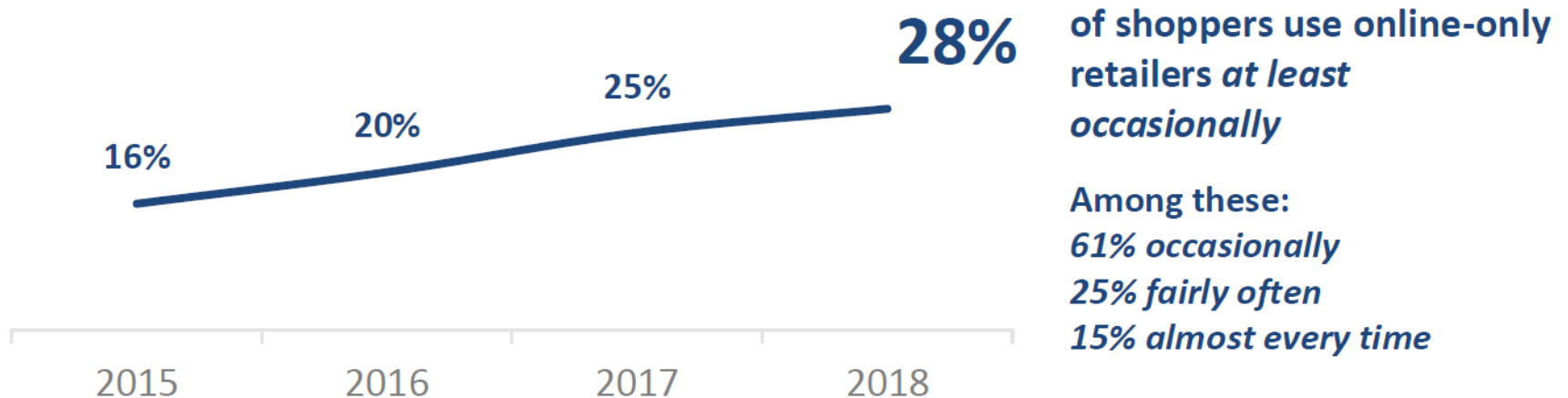# Alexa, Bring Me Dinner!

William K. Hallman

Rutgers University

Online Grocery Shopping is Increasing

CHART 1.8: USE OF ONLINE-ONLY RETAILERS, HISTORICAL TREND

16%

20%

25%

28% of shoppers use online-only retailers *at least occasionally*

Among these:
61% occasionally
25% fairly often
15% almost every time

2015   2016   2017   2018

Source: FMI U.S. Grocery Shopper Trends, 2018. Q: "When you need grocery type items, how often do you shop in person or online at each of the following?" n=2,136. (See Appendix Table A.7A)
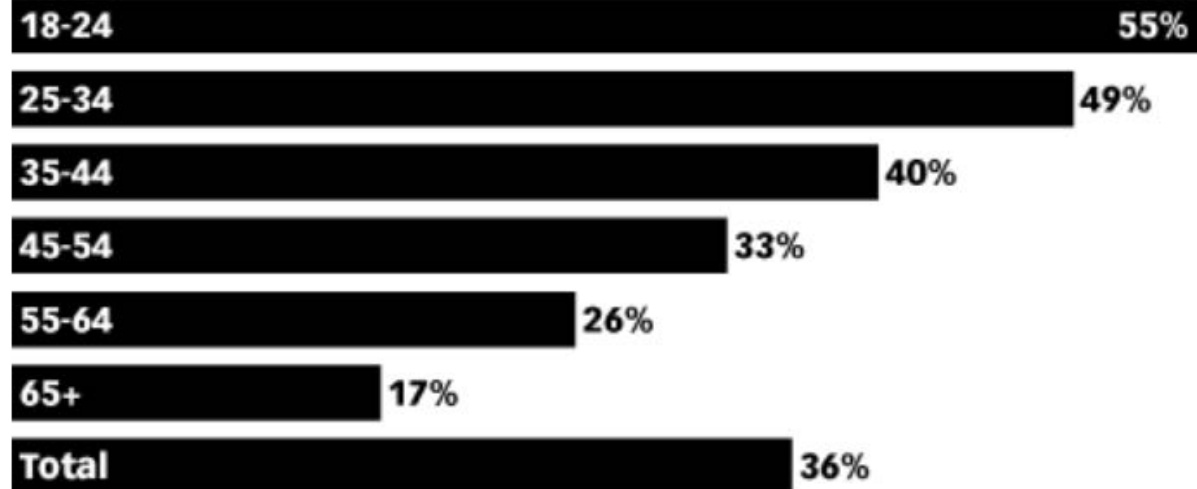
Online Ordering of Food With Home Delivery

Restaurant Food Delivery Service

US Internet Users Who Have Used a Food Delivery Service to Deliver a Restaurant Meal, by Age, Feb 2018

% of respondents in each group

Age	%
18-24	55%
25-34	49%
35-44	40%
45-54	33%
55-64	26%
65+	17%
Total	36%

Note: over the past 12 months
Source: Market Force Information, "US QSR Benchmark Study," April 17, 2018

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www.**eMarketer**.com

Leading Restaurant Meal Delivery Services

Leading US Food Delivery Service Metrics, Sep 2018

	Users (millions)	Sessions per user	Exclusive users (%)
GrubHub	17.2	3	57%
DoorDash	15.5	4	54%
UberEats	8.1	6	47%
Postmates	2.8	7	55%

Note: adults ages 18+; based on monthly unique users
Source: Verto Analytics, "Verto Watch" as cited in company blog, Oct 31, 2018

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www.**eMarketer**.com

Online Ordering with Delivery by UPS and FedEx

Food Safety Issues Associated with the Online Purchase of Perishable Meat, Seafood, Poultry, and Game Products that are Delivered by Common Carriers

William K. Hallman
Angela Senger-Mersich
Donald Schaffner
Rutgers University

Sandria Godwin
Fur-Chi Chen
Richard Stone
Tennessee State University

TSU / RU Collaborative Study

❑ USDA-funded study that:

➢ Surveyed **1,002 U.S. consumers** about their experiences and expectations.

➢ Examined food safety information on **427 domestic vendor websites** 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.

➢ Provides recommendations for consumers and the industry to improve food safety.

Background

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

Background

More than 500 US online vendors offering raw meat, poultry, game and seafood products with direct delivery to consumers using FedEx®, UPS®, and the USPS®.

There are few barriers to entry to the market

Survey - Key Findings

About 1 in 10 Americans purchased or received perishable meat, poultry, game or seafood from an online purveyor in 2014

- Customers perceive little risk
  - 84% satisfied with the quality of the products they received
  - 95% believe that receiving fresh or frozen products delivered by a package delivery service is safe

Concerns

Parcels containing perishable foods are treated _no differently_ than any other package handled by FedEx®, UPS®, or USPS®.

Concerns

Packages must maintain proper cold temperatures on their own

FedEx® warns that

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

The Policy of *Signature Release*

Signature release:

Delivery _without_ requiring the recipient's signature

- packages may be left at an exterior door

FedEx Signature/Waiver Form 24-1

FedEx Tracking Number: _____

Name of Addressee: _____

Delivery Address: _____

Phone Number: _____

FedEx: Please leave package at the front door.

I hereby waive the right to be present upon delivery, and my signature below is my authorized waiver and release to FedEx to leave the package without my signature in person. The following signature is my authorized signature for delivery. Please leave the package at my door and protected by rain, if necessary.

Signature for this delivery:

_____   _____
Authorized Addressee   Date

Problems with *Signature Release*

Only 5% of 427 vendors studied specifically require a signature upon delivery

➢ Packages may be left outside for long periods, which can result in temperature abuse

Hallman, W. K., Senger-Mersich, A., & Godwin, S. L. (2015). Online purveyors of raw meat, poultry, and seafood products: delivery policies and available consumer food safety information. Food Prot. Trends, 35, 80-88.

Problems with *Signature Release*

Only 27% explicitly state that their packages are shipped signature release

➢ Those ordering products as gifts may not realize that these products will be left outdoors until the recipient returns.

Question of Liability

➤ FedEx® and UPS®:

> ➤ **Disclaim responsibility** if the perishable products become spoiled or damaged during the delivery process

> ➤ It is the <u>vendor's</u> responsibility to ensure that their perishable goods reach their customers safely

Yet,

> ➤ <u>Vendors</u> often disclaim responsibility

> ➤ They make it difficult for consumers to report problems or to receive refunds

Food Safety Information on Websites

- Only 42% provided *any* food safety information

- Info was difficult to find

  - Most (22%) listed food safety instructions under an FAQ tab on their main page.

  - Only four (1%) explicitly used the term "food safety."

  - Other terminology used on tabs:

    - "Customer Service," "Shipping," "Recipes," "About Us," "Seafood Facts," "They've arrived."

Hallman, W. K., Senger-Mersich, A., & Godwin, S. L. (2015). Online purveyors of raw meat, poultry, and seafood products: delivery policies and available consumer food safety information. Food Prot. Trends, 35, 80-88.

Inaccurate Food Safety Advice

❑ Thawing

"If you need to defrost it quickly, we recommend submerging the bird in a tub of <u>hot</u> water." (Pheasant for Dinner)

"All meat must be at room temperature before cooking. … About <u>four hours </u>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

❑ 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)

Much of the Information was Inaccurate

"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)
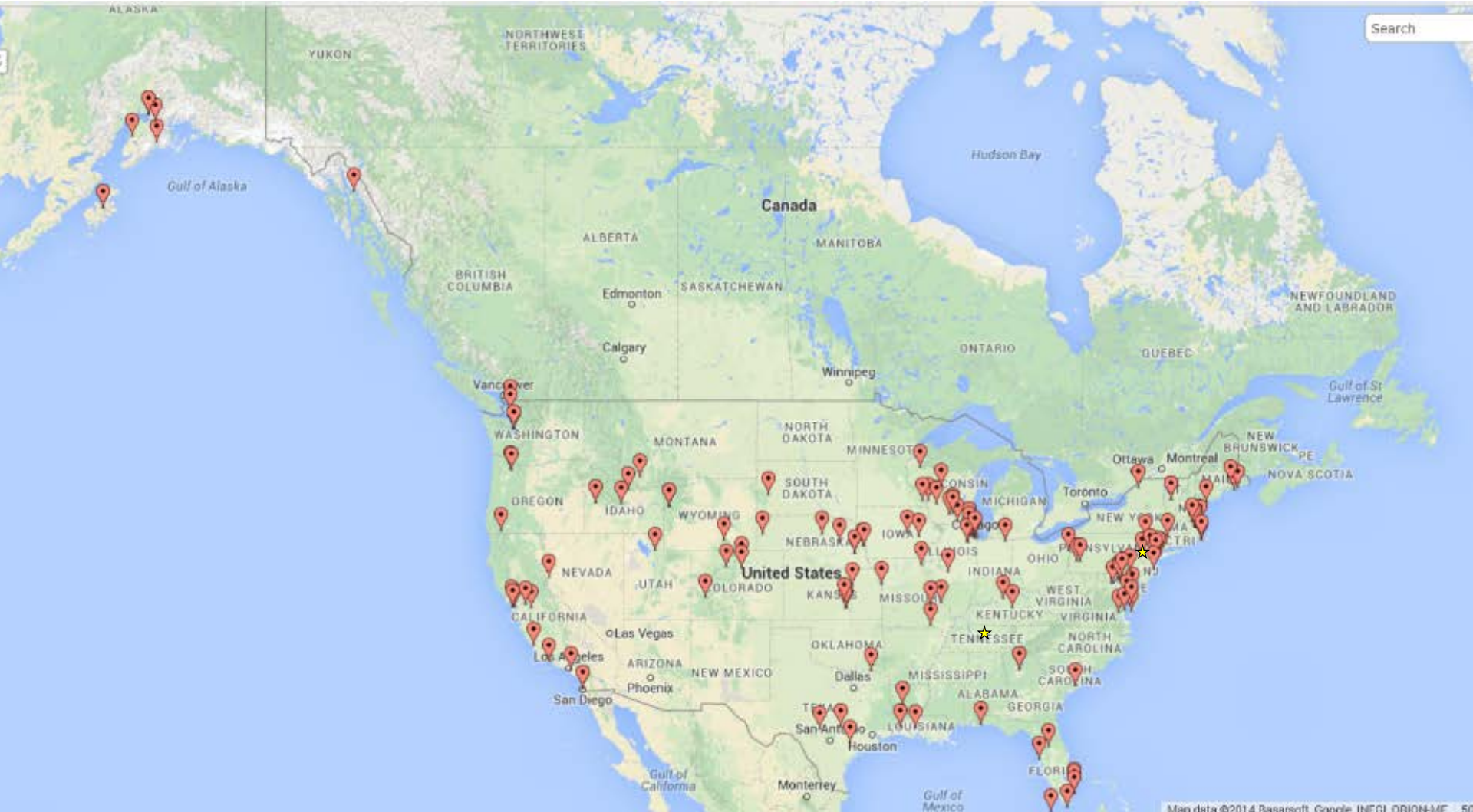
SHIPPING AND DELIVERY

Types of Food Ordered

Samples of raw meat, game, poultry, and seafood were purchased online from <u>160 US</u> purveyors between January and October 2013, and shipped using common carriers to NJ and TN.

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

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

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

➢ Products were sealed in labeled plastic bags and frozen

➢ Product samples were analyzed for presence of indicator organism and specific pathogens

Shipping & Delivery

Product Shipments

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

Shipping & Delivery

- ## **Container Volumes**
  - Range (n=66)
    - 610 cubic inches (0.35 cubic feet)
    - 4,015 cubic inches (2.32 cubic feet)
  - Many of these containers were <u>much</u> too large for their contents.

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, also leaked onto the outside of the package.

Examples of Dunnage

Shipping & Delivery

63% lacked Dunnage

Shipping & Delivery

Coolants

- The majority (56%) contained gel packs.
- 42% contained dry ice.
- 2% included conventional wet ice.

Shipping & Delivery

Dry ice – 72 packages

- Less than half (43%) had dry ice <u>label</u>

- Only a third (36%) provided information on safe handling and disposal.

- This lack of labeling might pose a health risk to consumers – Dry ice can cause severe skin damage upon touch.
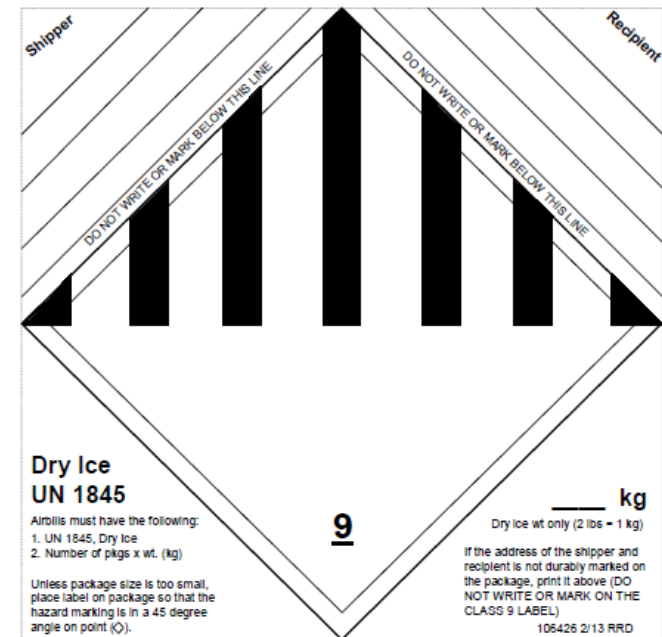
Delivery Temperatures

➢ 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 largely attributable to the type of coolant used and the proximity of the coolant to the product
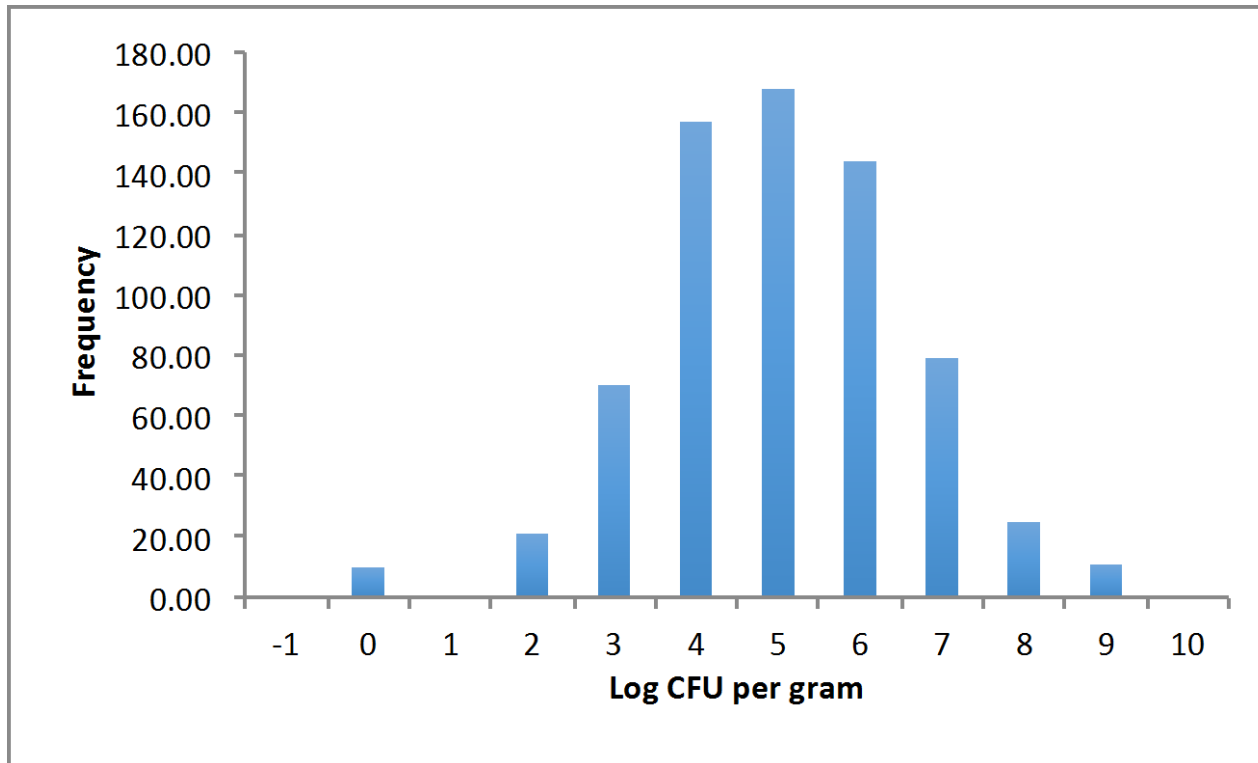
Delivery Temperatures

Nearly <u>half</u> (47%) of the 684 products arrived with a surface temperature **above 40⁰F**!

Cooling Capacity

Gel packs were clearly inferior to dry ice in keeping perishable products below 40°F

Error Bars: 95% CI
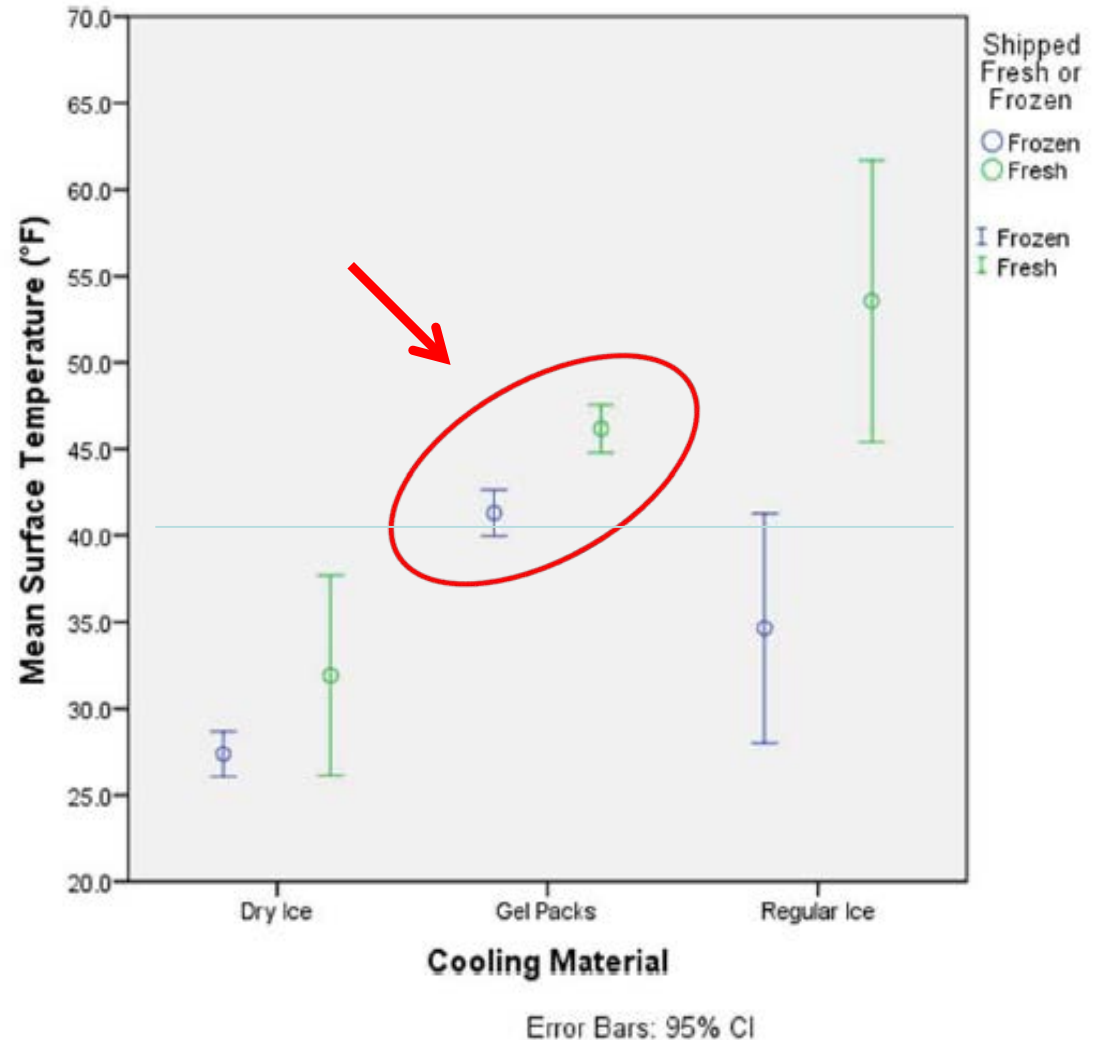
TPC Distribution

- Typical plate count appears to be 5 log CFU/g
- Some foods had no detectable bacteria, represented by 0 log CFU here
- Some foods had very high total plate counts

Other Problems

Pieces of <u>nuts</u> in bottom of box

Other Problems

Crushed dry ice - no dry ice label

Other Problems

## Unlabeled Products

Other Problems

Potentially Mislabeled Products

Filet mignon (?)

Conclusions

❑ The product temperature measured upon opening of the packages is <u>one</u> 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.
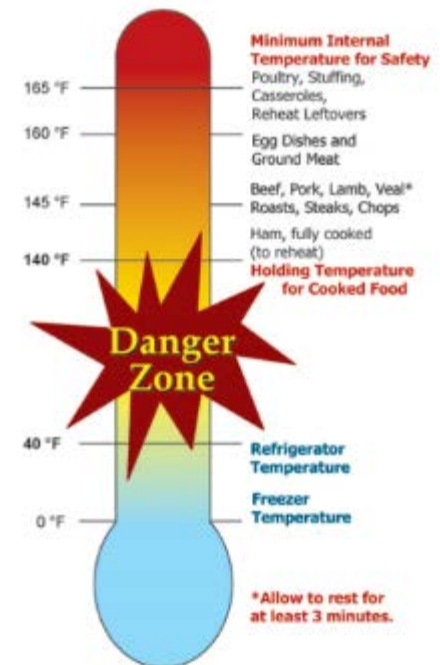
Conclusions

Bottom Line:

❑ In this study, almost half of the 684 samples arrived in the danger zone and should be considered <u>unsafe to consume.</u>

❑ But:
  - ❑ Consumers don't perceive this risk
    - ❑ They aren't expecting it
    - ❑ They aren't looking for it
  - ❑ Vendors sites and packages lack food safety information
    - ❑ Many provide unsafe advice
  - ❑ Packages lack appropriate coolants, dunnage, and labeling
  - ❑ Delivery companies *and* vendors disclaim liability
    - ❑ Vendors often make it difficult for consumers to report problems or receive refunds
  - ❑ There are few barriers to entry into online sales of these products

Policy Recommendations

- Online vendors of these products should be required to:
  - Be registered and have a unique ID number
  - Add sensors to packages to alert customers when contents exceed safe temperatures
  - Pass an online course on best packaging practices
    - including the proper amount and type of coolants to be added to packages
  - Provide accurate food safety information along with their shipments
- Resolve the liability issues
  - Shippers and shipping companies should be responsible for spoiled/damaged products – <u>not consumers</u>

Industry Recommendations

- Food safety information should be easy to find on vendors' websites
  - It should be displayed either on the home page (i.e., first page), or with the individual food products sold
- Include information in package concerning the proper handling of the product to ensure safety and customer satisfaction.
  - Make this information obvious in packaging
- Check the accuracy of food safety information

Industry Recommendations

- Package products anticipating "worst case" conditions
  - Expect transit delays
  - Realize that temperatures during transit may be extreme
  - Expect that for packages delivered "signature release" perishable products may:
    - be further exposed to extreme temperatures after delivery
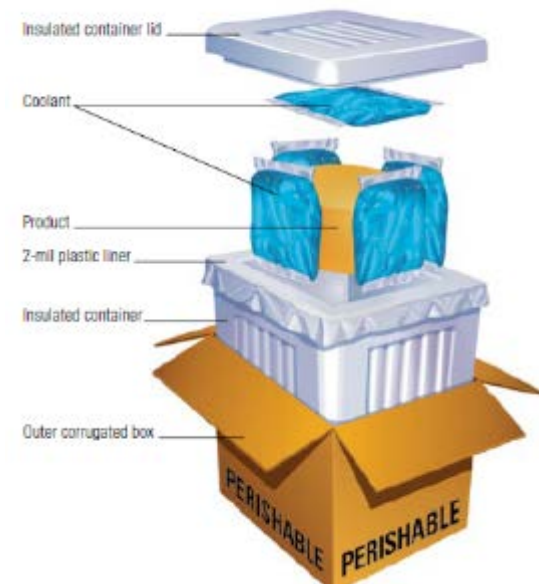   - remain un-opened for 8 or more hours

Industry Recommendations

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
- Use appropriate dunnage:
  - To protect the contents from being damaged
  - To reduce the amount of air that needs to be cooled
- Pre-chill/freeze the products before packing
- Calculate the type and amount of coolant necessary
  - Gel packs performed poorly in our study
- Make sure that the coolants are placed properly

Packaging Perishable Shipments With Gel Coolants

Insulated container lid

Coolant

Product

2-mil plastic liner

Insulated container

Outer corrugated box

PERISHABLE PERISHABLE

Industry Recommendations

- 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.

Industry Recommendations

- 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

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.

  - 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.

Moving Forward

➢ 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

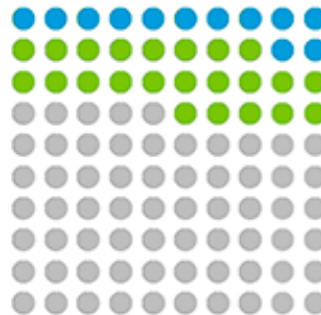# Meal Kits – the next set of challenges

Meal Kits

MEAL KITS: 36% GROWTH IN JUST UNDER A YEAR

12% of total consumers have purchased a meal kit in last six months

14.3M HOUSEHOLDS

2019: 9%

23% of total consumers would consider trying a kit in next six months

27.6M HOUSEHOLDS

2019: 25%

Additional 3.8M households purchasing meal kits

https://www.nrn.com/marketing/meal-kits-continue-show-strength

Potential for Cross-Contamination

Issues of Traceability of Ingredients

Packaging Waste

Plastic Bags and Bottles

Gel Packs

Packaging Waste

Box Insulation

"upcycling box liners" – Blue Apron

Packaging Waste

- Polystyrene Coolers

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USDA

United States Department of Agriculture

National Institute of Food and Agriculture