Wasted Food:
Public Health Costs & Benefits

Roni Neff, PhD MS
Johns Hopkins Center for a Livable Future
Johns Hopkins Bloomberg School of Public Health

1. NUTRITION
2. FOOD SECURITY
3. FOOD SAFETY

And…

4. OCCUPATIONAL SAFETY & HEALTH

Neff, Kanter, & Vandevijvere, 2015

NUTRITION

Nutrition

<u>Opportunities</u> - shared risk factors for poor nutrition + waste

- Oversupply, low valuation of food, large portion size

<u>Challenges</u> – win/lose

Win- Health

- "Fresh"

Win-Waste

- Highly processed foods

How Much Nutritional Value is Lost?

Neff, Kanter, Vandevijvere
Health Affairs. 2015.

Lost Nutritional Value

- Previous estimates: 1,249[1] to 1,400[2] calories/capita/day
- But, fruits, vegetables, other frequently wasted foods often lower in calories, higher in other nutrients
- First study to calculate nutritional value of wasted food in US
- Focus on under-consumed nutrients:
  - Dietary fiber, calcium, iron, magnesium, potassium, and vitamins A, C, D and E.[3]
- 213 commodities, 2012 r

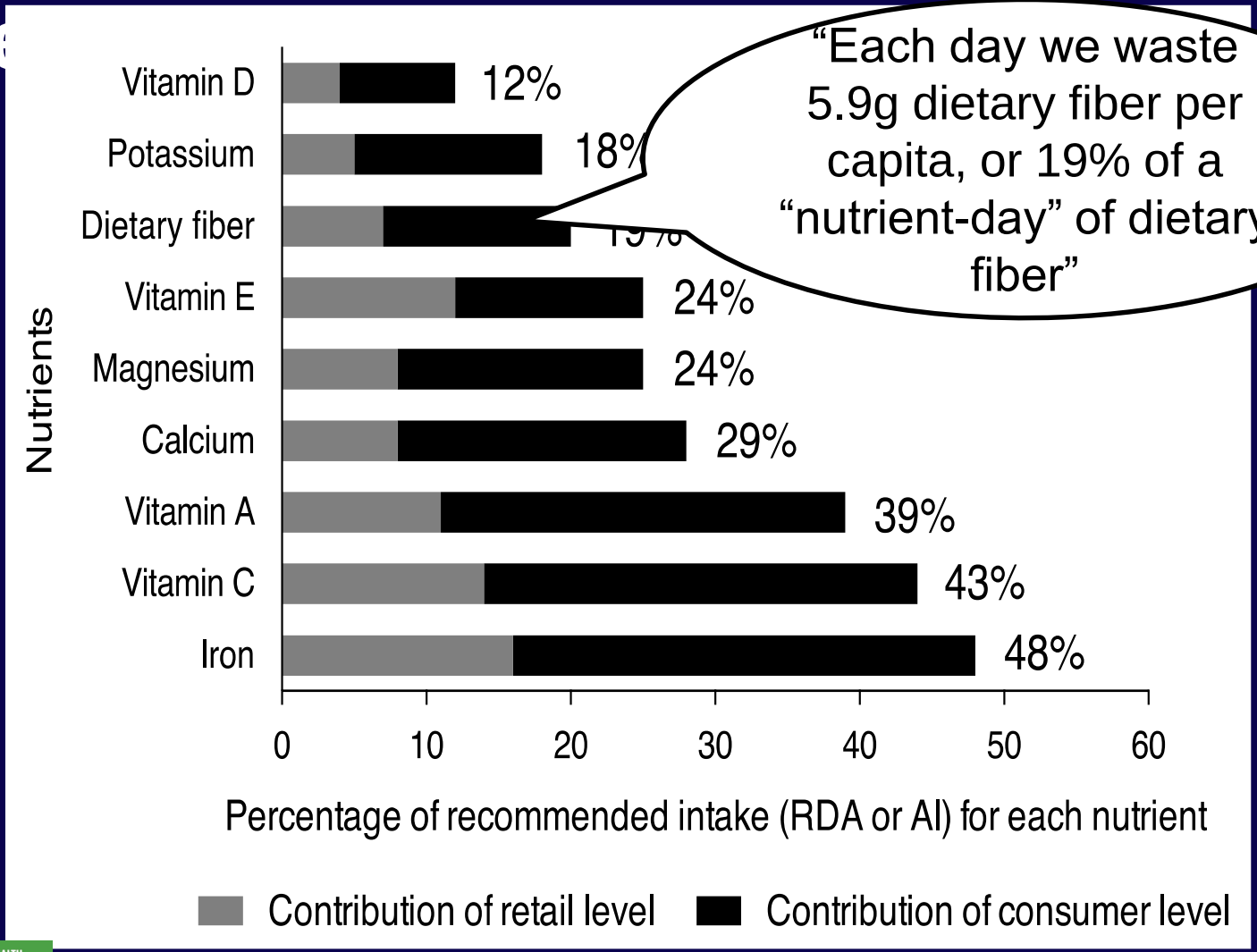
Wasted Food, Wasted Nutrients: Nutrient Loss from Wasted Food in the United States and Comparison to Gaps in Dietary Intake

Spiker, Hiza, Siddiqi, Neff, 2017

Journal of the Academy of Nutrition and Dietetics
The premier source for the practice and science of food, nutrition, and dietetic

1. Buzby et al, 2014 2. Hall et al, 2009. 3. DHHS/USDA, 2015.

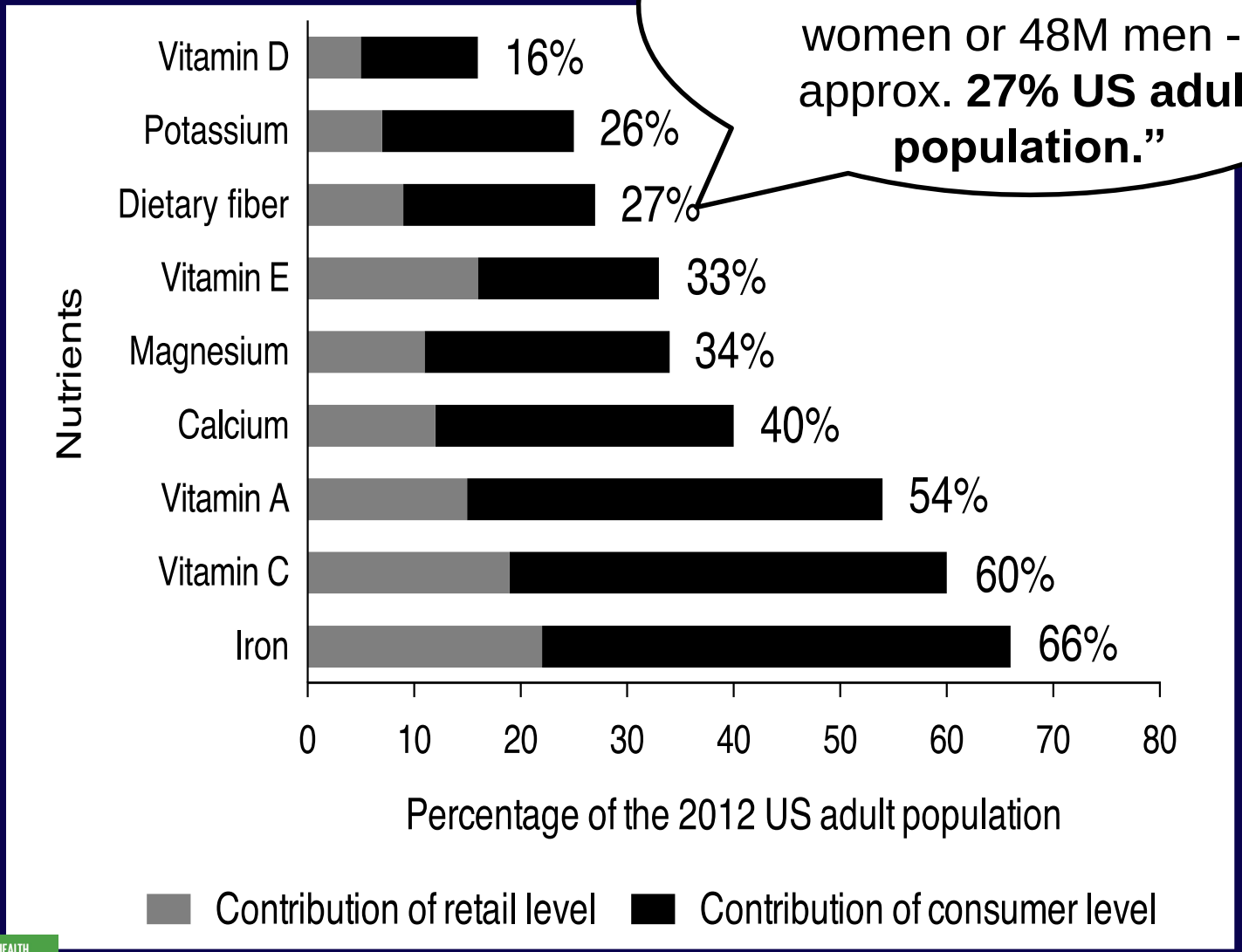
Nutrient Loss by % Recommended Intake



Spiker, Hiza, Siddiqi & Neff
J Acad Nutr Diet. 2017.

“Nutrient-Days” Lo

“Each day we waste enough dietary fiber to meet RDA for 74M women or 48M men -- approx. **27% US adult population.**”

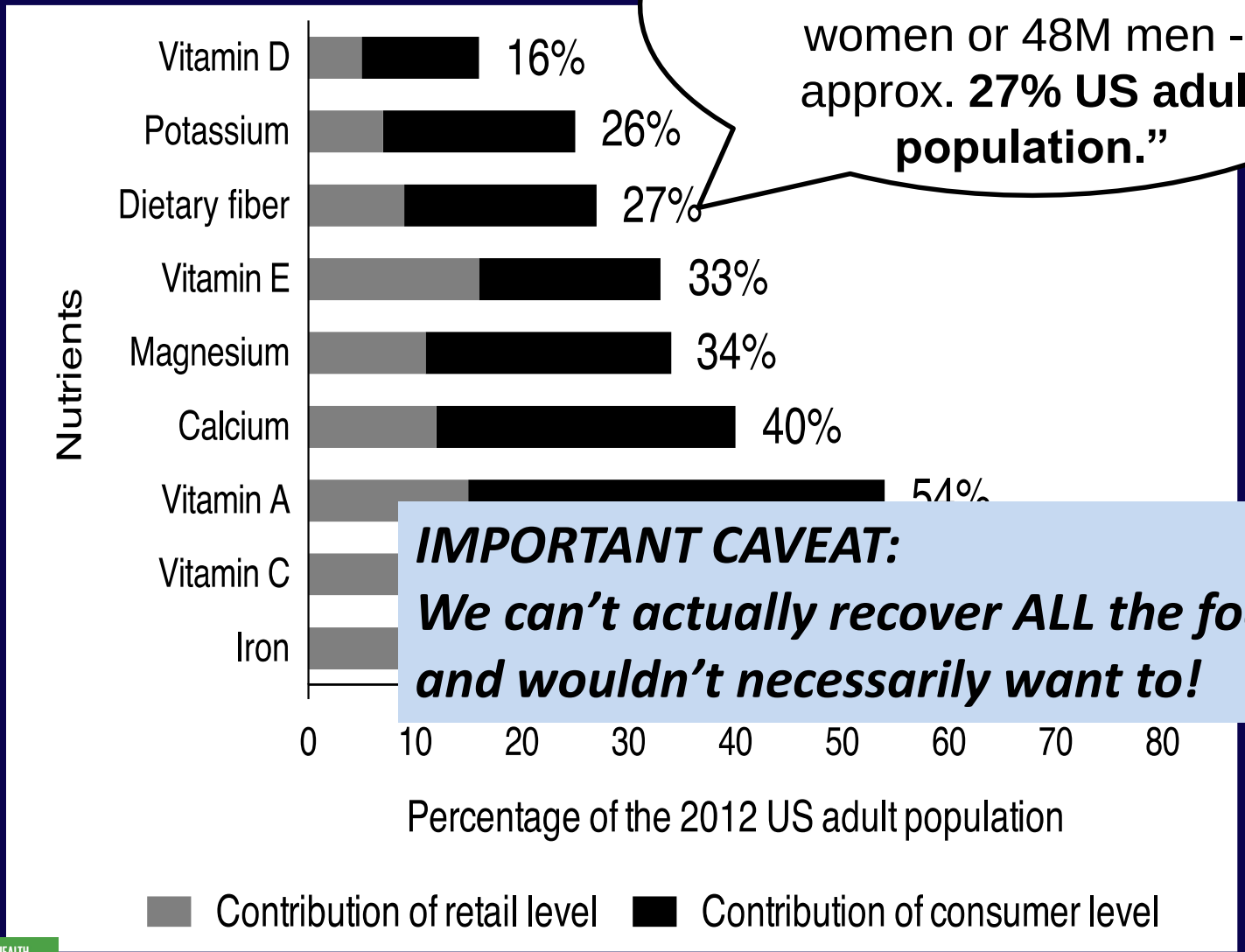


2 ZERO HUNGER
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
3 GOOD HEALTH AND WELL-BEING

Spiker, Hiza, Siddiqi & Neff
J Acad Nutr Diet. 2017.

“Nutrient-Days” Lo

“Each day we waste enough dietary fiber to meet RDA for 74M women or 48M men -- approx. **27% US adult population.”**



IMPORTANT CAVEAT:
We can’t actually recover ALL the food and wouldn’t necessarily want to!

2 ZERO HUNGER
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
3 GOOD HEALTH AND WELL-BEING

Spiker, Hiza, Siddiqi & Neff
J Acad Nutr Diet. 2017.

"Gaps in Dietary Intake" In VT Farm Salvageable Veg + Berry Losses

Table 5. Nutritional Content of Salvageable Vegetable and Berry Losses in Vermont (Modeled), for Selected Nutrients

Nutrient	Nutritional content of salvageable loss of vegetables and berries (average per capita per day)	Average gap in dietary intake for adult women: National mean current intake minus Recommended Dietary Allowance or Adequate Intake	Equivalent number of gaps in dietary intake for adult women from salv[illegible]	Average gap in dietary intake for adult men: National mean current intake minus [illegible]	Equivalent number of gaps in dietary intake for adult men [illegible]
Vitamin A	[illegible]	[illegible]			
Vitamin E	0.12 mg				
Calcium	6.9 mg	–13			
Iron	0.2 mg	–4.			
Magnesium	6.3 mg	–36 mg			
Potassium	78.4 mg	–2288 mg	[illegible]	[illegible]	[illegible]
Dietary Fiber	0.5 g	–8.9 g	36,075 adults	–17.7 g	18,139 adults

Source: Nutritional data from USDA, and RDA/AI data from Hellwig, Otten, & Myers, 2006..

US women consume approx. 97 mcg less VitA/day than recommended. In VT, enough salvageable veg + berries are discarded at the farm level to fill that gap for nearly 221,000 women

JAFSCD Journal of Agriculture, Food Systems, and Community Development
ISSN: 2152-0801 online
https://www.foodsystemsjournal.org

Salvageable food losses from Vermont farms Neff, Dean, Spiker, Snow, 2018

Global Environmental Change

ELSEVIER

journal homepage: www.elsevier.com/locate/gloenvcha

Wasted seafood in the United States: Quantifying loss from production to consumption and moving toward solutions

Dave C. Love[a,b,*], Jillian P. Fry[a,b], Michael C. Milli[a], Roni A. Neff[a,b,c]

WASTED SEAFOOD

- Dietary Guidelines: 2x seafood
- Global fish stocks declining
- Aquaculture ½ global seafood supply, but high resource use
- **Evidence synthesis: up to 47% US seafood supply wasted**
- Could fill 34% gap between current seafood consumption, USDA-recommended
- Lost ”nutrient-years”
  - 9.5 million men’s “protein-years”
  - 18.5 million adult “EPA+DHA years”

a.org/wikipedia/commons/2/2a/Salmon_waste_-_panoramio

FOOD SECURITY

Food Security

<u>Opportunities: Win-Win</u>

Shorter term Food Sec

- Food recovery
- Prevention extends food $

Longer term Food Sec

- Extend resources, GHG "budget"
- Halving FLW equivalent to 20% of 2050 global food gap (Searchinger)

<u>Challenges</u> - limitations of food recovery

- Not always "good food"
- Reduced disincentive to overproduce (moral licensing)
- Divert energy from addressing hunger directly & reducing waste
- Super-efficient food system leaves reduced buffer for emergencies

FOOD SAFETY

Food Safety

Opportunities

- Education/home ec: Food safety=#1 reason US consumers give for discarding food
- Prevent food from becoming unsafe
  - Food storage and packaging
  - Prevent food recalls
- National date labeling policy

Lose - Health

- Inadequately precautionary: taking food safety risks to prevent waste

Lose - Waste

- Overly precautionary: when in doubt, throw it out

Neff, Vandevijvere, Kanter 2015; Neff, Truant & Spiker, 2015

OCCUPATIONAL INJURY/ILLNESS

OSH Concerns

- Intervening to address wasted food can provide jobs
- Risks:
  - Microbial - bioaerosols; slips/trips/falls (slides from unstable piles, cave-ins); caught in processing equipment; run over by mobile equipment; musculoskeletal injuries - lifting & repetitive motions; motor vehicle crashes
- Wasted food: many new, private/nonprofit, small firms; volunteers/interns/students
  - Risk higher for newer employees
  - More sanitation fatalities in private vs public
  - No OSHA oversight if <11 employees, much of ag

Poole & Basu 2017. Systematic Review: Occupational illness in the waste and recycling sector. *Occupational Medicine*, Volume 67, Issue 8.
Cointreau S. Occupational and environmental health issues of solid waste management : special emphasis on middle- and lower-income countries. World Bank 2006

Industries Related to Wasted Food: Injuries / Illnesses 2016 (BLS)

	Injury*/100	Illness**/10k
All Private Industry	***2.8***	***14.1***
Agriculture, Forestry, Fishing & Hunting	**5.7**	**43.3**
Food Manufacturing – ex Fruit Veg manuf/specialty food	4.1	**35**
Refrigerated warehousing & storage	**5.6**	3.9
Solid Waste Landfill	4.7	**15.6**
Solid waste collection	4.9	9.7

* Recordable injuries; **Total cases illness

Industries Related to Wasted Food: Fatalities – CFOI 2016

	Fatality Rate/100k
All Wage & Salary Workers	***3.0***
Waste management & remediation svcs	**12.7**
Farming, fishing & forestry occupations	**24.9**
Truck transportation	**25.6**
Refuse & recyclable material collectors	**34.1**

→ Need research, safety/health training/TA, oversight

Conclusions

- Many points of connection between wasted food & public health
- Mostly benefits, but there are costs also –
- Needs active attention to find ways around the challenges

Thank You!

Roni Neff, PhD MS
Rneff@jhsph.edu

Johns Hopkins Center for a Livable Future

- Website: http://jhsph.edu/clf
- *Opportunities for students:*
  - Food Systems Certificate
  - MPH concentration
  - Funding: masters, doctoral