tr>
<tr>
<td>Hand washing instructions</td>
</tr>
<tr>
<td>Tips for storing leftovers</td>
</tr>
</tbody>
</table>
Receiving the Delivered Product

- About half (53%) of the participants were present when the package was delivered.
- Only one-quarter (27%) of the participants had to sign for the package.
- A majority (93%) of the packages were delivered to the participants’ place of residence.
- About half (46%) of the packages were left outdoors when delivered.

- Of those left outdoors:
  - 81% of packages were left at the front door.
  - 82% of packages were left in a covered or shaded area.
Receiving the Delivered Product

- The delivered items were packaged:
  - Fresh (16%)
  - Frozen (74%)
  - Both Fresh and Frozen (9%)
- Most items packaged frozen (90%) were reported to be still completely frozen when opening
- 77% of shipping containers reported to have had labeling on the outside

**Labeling reported to be on shipping containers**

- Company name (90%)
- Perishable product warning (80%)
- Tracking number (71%)
- Dry ice label (62%)
Receiving the Delivered Product

- A majority of the participants believe that it is important to have labeling on the outside of the shipping container (95%)
- 81% recalled coolants added to the shipping container to keep products cool/frozen
- Dry ice (65%) and gel packs (23%) were the predominate coolants recalled
- 19% of participants did not take any special precautions when handling the dry ice.
74% recalled seeing additional literature in the package

<table>
<thead>
<tr>
<th>Types of additional literature provided in the packaging</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Company catalog</td>
<td>80%</td>
</tr>
<tr>
<td>Package invoice</td>
<td>75%</td>
</tr>
<tr>
<td>Food safety tips/instructions</td>
<td>74%</td>
</tr>
<tr>
<td>Cooking instructions</td>
<td>73%</td>
</tr>
<tr>
<td>Storage instructions for items after removing them from container</td>
<td>64%</td>
</tr>
<tr>
<td>Product recipes</td>
<td>62%</td>
</tr>
<tr>
<td>Coupons</td>
<td>46%</td>
</tr>
<tr>
<td>Instructions for the safe disposal of dry ice</td>
<td>29%</td>
</tr>
<tr>
<td>Customer feedback card</td>
<td>29%</td>
</tr>
</tbody>
</table>
Receiving the Delivered Product

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<th>Percentage of food safety tips/instructions respondents recalled seeing in additional literature</th>
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<td>Tips for storing leftovers</td>
</tr>
<tr>
<td>None of the above</td>
</tr>
</tbody>
</table>

- 96% thought the tips/instructions provided were complete.
Receiving the Delivered Product

- Of those who did not believe their product was delivered at a safe temperature, only 21% used a thermometer to make this determination.
- 3% of participants reported juices leaking from the product packaging.
Receiving the Delivered Product

Most of the participants:

- Were satisfied with the quality of the products they received (84%)
- Believe that receiving fresh or frozen products delivered by a package delivery service is safe (94%)
- Believe that it is important for companies to provide food safety information in the packaging of its products (92%)

be food safe.
clean. separate. cook. chill.
www.befoodsafe.org
Audit of Food Safety Information Provided in Study’s Shipping Containers
Methods

- Raw meat, poultry, finfish, and shellfish products were purchased online from 160 U.S. vendors, and shipped using a package delivery service.
- As part of the delivery protocol, all additional literature was placed into a coded bag.
- The materials were reviewed by researchers for any information pertaining to food safety.
- Food safety information was recorded, categorized, and compared to information provided by FDA and USDA for accuracy.
Only a third (34%) of the companies had any food safety information included with the shipment.

<table>
<thead>
<tr>
<th>Percentage of food safety tips/instructions included in the additional literature</th>
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</thead>
<tbody>
<tr>
<td>Safe product storage instructions</td>
</tr>
<tr>
<td>Thawing instructions</td>
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<tr>
<td>Handling instructions for the cooked product</td>
</tr>
</tbody>
</table>
Much of the food safety information provided was incorrect.

| **Percentage of food safety tips/instructions included in the additional literature with incorrect information** |
|-------------------------------------------------|--------|
| Cooking temperature instructions                   | 74%    |
| Refrigerator/freezer storage times                  | 70%    |
| Safe product storage instructions                    | 47%    |
| Thawing instructions                                  | 26%    |
| Tips for storing leftovers                           | 33%    |
| Instructions on how to correctly handle the raw product | 11%    |
| Hand washing instructions                            | 0%     |
| Handling instructions for the cooked product         | 0%     |
| Warning about eating raw or undercooked products     | 0%     |
Examples of incorrect Information

- **Thawing instructions**
  - “Remove lobster claws still in packaging and place in a deep dish at room temperature for 3 hours or until thawed”

- **Refrigerator/freezer storage times**
  - “Chicken, lobster tails, and shrimp should not be refrozen once thawed, they can be refrigerated for up to 7 days and cooked normally”

- **Safe product storage instructions**
  - “If the insulated cooler arrives with the dry ice having evaporated, do not be alarmed. As long as the product is cool to the touch, you may freeze it or prepare it”

- **Cooking temperature instructions**
  - “Cook roast until the meat thermometer reads 130°F”
Recommendations
Consumer Recommendations

- Consumers are the last line of defense in preventing a foodborne illness. It is important that they take a more active role in ensuring their food is safe (especially when purchased online).
  - Ensure that **EACH** product arrives at a safe temperature by using a food thermometer.
    - “Cool to the touch” isn’t a temperature
    - Products should arrive at 40°F or below
  - Store the products in the refrigerator or freezer (bottom shelf with a plate or pan under the package to catch the juices) immediately after determining they arrived at a safe temperature.
  - Contact the company if there is doubt about the safety of the product received.
Recommendations for Industry

- Once the package of perishable products leaves your facility, it is treated like any other package containing non-perishable items.
- It is your responsibility to ensure that the product arrives safely and in excellent condition.
- Package products anticipating “worst case” conditions:
  - Expect potential transit delays.
  - Realize that temperatures during transit may be extreme.
  - Expect that for packages delivered “signature release” your package of perishable products may:
    - Be further exposed to extreme temperatures after delivery.
    - Remain un-opened for 8 or more hours after delivery.
Recommendations for Industry

- Ensure that the shipping container, dunnage, and coolants used are sufficient to keep the product at a safe temperature.

- Choose containers of an appropriate size for their contents
  - Outer cardboard boxes can protect an inner polystyrene container

- Use dunnage to protect the contents from being damaged and to reduce the amount of air that needs to be cooled

- Pre-chill/freeze the products before packing

- Calculate the amount of coolant necessary to keep the product at a safe temperature during transit
  - Expect that products delivered “signature release” are likely require additional coolant

- Make sure that the coolants are placed properly
  - Gel packs performed poorly in keeping frozen products cool
Recommendations for Industry

- Include information educating consumers on the proper handling of the product to ensure their safety and customer satisfaction.
  - Make this information obvious in packaging and on website.
- Double check printed materials containing food safety information with FDA and USDA resources to ensure accuracy.
- If using dry ice as a coolant, be sure to include warnings and handling instructions for the consumer on both the outside and inside of the shipping container.
Recommendations for Industry

- Urge consumers to contact the company if they have any questions or concerns about the products they have received.
  - Make this prominent.
  - Provide a toll-free phone number that is easy to locate in delivery materials and on the company website.

- Develop reasonable reimbursement policies.
  - Make them clear and easy to follow.
Potential Template for Food Safety Information
Food Safety Template

- Still in the developmental phase
- Will be a combination of written information, pictures, videos, and charts
  - This combination is based on consumer preferences indicated in the consumer survey.
- Food safety areas of focus
  - Product ordering
    - It is important to determine if the package requires a signature upon delivery
    - Always choose the best/fastest delivery option for a product that is to be delivered
      - If a consumer orders a fresh product they should choose the overnight option rather than ground delivery.
Food Safety Template

- Food safety areas of focus
  - Receiving the product
    - Use a food thermometer to ensure the delivered product is at a safe temperature of 40°F or below
    - Place the delivered product immediately in the freezer or on the bottom shelf of the refrigerator with a plate or pan under the package to catch any juices
  - Thawing instructions
    - Thaw small portions of frozen products in the refrigerator overnight
    - Larger portions may require more time to completely thaw in the refrigerator.
    - Placing the frozen product in cold water is a faster way of thawing. Place the frozen food in a leak proof bag and submerge in cold tap water. Change the tap water every 30 minutes until thawed.
Food Safety Template

- **Food safety areas of focus**
  - **Preparing the products safely**
    - Before preparing the product, be sure the kitchen countertop and any other kitchen equipment that will be used is clean and sanitized.
    - Wash hands with warm water and soap before, during, and after cooking the product.
    - Be sure the cutting board is clean before each use. It is a good idea to have one cutting board for fresh produce and a separate one for raw meat, poultry, and seafood.
    - Discard any marinade sauces that were used on raw meat, poultry, or seafood.
Food Safety Template

- Food safety areas of focus
  - Cooking instructions
    - Always use a cooking thermometer to ensure that the product is cooked to a safe internal temperature

<table>
<thead>
<tr>
<th>RECOMMENDED INTERNAL COOKING AND STORAGE TEMPERATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temp (°F)</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>165°F (74°C)</td>
</tr>
<tr>
<td>160°F (71°C)</td>
</tr>
<tr>
<td>145°F (63°C)</td>
</tr>
<tr>
<td>140°F (60°C)</td>
</tr>
<tr>
<td>140°F - 40°F</td>
</tr>
<tr>
<td>40°F (4.4°C) to 32°F (0°C)</td>
</tr>
<tr>
<td>0°F (-18°C)</td>
</tr>
</tbody>
</table>

* Or until both the yolks and whites are firm
| Whole cuts of meat include steaks, roasts, and chops |
| All whole cuts of meat need to rest for three minutes before carving |
Food Safety Template

Food safety areas of focus

Leftover storage

- Hot foods need to reach 40°F within 2 hours of being removed from the heat source.
- Divide hot foods into small portions, place into a storage container, and put the container into the refrigerator/freezer.
- Be sure to label leftover container with the name and date they were prepared.
Direct marketing, sales, and delivery to consumers of perishable meat, poultry, game, and seafood is a large and growing business.

Shipping perishable items directly to consumers can be safe if done correctly.

Government, industry, academia, and consumer organizations need to work together to improve the food safety of these products.
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