



Meatless Monday & the Johns Hopkins Bloomberg School of Public Health

10TH ANNIVERSARY SCIENTIFIC SYMPOSIUM & CELEBRATION

 #MM10clf



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Panel Discussion:

“Why Meatless?
The Public Health Impacts of a
High Meat Diet”

 #MM10clf

Dietary Guidelines for Americans for a Healthier Life

2010

Lawrence Appel



Dietary Patterns in 2010 Dietary Guidelines for Americans

- Patterns highlighted as healthful
 - DASH-Style Dietary Patterns
 - Mediterranean-style Dietary Patterns
 - Vegetarian Dietary Patterns
- Evidence on vegetarian diets
 - 5 clinical trials with blood pressure as outcome
 - 5 cohort studies with mortality as outcome
- Excerpts about healthful dietary patterns
 - “associated with lower blood pressure and a reduced risk of cardiovascular and total mortality”
 - “common feature is emphasis on plant-based foods”

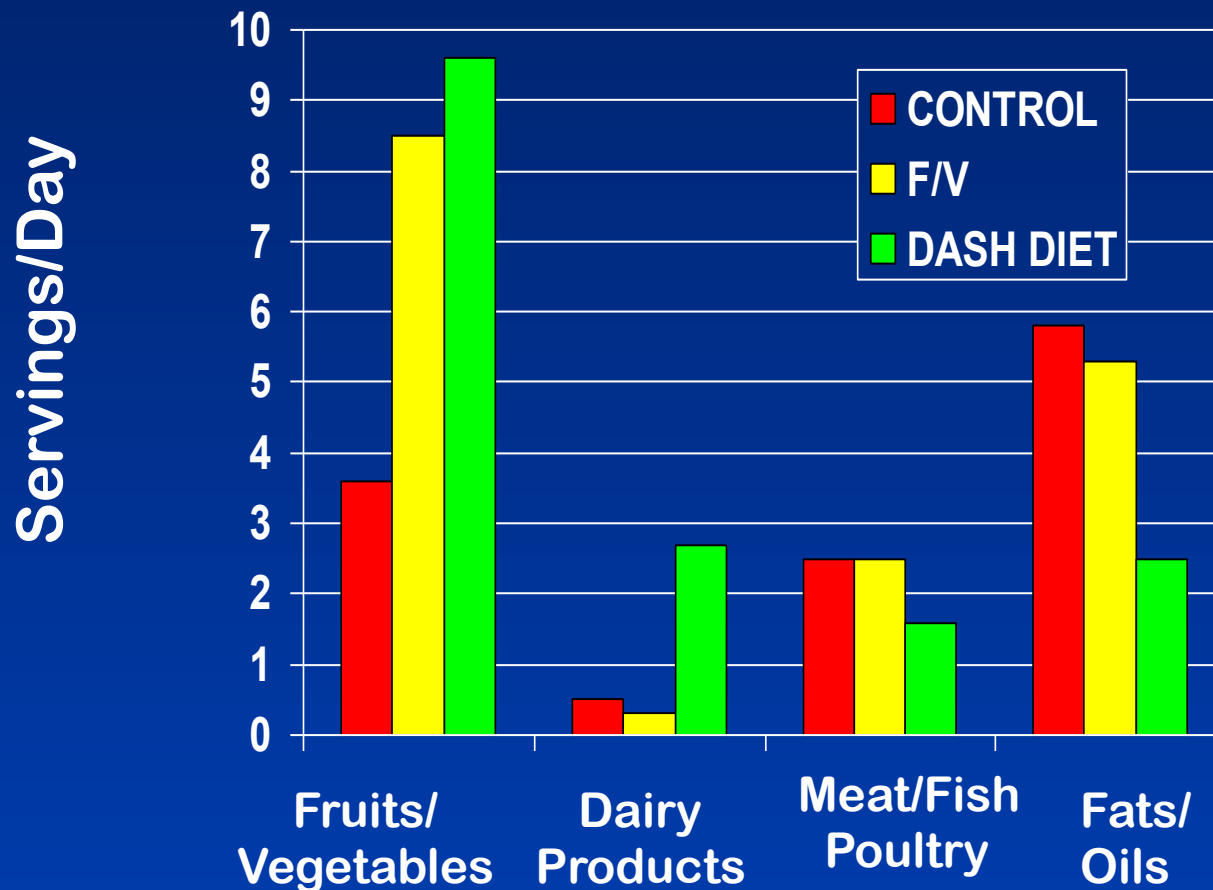


*D*ietary
*A*pproaches to
*S*top
*H*ypertension

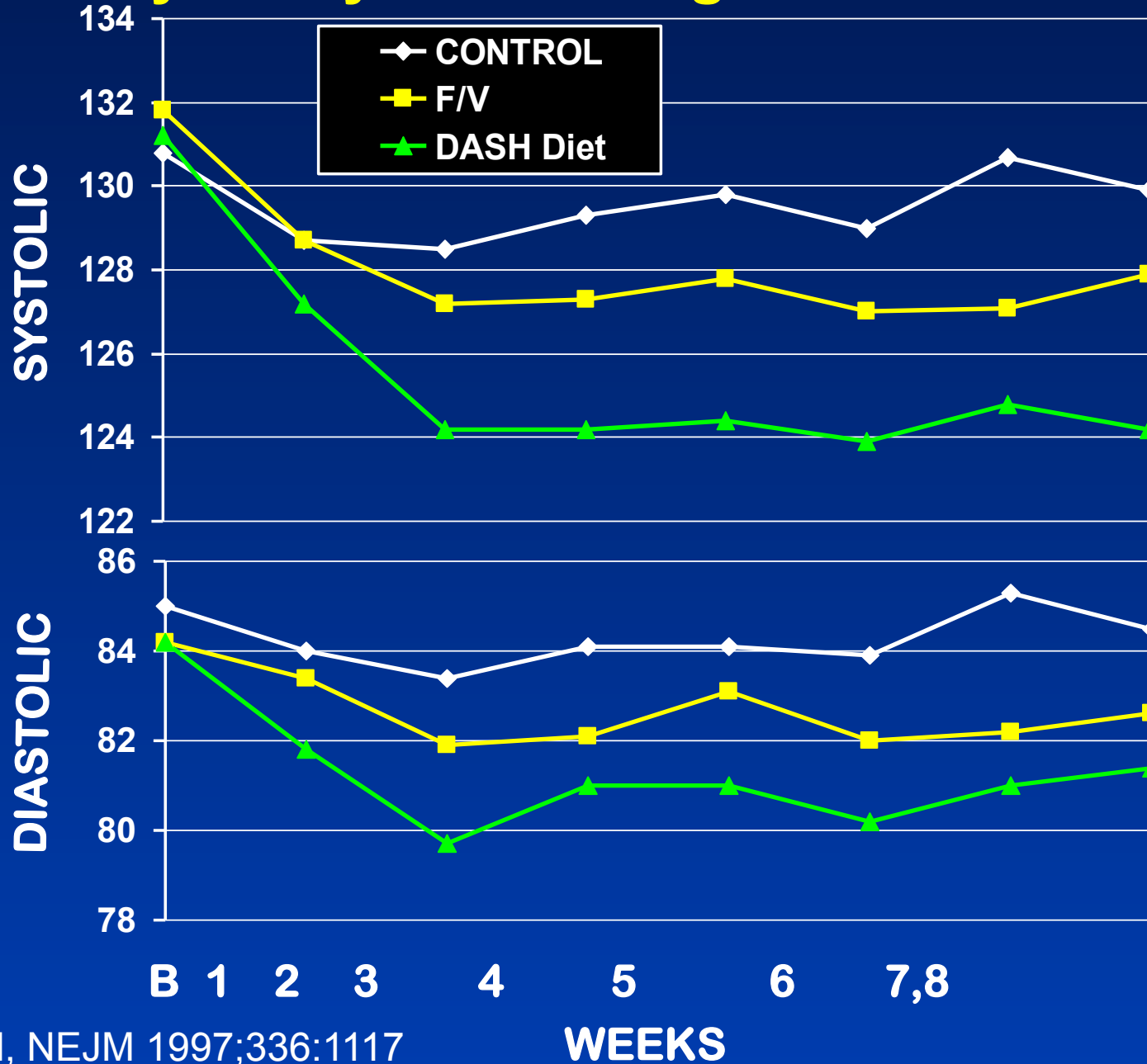




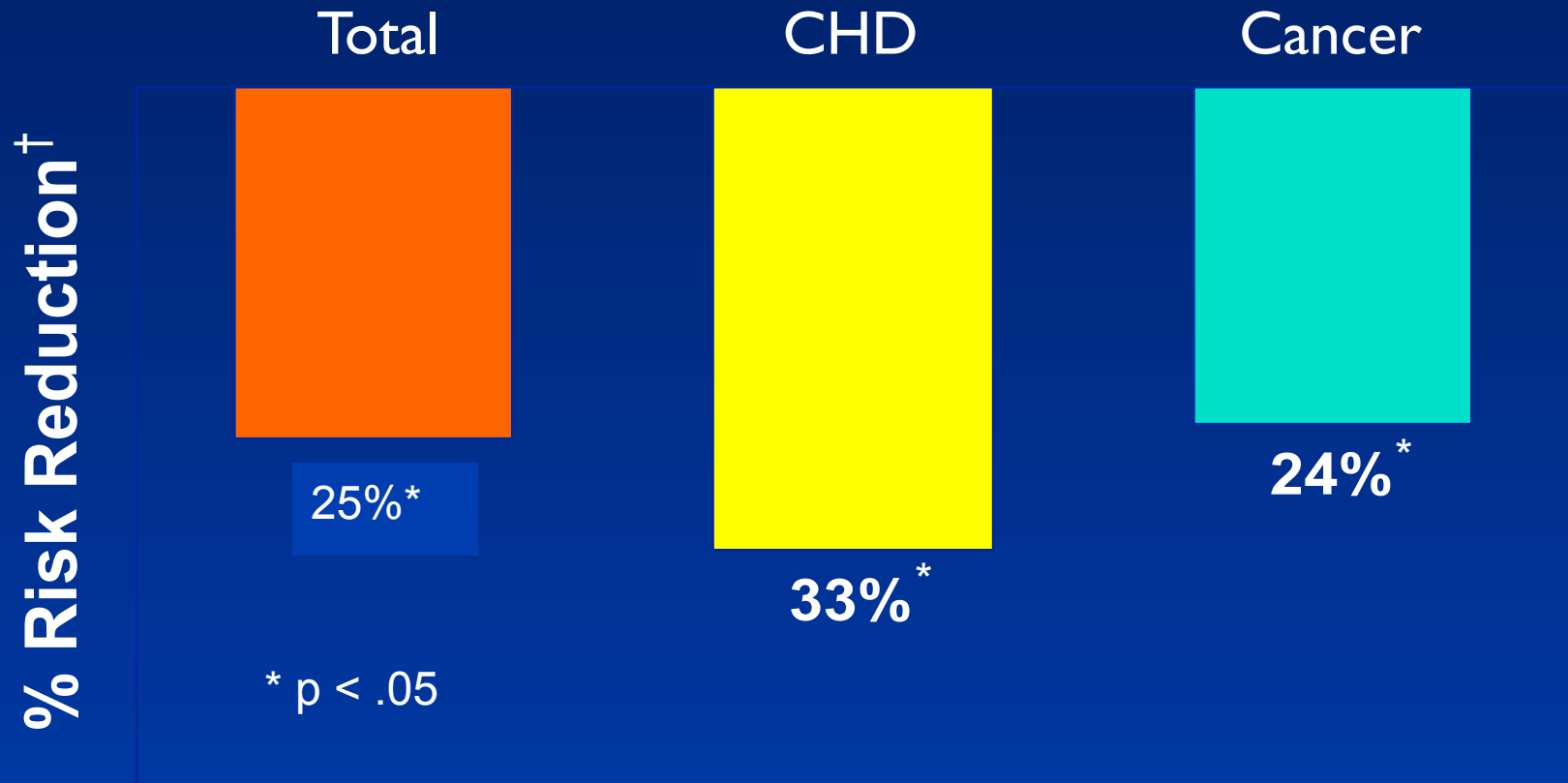
Servings per Day of Food Groups



Weekly BP by Diet During Intervention Feeding

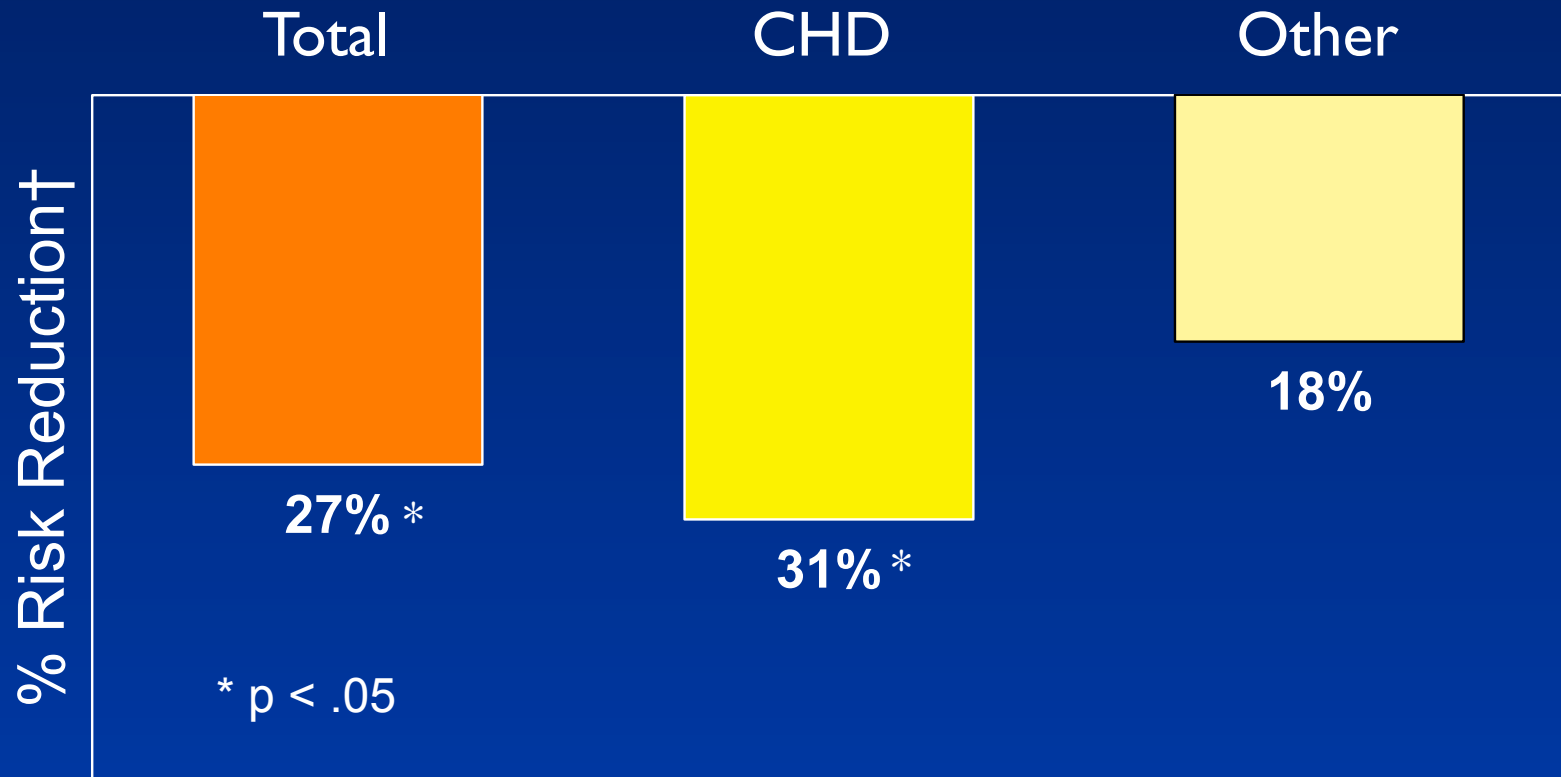


Associations of Mediterranean Diet[†] with Mortality Over 44 months in Greek Population (Primary Prevention)



[†] Per 2 unit increase in Mediterranean Diet Score

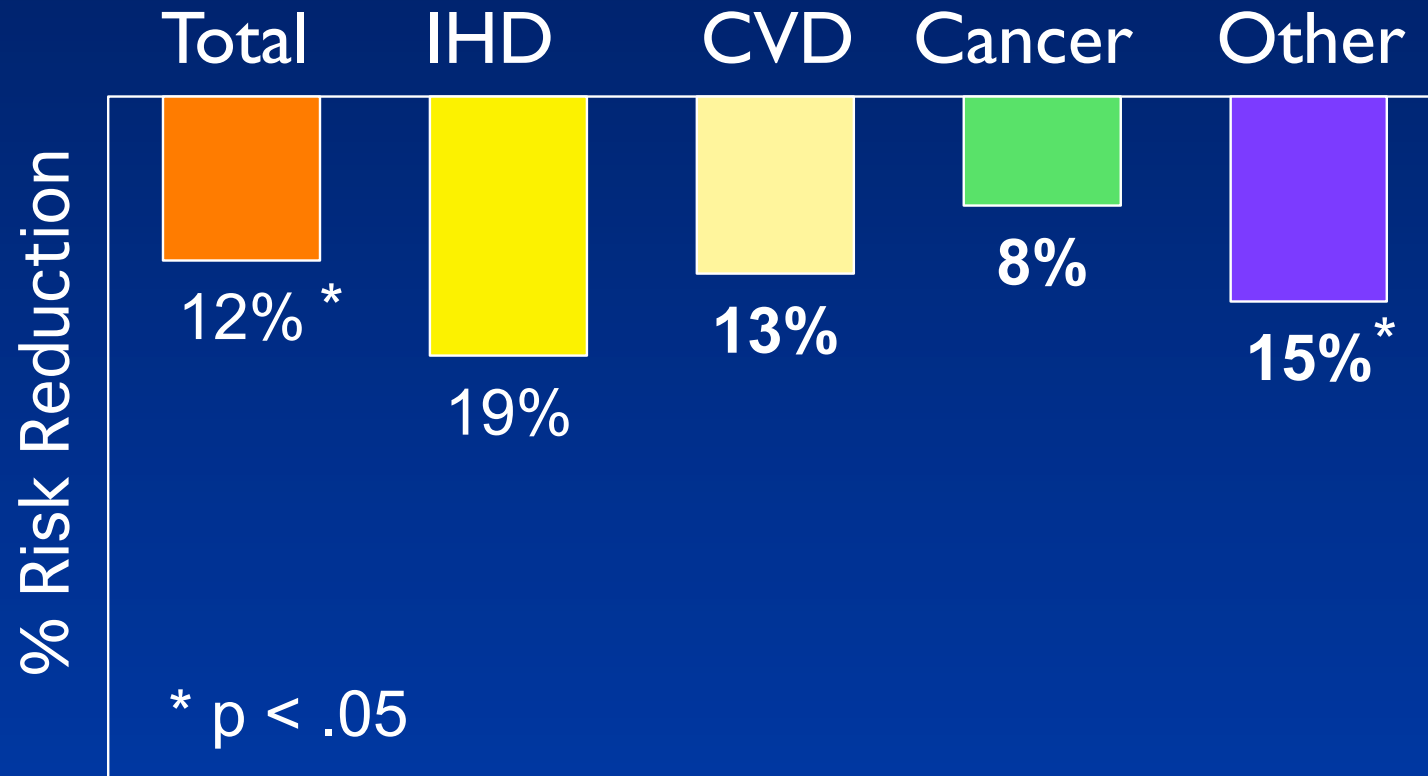
Associations of Mediterranean Diet[†] with Mortality Over 44 months in Greek Patients with Coronary Heart Disease



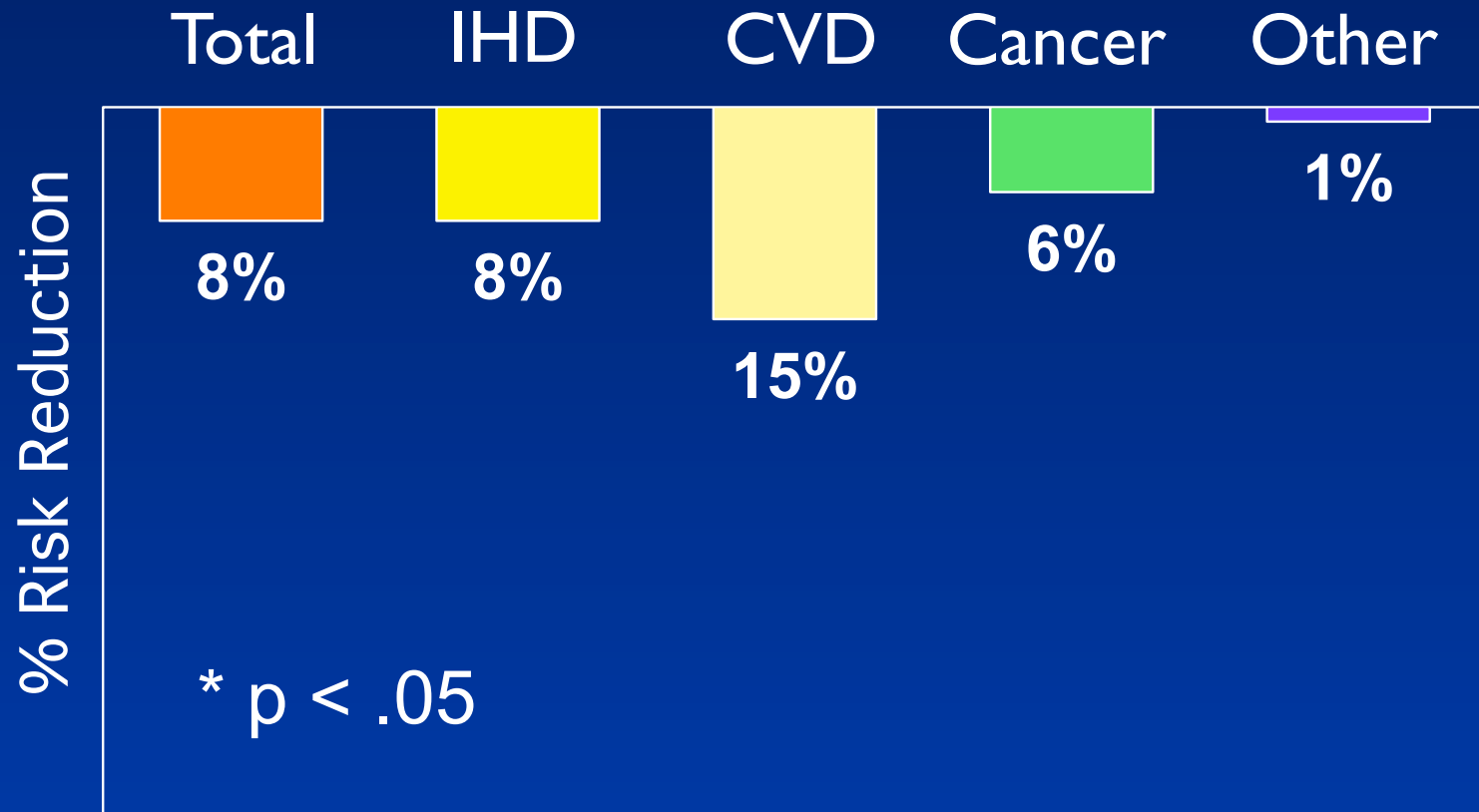
† Per 2 unit increase in Mediterranean Diet Score

Trichopoulos, Arch Int Med, 2005

Associations of Vegetarian Diets with Mortality in Seventh Day Adventists



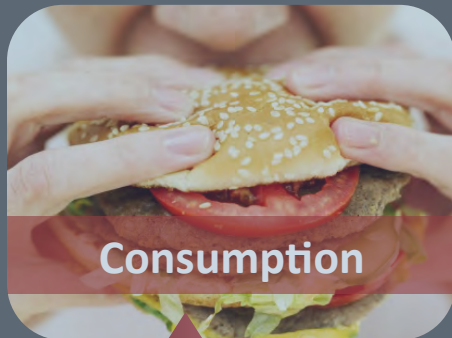
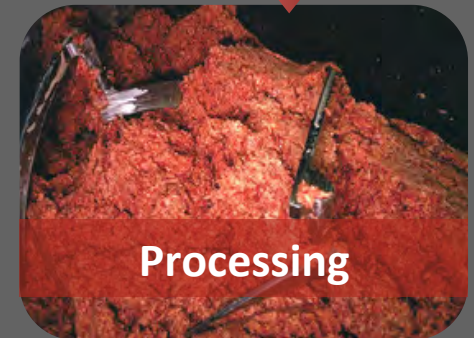
Associations of Semi-Vegetarian Diets with Mortality in Seventh Day Adventists



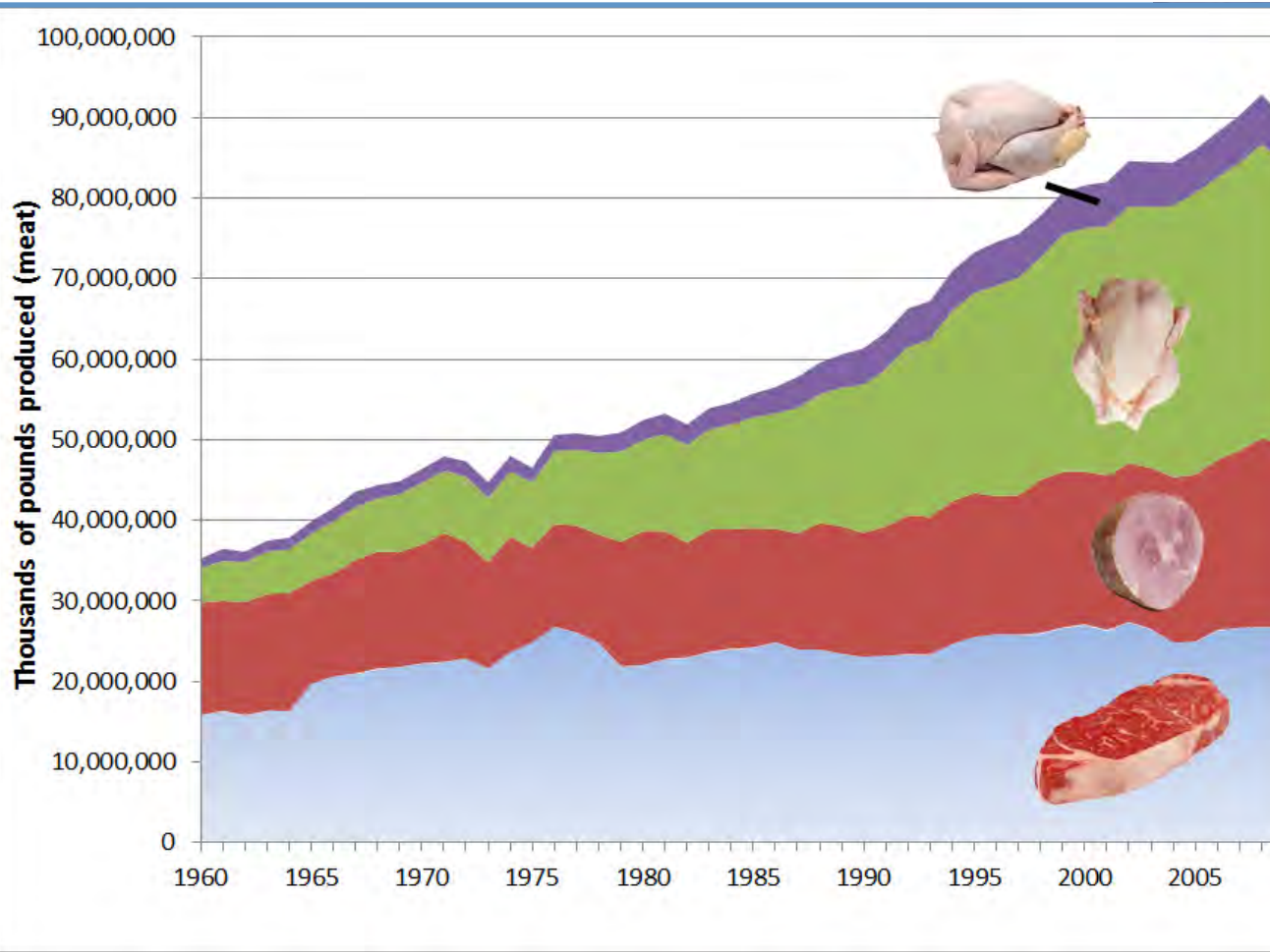
Summary and Comments

- Reduced meat intake is one characteristic of healthful dietary patterns
- Consistent evidence of potential benefit from vegetarian diets, more so in men than women
- Limitations of evidence
 - Potential for residual confounding (e.g. preservatives, cooking method)
 - Remarkably few studies of vegetarians in US

From farm to fork



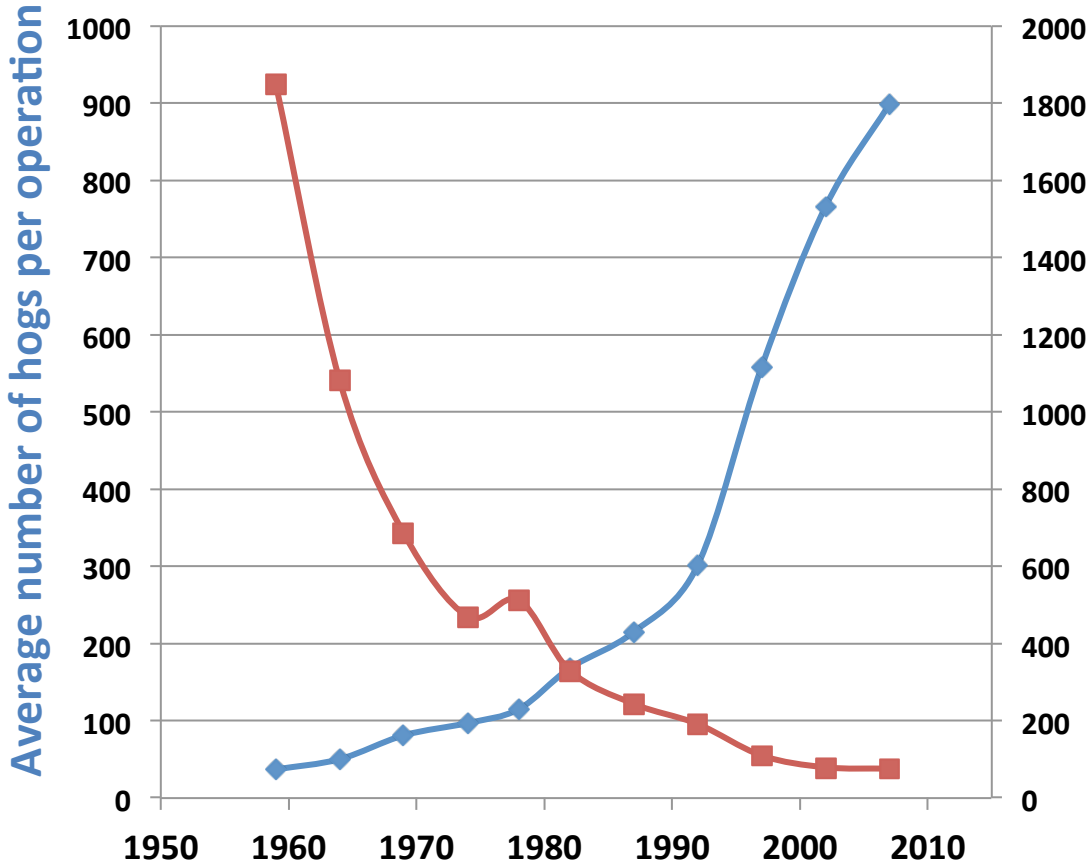
Food animal production in the US has been transformed over the last 50 years



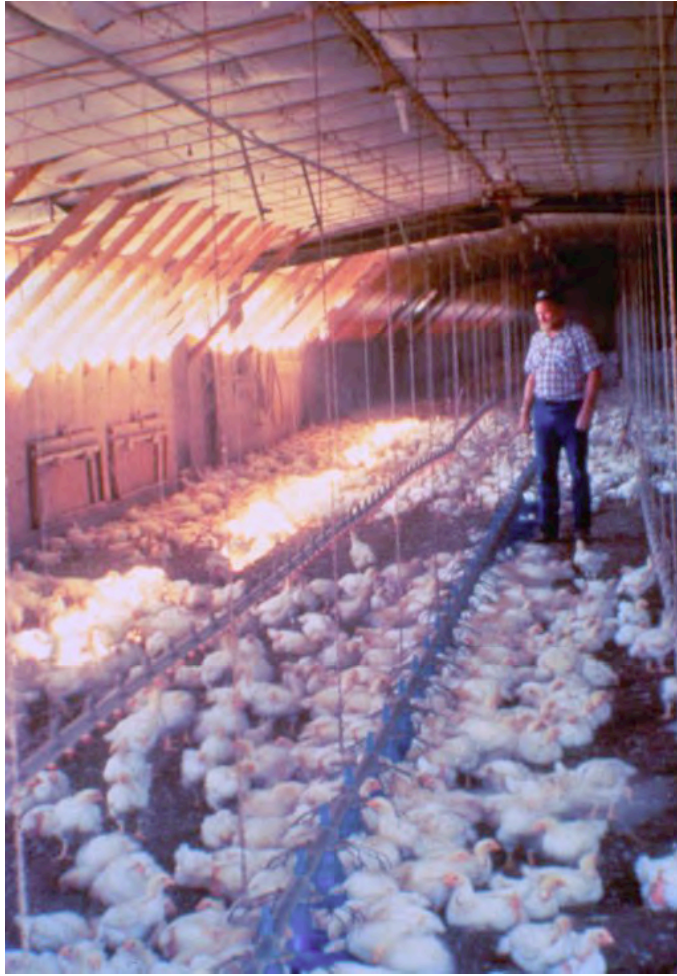
USDA National Agricultural Statistics Service. The Census of Agriculture.

Food animal production in the US has been transformed over the last 50 years

Change in Hog Industry Structure 1959 - 2007

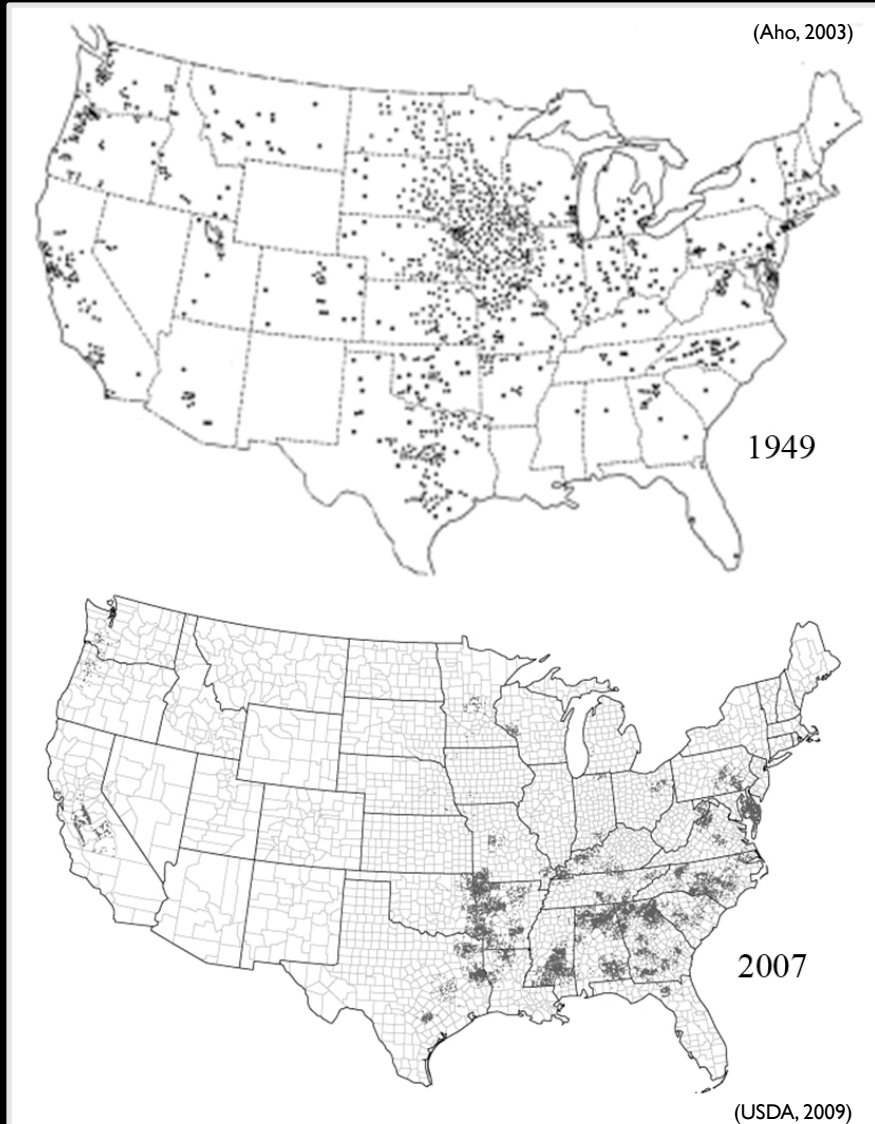


Number of hog operations (1000s of farms)



USDA National Agricultural Statistics Service (2007). *The Census of Agriculture*.

Localization of production



1949

Poultry processing plants

- Each dot represents a plant processing 50,000 or more chickens each year

2007

Chicken production

- Each dot represents annual production of 1 million or more chickens

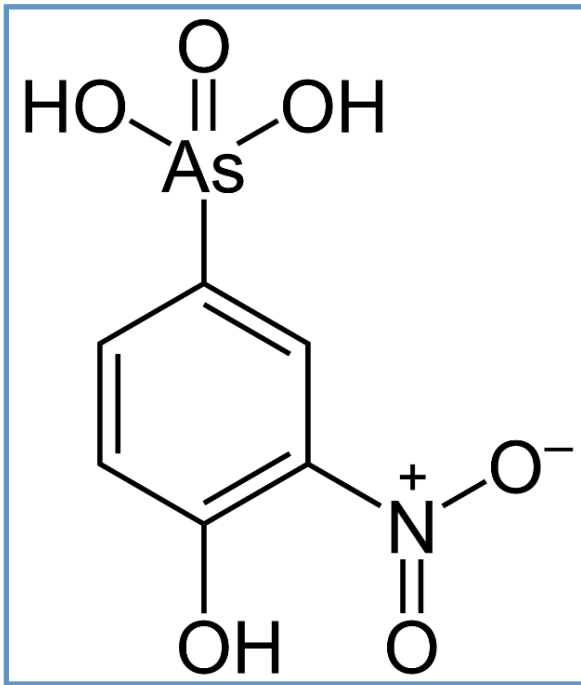
Practices and outputs of a truly broken system

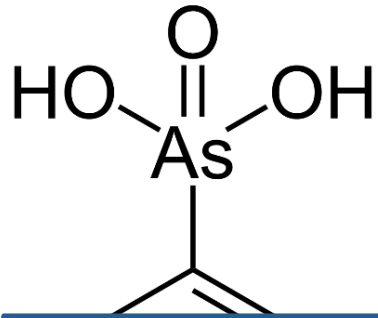
- Use of:
 - Arsenic-based drugs
 - Routine antibiotic use
- Consequences for:
 - Food safety
 - Community health



Arsenic-based drugs

- **Roxarsone and nitarsonsone**
 - Also p-arsanilic acid, carbarsone, arsanilate sodium
- Additives in poultry and swine feed since mid-1940s
- Approved for growth promotion, improved pigmentation, coccidiostat, treatment of swine dysentery
- Primary human exposure concerns are animal waste management and residues in animal products






Arsenic-based drugs

- **Roxarsone and nitarsonsone**

- Also p-arsanilic acid, carbarsone, arsanilate sodium

- Use of arsenic-based drugs in poultry production increases the concentrations of inorganic (toxic) arsenic in chicken meat
- Inorganic arsenic is a carcinogen and linked to other outcomes (CVD, diabetes, neurological effects, immunosuppression, others)
- Roxarsone was banned in October 2013, whereas nitarsonsone is still in use in turkeys

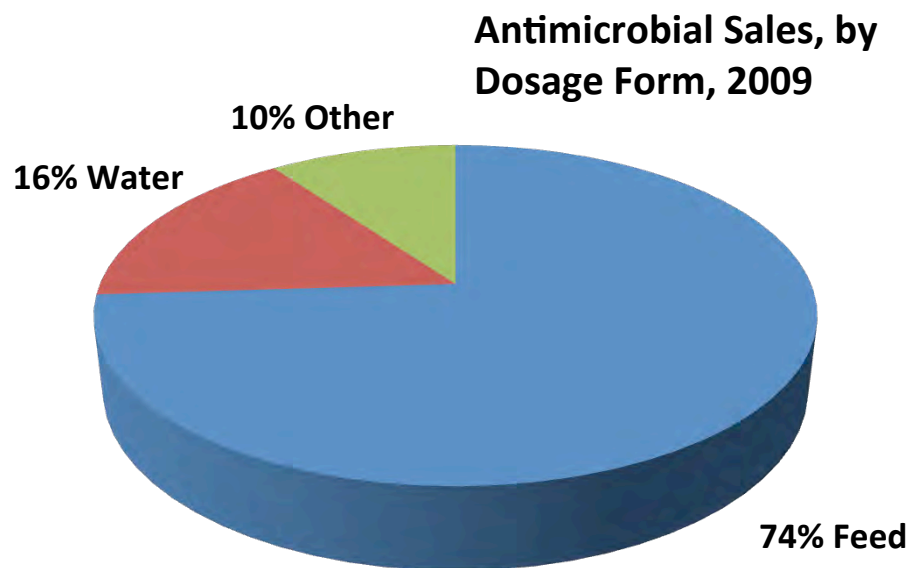


are animal waste management and residues in animal products

Antimicrobial Misuse

Prevention and growth promotion

- Lower dose
- Longer duration
- Feed and water
- Limited veterinary oversight
- Selection for ABR bacteria
- Environmental exposure pathways and food safety risks
- Risk of infection that does not respond to antibiotic therapy

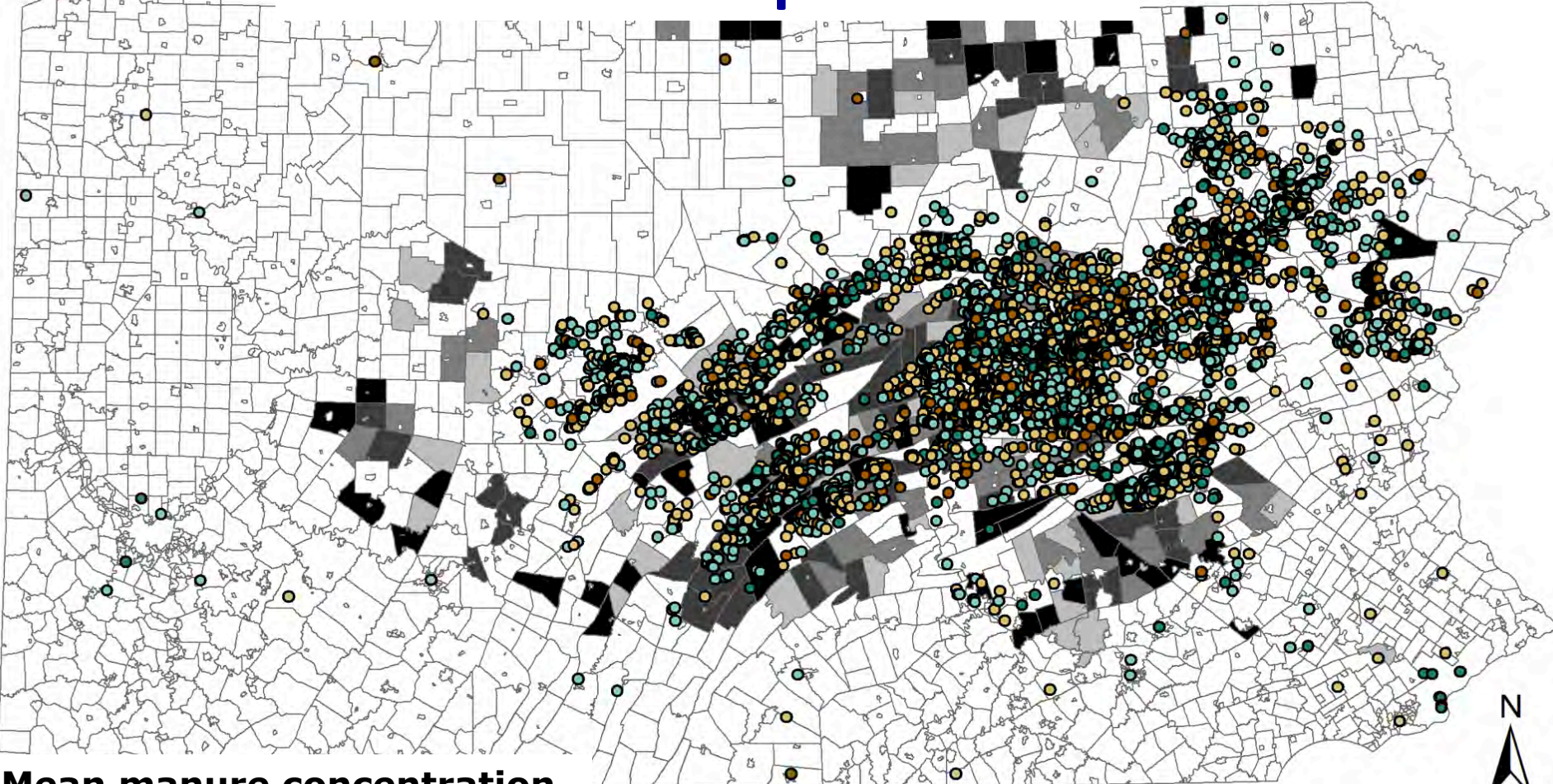


Antimicrobial Misuse

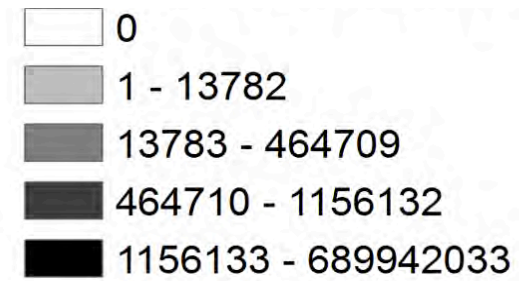
Prevention and

- Non-therapeutic use of antibiotics is widespread in industrial food animal production
- Federal efforts to curtail irresponsible use have been ineffective
- Resistant pathogen foodborne outbreaks continue to occur
 - 2013 MDR *Salmonella Heidelberg* in Foster Farms chicken
- Rural communities are in greatest proximity and likely have increased exposure to drug-resistant pathogens
- Risk of infection that does not respond to antibiotic therapy

Patients and Crop Fields



Mean manure concentration quintiles (gal/km²)



Patients

- HA-MRSA
- CA-MRSA
- SSTI
- Control



GEISINGER
HEALTH SYSTEM

Associations of **Seasonal Crop Field Manure Exposure** with HA-MRSA, CA-MRSA and SSTI (full multilevel model^a)

	HA-MRSA	CA-MRSA	SSTI
	Adjusted OR (95% CI)	Adjusted OR (95% CI)	Adjusted OR (95% CI)
Swine			
Q1	1.0	1.0	1.0
Q2	1.19 (0.97-1.46)	1.08 (0.89-1.31)	1.03 (0.88-1.20)
Q3	1.26 (1.03-1.55)	1.25 (1.04-1.52)	1.22 (1.05-1.41)
Q4	1.29 (1.04-1.60)	1.38 (1.13-1.68)	1.37 (1.18-1.60)
p ^b	0.01	< 0.001	< 0.001
Dairy/veal			
Q1	1.0	1.0	1.0
Q2	0.83 (0.68-1.03)	0.97 (0.80-1.18)	0.91 (0.78-1.06)
Q3	0.93 (0.76-1.13)	0.91 (0.75-1.10)	0.85 (0.73-0.99)
Q4	0.77 (0.62-0.97)	1.25 (1.02-1.53)	1.02 (0.87-1.19)
p ^b	0.06	0.06	0.95

CA-MRSA = community-associated methicillin-resistant *S. aureus*; HA-MRSA = healthcare-associated MRSA; SSTI = skin and soft tissue infection

^a Controlled for sex, age, race/ethnicity, ever-smoking status, antibiotic prescription in prior 2 years, community type, and community socioeconomic deprivation

^b p-value for linear trend

Associations of **Seasonal Crop Field Manure Exposure** with HA-MRSA, CA-MRSA and SSTI (full multilevel model^a)

	HA-MRSA Adjusted OR (95% CI)	CA-MRSA Adjusted OR (95% CI)	SSTI Adjusted OR (95% CI)
<ul style="list-style-type: none"> • Living near swine production facilities was associated with increased risk of MRSA and SST infections • Living near cropfields where swine waste is land applied is a risk factor for MRSA and SST infections • Persons living in agricultural communities face additional risk burdens beyond those borne by society via foodborne pathogens 			
p ^b	0.06	0.06	0.95

CA-MRSA = community-associated methicillin-resistant *S. aureus*; HA-MRSA = healthcare-associated MRSA; SSTI = skin and soft tissue infection

^a Controlled for sex, age, race/ethnicity, ever-smoking status, antibiotic prescription in prior 2 years, community type, and community socioeconomic deprivation

^b p-value for linear trend

Why Meatless Monday?: Resource, Climate and Food Security Perspectives

Roni Neff, PhD MS

Program Director, Food System Sustainability and Public Health,
Center for a Livable Future

Assistant Scientist, Environmental Health Sciences
Johns Hopkins Bloomberg School of Public Health

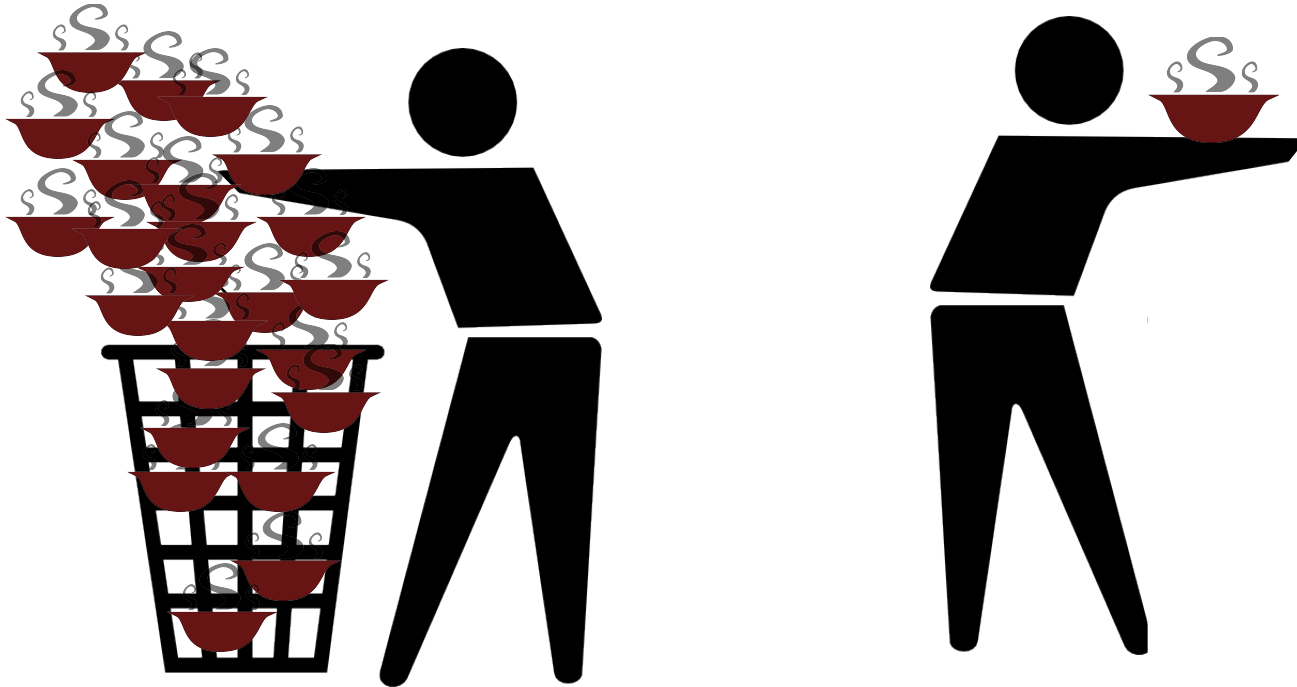
Rneff@jhsph.edu



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CENTER *for* A LIVABLE FUTURE

Basic Inefficiency

- 4.5 kg feed \rightarrow 1 kg chicken meat
- 9.4 kg feed \rightarrow 1 kg pork
- 25 kg feed \rightarrow 1 kg beef (Smil 2002 based on USDA longterm data)



Resource use in meat production

- Energy
 - >40 kcals energy/1 kcal beef
- Soil
 - 20-100 yrs/inch topsoil; losing 1 inch/34 years
- Fertilizers
 - Nitrogen – GHG, energy intensive, water contam
 - Phosphorus – peak phosphorus
 - Manure – 130x human waste; runoff; contamination
- Water
 - 27% global human water footprint: animal production
 - Ogallala aquifer: >25% US irrigated land overlies, drinking water to 82% within boundary; *May be drained in 25 years.*
 - Industrial countries, veg diet can reduce food-related water footprint by 36%



Climate Change

- Livestock-related greenhouse gas emissions
 - 14.5% of global anthropogenic GHG
 - 6% In US; 9%
 - Is grassfed better?
 - Probably not for climate change
(yes for other reasons.)



Impacts

- 4 person family, 1 day/week for 1 year
 - Skip meat/cheese = not driving for 5 weeks
 - Skip steak = not driving for almost 3 months
- Everyone in US, 1 day/week for 1 year
 - Skip meat/cheese = like not driving 91 billion miles, or taking 76 million cars off the road.



=



Food Security

- **By 2050**
 - Need 50% more food
 - Global meat demand may rise by 73%
- **Yet:**
 - crop yield increases may be reaching limit;
 - little available extra land;
 - climate change;
 - Soil, water depletion and contamination
 - Depletion of fossil fuels and phosphorus, etc....
- **What if we used our resources differently?**
- If land for feed used to grow food crops, could feed 1b on predominantly veg diets
 - 870 million undernourished 2012





10TH ANNIVERSARY SCIENTIFIC SYMPOSIUM & CELEBRATION

Panel Discussion:

“Why Monday?

The Idea and Research behind
Monday as a Day for Health
Behavior Change”



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What to do

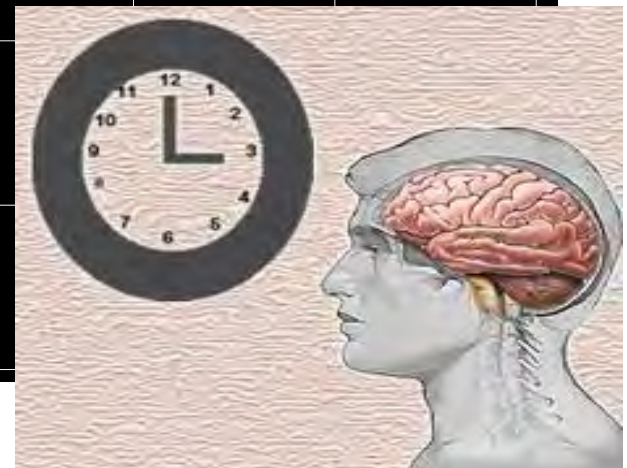


When to do it

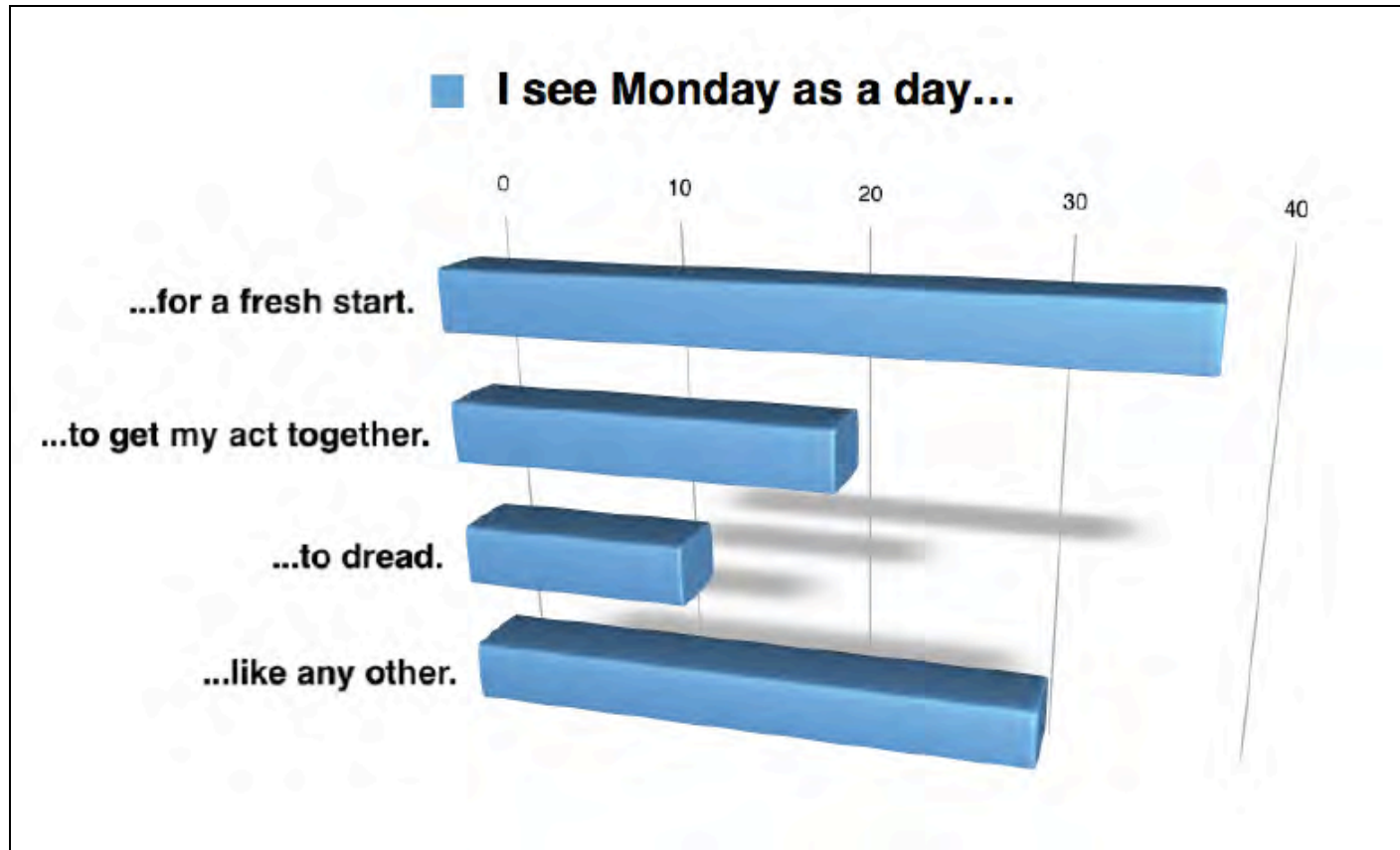
Morgan Johnson

It's already on the calendar!

Sun	Mon	Tue	Wed	Thu	Fri	Sat



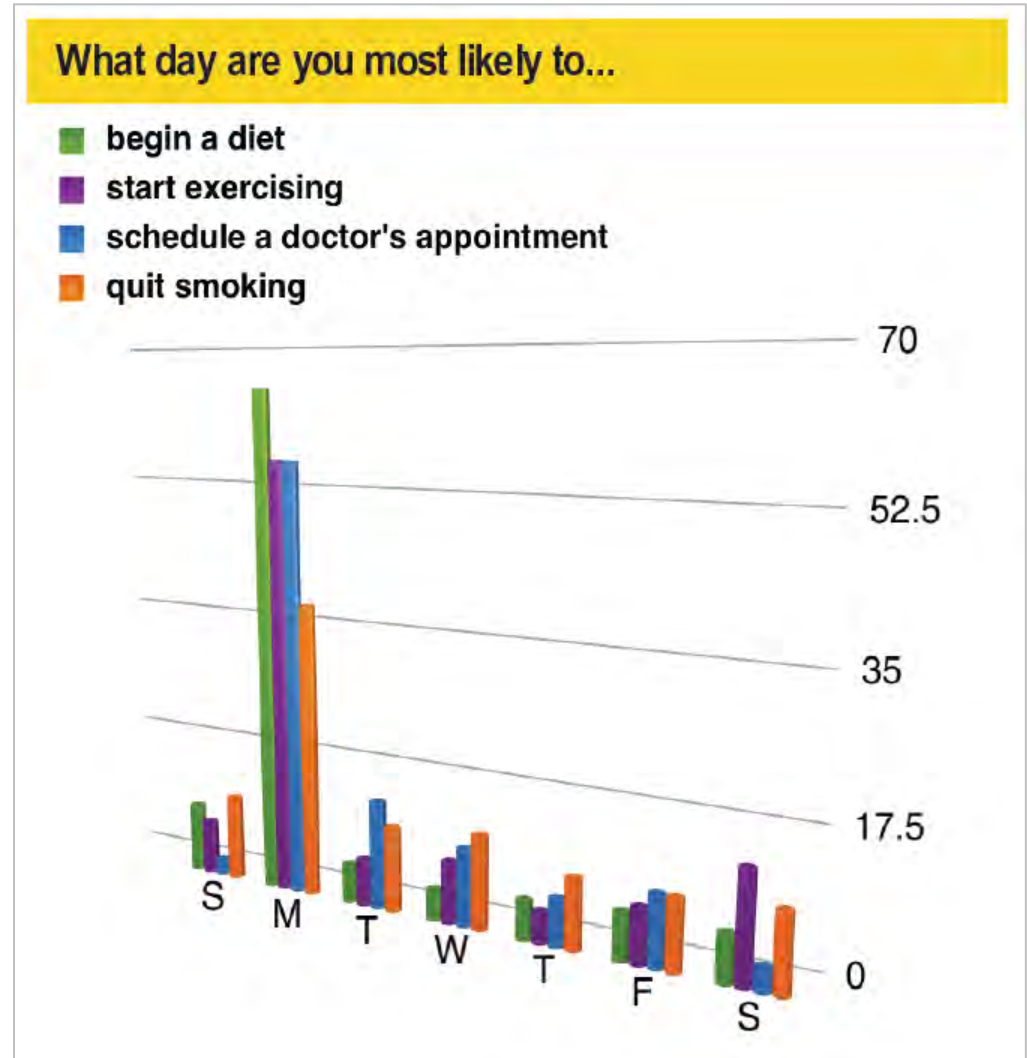
The Monday Mindset



Online survey conducted by FGI Research among 2000 18+ representative sample. Sampling error is +/- 2% at the 95% confidence level.

Monday & Health Behaviors

According to 2011 nationwide survey
Monday is the most popular day for new health behaviors.



Source: FGI Resources Inc May 2011 marketing survey of 2,000 US-based adults (margin of error +/-2%)

T.G.I.M.





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SCHOOL *of* PUBLIC HEALTH

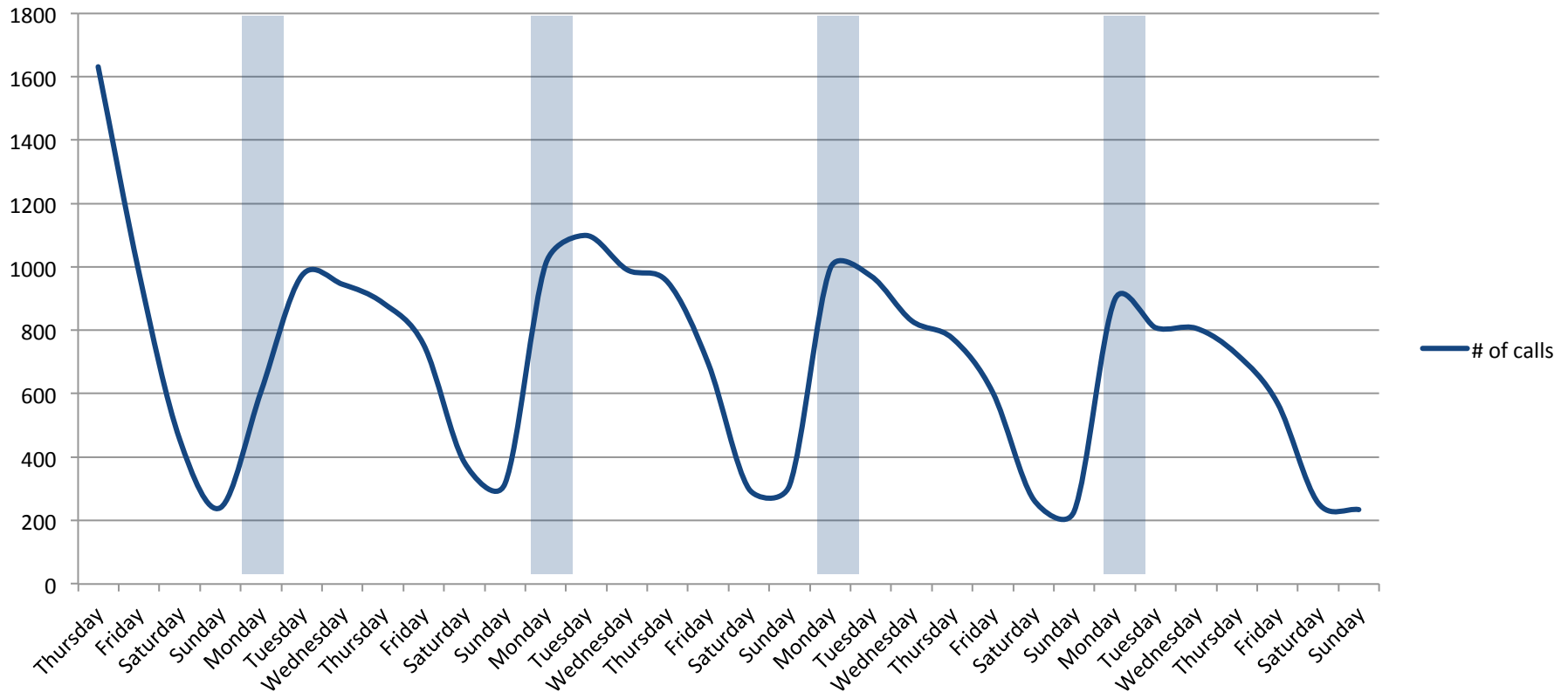
Leveraging Monday for Smoking Cessation

Joanna Cohen, PhD, MHSc
Director, Institute for Global Tobacco Control



Protecting Health, Saving Lives—*Millions at a Time*

Tobacco quitline calls, by day of the week July 2010

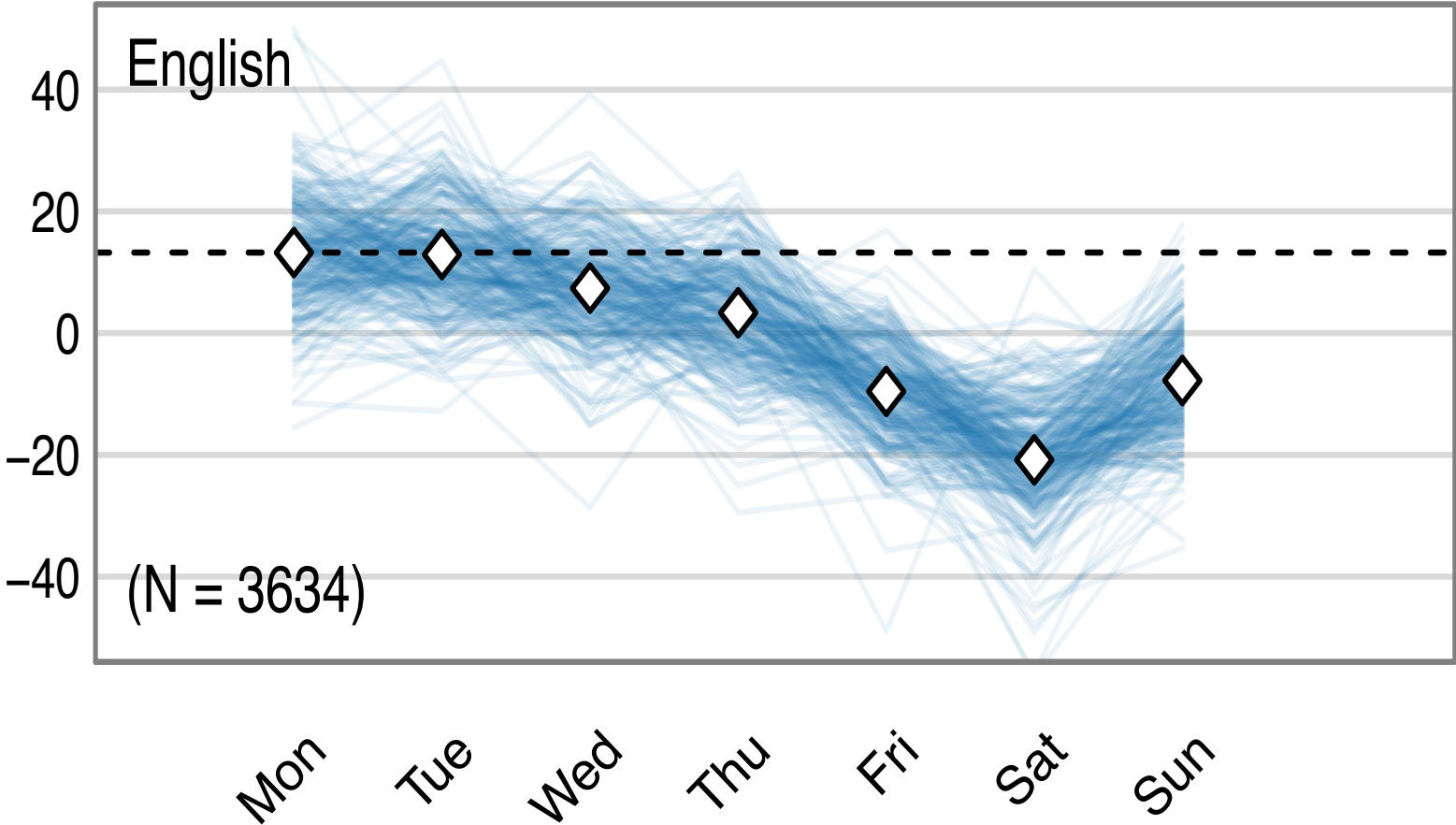


Original research by Morgan Johnson, MPH. From "Weekly Patterns in Usage of Tobacco Quit Lines" presented to National Quitline Consortium, November 10, 2011. Slides available at: http://www.naquitline.org/resource/resmgr/research/quitline_periodicity_2.pdf.



Google search queries for smoking cessation, by day of the week

Search Query Volume (Detrended & Mean Centered)



Ayers JW, Althouse BM, Johnson M, Cohen J. Weekly “Circaseptan” Rhythms in Smoking Cessation Considerations. *JAMA Internal Medicine*. 2013 (in press).



Quit  **& Stay Quit**
Monday





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SCHOOL *of* PUBLIC HEALTH

Monday in obesity

Lawrence Cheskin, MD

Director, JH Weight Management Center



Protecting Health, Saving Lives—*Millions at a Time*

Mondays and weight loss

- Monday concept is conducive to small steps & reminders
- Especially useful in the emerging field of mHealth
 - Tailored rapid interactive mobile messaging program (TRIMM)



What do people struggling to lose weight request?

Results of focus groups at the JHWMC

- Focused attention to their specific situation and needs
- Periodic “reminding”
- Respect for their time and schedule

- Patients of the Center were very receptive to periodic messages to help keep them on track
- None were opposed to trying it

- All thought a **Monday** focus made a great deal of sense



Lifestyle Tailoring & Behavioral Goals

Michael:

- Wakes up at 6am, lunch at 12pm
- Exercises regularly
- Loves Twinkies, not veggies
- Munchies when studying

TRIMM Goals

- Reduce Sugar Intake
- More Balanced Diet
- Eat Only When Hungry

Michael's Mom:

- Wakes up at 9am, lunch at 2pm
- Mostly sedentary, little physical activity
- Loves fried foods
- Large portions

TRIMM Goals

- Reduce Fat Intake
- Practice Portion Control
- Increase Physical Activity



Interactive Messages

- Response to Michael is based on his progress:



TRIMM results

- 6-month weight loss:

	Standard Care	TRIMM Intervention	P-value
Mean Weight Loss	1.3 lbs	8.0 lbs	<0.03
Mean % Body Weight Loss	0.6%	3.7%	<0.02

- Engagement: participants read and responded to ~60% of text messages overall
- Each additional engagement percentage predicted an additional 0.25 lb of weight loss at 6 months



Feedback from TRIMM participants

- Participant satisfaction averaged 4.4 / 5.0
- Specific Feedback:
 - “It’s like having a partner who is concerned about your eating habits.”
 - “TRIMM has changed my lifestyle.”
 - “I have lost weight that I could not lose before.”
 - “This is better than having a buddy ‘cause it’s always there.”



Monday TRIMM and the future

- We are designing Monday TRIMM, a further enhancement of TRIMM, applied to Mondays
- We are planning to pilot integration into community and clinical practice settings
- Monday TRIMM is being integrated into the JHWMC's programs offered to members of the general public seeking weight loss





Peggy Neu

Tenth Anniversary Timeline



CLF's Bob Lawrence cites Surgeon General's Healthy People 2010 goal of reducing saturated fat in the American diet by 15%



Sid Lerner suggests people cut out meat once a week and proposes bringing back Meatless Monday, an idea from WWs I and II.



Meatless Mondays are embraced at Jay's Wolfe Street Cafe at JHSPH.



Meatless Monday inspires chili cook-offs around the country.



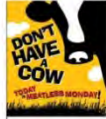
CLF publishes "Public Health Implications of Meat Production and Consumption" in the Journal of Public Health Nutrition.



CLF offers online graduate course, "Food Production, Public Health and the Environment," highlighting the Meatless Monday story.



Boca Burger becomes first food company to use Meatless Monday to promote their vegetarian offerings.



Meatless Monday attends American College Health Association which starts MM trend on campus.

Jenny Craig adds Meatless Monday to weekly newsletter.



Fresh Direct features Meatless Monday on digital and in-store promotion.



United Nations releases report documenting the environmental impact of industrial farm animals.



Meatless Monday celebrates Mardi Gras with a campaign asking people to take a "big fat break."



Food writer Kim O'Donnell writes a weekly Meatless Monday nutrition column in the Washington Post.



CLF completes two reviews on the cultural significance of Monday and the effectiveness of periodic prompts in health promotion which serves as the foundation for supporting Monday concept.



Meatless Mondays is endorsed by best-selling author and food advocate, Michael Pollan during the Oprah Winfrey Show.



Former Beatle Sir Paul McCartney starts Meat-Free Monday in the UK.



Baltimore City Public Schools become first school system in the country to join Meatless Monday.



Celebrity Chef Mario Batali publicly supports Meatless Monday and begins offering options in his 14 restaurants.



Oprah institutes MM in Harpo cafeteria and cheers MM on show reaching millions.



CLF helps bring Meatless Monday to Johns Hopkins University and Hospital Cafeterias.



Meatless Monday identified in media as top food trend for 2011.



Institutional food service provider Sodexo brings Meatless Monday to over 6,000 hospitals, workites, and government offices throughout the US.



Aspen becomes the first Meatless Monday city.



Los Angeles passes city council resolution to be a Meatless Monday city which provides fodder for Jay Leno, Stephen Colbert and Bill O'Reilly.



Mario Batali and The Chew team highlight MM in full hour of popular cooking show.



USDA employee endorses MM in internal newsletter which is then retracted by USDA in response to meat industry pressure.



Meatless Monday moves to the Middle East with initiatives in Iran, Israel and Turkey.



San Diego schools adopt Meatless Monday, joining Los Angeles, Baltimore and hundreds more.



Meatless Monday makes splash at Sundance with Morningstar Farms' "Get the Beef off Your Buns."



Meatless Monday awareness graph.



0%



2004



2005



2006



2007

15%



2008



2009

26%



2010



2011



2012

43%



2014

**MEATLESS
MONDAY**

Meatless Monday is changing behavior

35.8% of those aware said MM had influenced their decision to cut back on meat

62% of those influenced said they try to incorporate MM into their weekly routine.

Respondents reported increases in a range of healthy meatless alternatives:

Fruits	65%
Vegetables	73%
Beans	42%
Whole grains	47%
Nuts	38%





It's now in 29 countries, including Israel and Iran!

LUNTIANG
LUNES



Meatless
Monday
יום שני ללא בשר

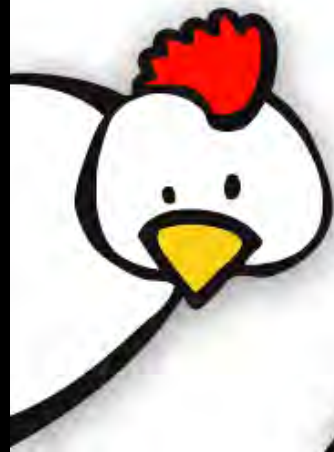


KJÖTTFRI
mandag



China??

有利于你，
有利于我们，
有利于地球。



**MEATLESS
MONDAY**
One day a week, cut out meat.



Hot weekend?

Get checked for HIV and STDs

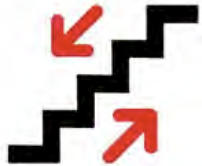
MANUP
MONDAY.ORG




B' More Healthy Communities for Kids



**MOVE IT
MONDAY!**



**Exercise your feet,
not your fingers.**



**MOVE IT
MONDAY!**
Jump start your week!

A graphic featuring a black staircase icon with two red arrows: one pointing up and one pointing down. Below the icon is the text 'Exercise your feet, not your fingers.' Underneath that are two circular buttons with blue arrows pointing up and down. At the bottom is the 'MOVE IT MONDAY!' logo with the tagline 'Jump start your week!'.



Monday Mile

A Healthier You Starts Here



**STRESSLESS
BUSINESSLESS
MONDAY**



Caregiver Monday
October 17, 2012 @

5 tips for caregivers from Alzheimer's Association.

FIVE TIPS for caregivers

1 **MANAGE YOUR STRESS LEVEL**

Consider how stress affects your body (stomach aches, high blood pressure) – and your emotions (overeating, irritability). Find ways to relax.



Me Time Monday Video Tip

Me Time Monday Celebrity Secrets 2012.



MONDAY

**THE DAY ALL HEALTH
BREAK LOOSE!**