Cancer
Prevention

Roman Pawlak, Ph.D, RD

Causes of mortality, United States

Cause	Deaths
Heart disease	611,105
Cancer	584,881
Chronic lower respiratory disease	149,205
Accidents	130,557
Stroke	128,978
Alzheimer's disease	84,767
Diabetes	75,578
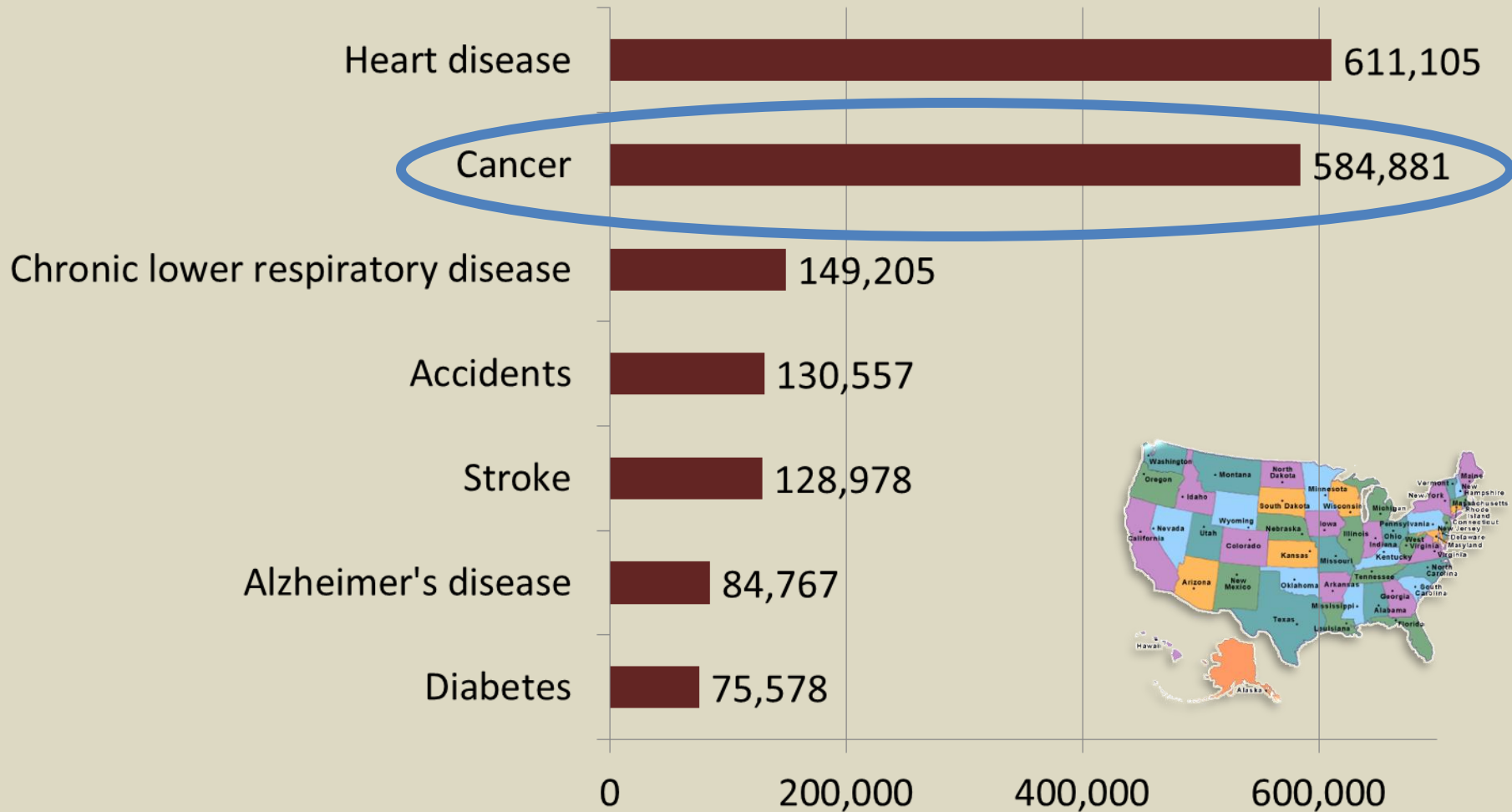
Center for Disease Control and Prevention, 2009. Retrieved from http://www.cdc.gov/nchs/FASTATS/lcod.htm

Heron, M. et al. (2009). Death: Final data for 2006. *National Vital Statistics Reports, 57*(14). Retrieved from http://www.cdc.gov/nchs/data/nvsr/nvsr57/nvsr57_14.pdf

Food, Nutrition, Physical Activity, and the Prevention of Cancer:
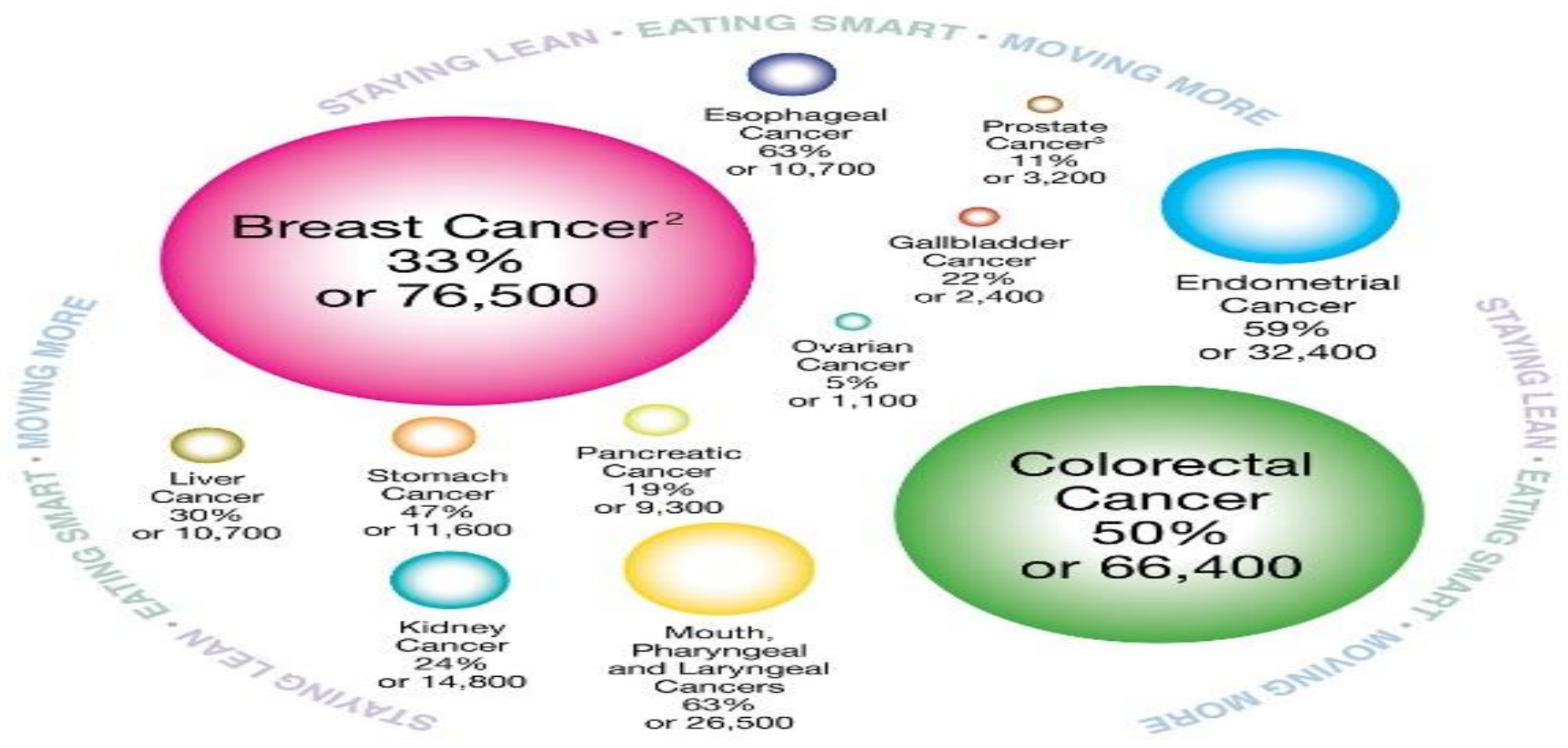
a Global Perspective

World
Cancer
Research Fund

American
Institute for
Cancer Research

"The prevention of cancer worldwide is one of the most pressing challenges facing scientists and public health policy-makers, among others. … The challenge can be effectively addressed and suggest that food, nutrition, physical activity, and body composition play a central part in the prevention of cancer." (p. 16)

Americans can prevent ⅓ of the most common cancers[1]

STAYING LEAN · EATING SMART · MOVING MORE

Breast Cancer[2]
33%
or 76,500

Esophageal Cancer
63%
or 10,700

Prostate Cancer[3]
11%
or 3,200

Gallbladder Cancer
22%
or 2,400

Endometrial Cancer
59%
or 32,400

Ovarian Cancer
5%
or 1,100

Liver Cancer
30%
or 10,700

Stomach Cancer
47%
or 11,600

Pancreatic Cancer
19%
or 9,300

Colorectal Cancer
50%
or 66,400

Kidney Cancer
24%
or 14,800

Mouth, Pharyngeal and Laryngeal Cancers
63%
or 26,500

STAYING LEAN · EATING SMART · MOVING MORE

There is strong evidence that diet can reduce the risk of lung cancer. But not smoking is by far the most important thing you can do to reduce your risk of this cancer.

[1] Estimated cases that could be prevented annually through a healthy diet, regular physical activity and being lean. Tobacco use is a convincing cause of many cancers.

[2] Female only

[3] Advanced prostate cancers

CDC. Cancer Prevention and Control

- **Educational Campaigns**

- *Inside Knowledge: Get the Facts About Gynecologic Cancer*(http://www.cdc.gov/cancer/knowledge/index.htm) raises awareness of the five main types of gynecologic cancer: cervical, ovarian, uterine, vaginal, and vulvar.

- *Screen for Life: National Colorectal Cancer Action Campaign*(http://www.cdc.gov/cancer/colorectal/sfl/index.htm) informs men and women aged 50 years and older about the importance of having regular colorectal cancer screening tests.

- *Bring Your Brave*(http://www.cdc.gov/cancer/breast/young_women/bringyourbrave/index.htm) educates women younger than age 45 about breast health and breast cancer risk by sharing real stories about young women whose lives have been affected by breast cancer.

- **National Programs**

- The National Breast and Cervical Cancer Early Detection Program supports breast and cervical cancer screening services for underserved women.

- The National Comprehensive Cancer Control Program(http://www.cdc.gov/cancer/ncccp/index.htm) supports programs to fight cancer through coalitions.

- The National Program of Cancer Registries helps programs collect high-quality cancer data.

- The Colorectal Cancer Control Program(http://www.cdc.gov/cancer/crccp/index.htm) helps increase colorectal (colon) cancer screening rates.

Recommendation 1 – body fatness

Maintaining a healthy weight is the single most important way to protect against cancer.

American Institute for Cancer Research

Calculating BMI

$$BMI = \frac{Weight(lb) \times 703}{Height(in)^2}$$

Example

Weight – 150lbs

Height– 69in

BMI = W(kg)x703/H(in)^2

BMI = 150x703/(69x69) = 23

Cancer mortality rates among men and women with BMI ≥ 35 compare to BMI between 18.5-24.9, in the Cancer Prevention Study II.
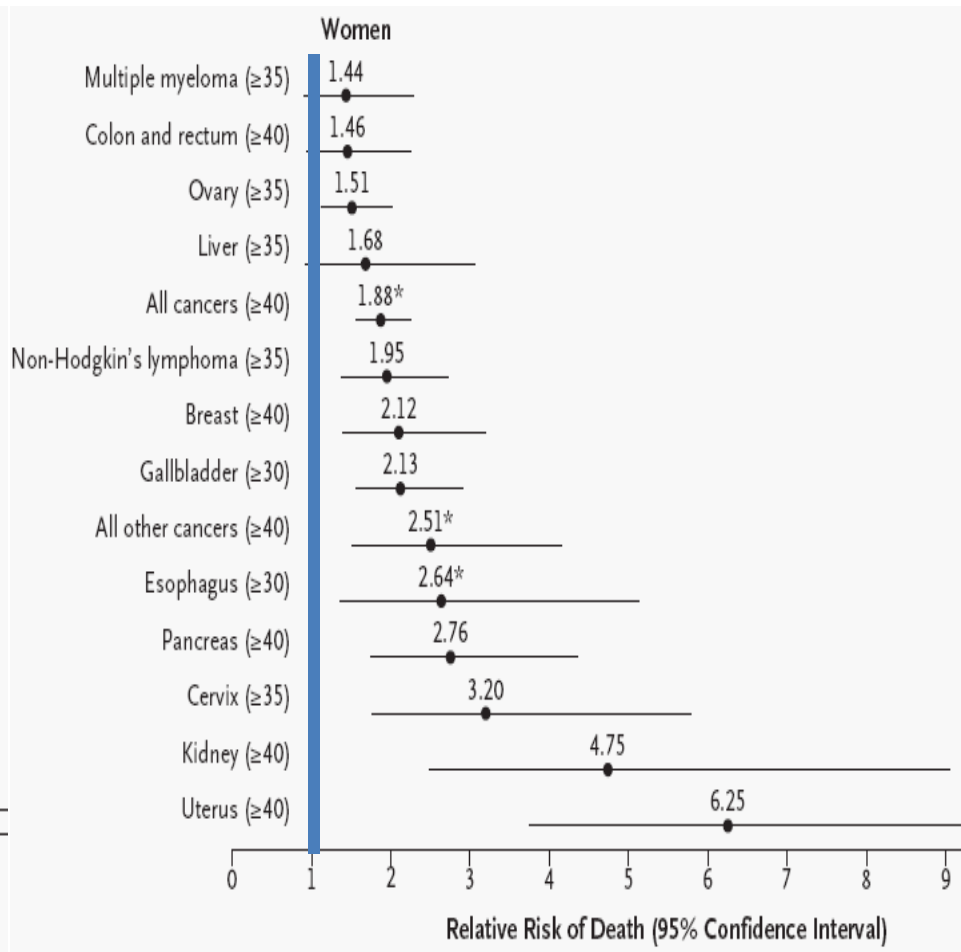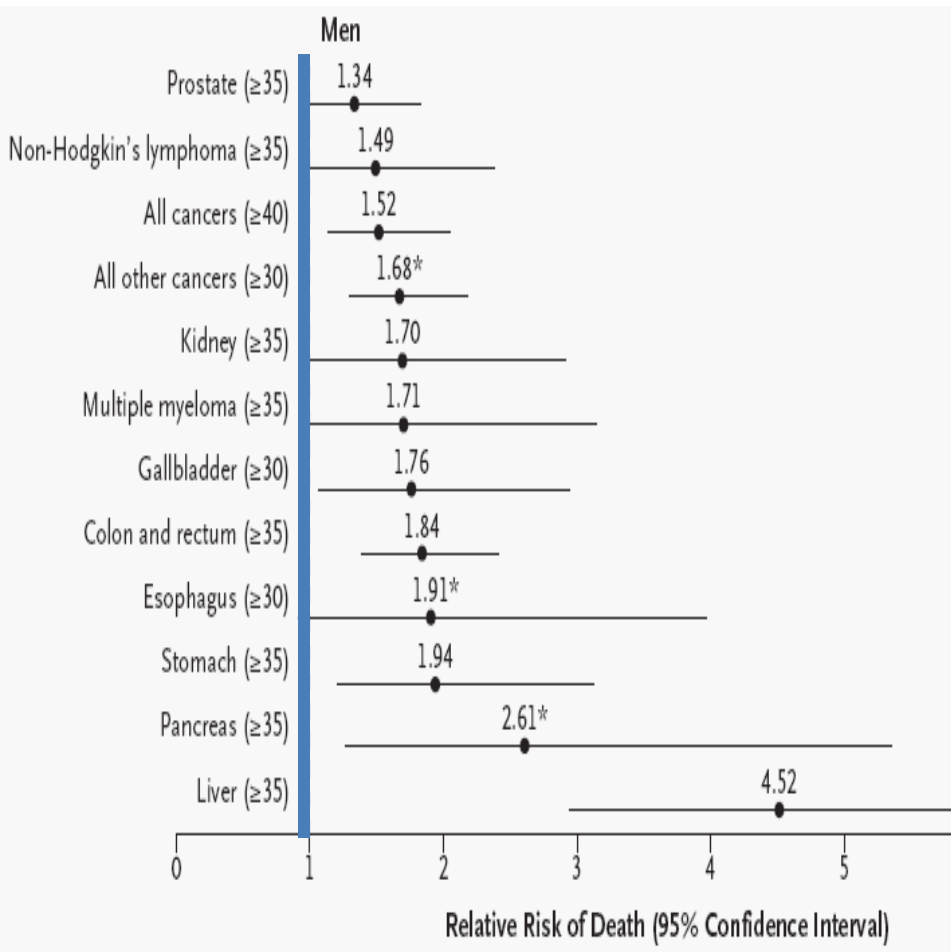
Calle, et al., NEJM, 2003, April 24, 348;17:1625-1638

Recommendation 2 – physical activity

Cancer rates have increased as the population has become more sedentary.

American Institute for Cancer Research

Recommendation 3 – sugary drinks

Choosing healthy foods and drinks … can help us avoid overweight and obesity and thereby reduce our cancer risk. … Water is the best alternative.

American Institute for Cancer Research

Recommendation 4 – eat **mostly** plant foods

Plant foods bolster our bodies' defenses against cancer.

American Institute for Cancer Research

Fruits, Vegetables, and Colon Cancer Risk in a Pooled Analysis of 14 Cohort Studies

Koushik A., et al. J Natl Cancer Inst 2007;99: 1471 – 83
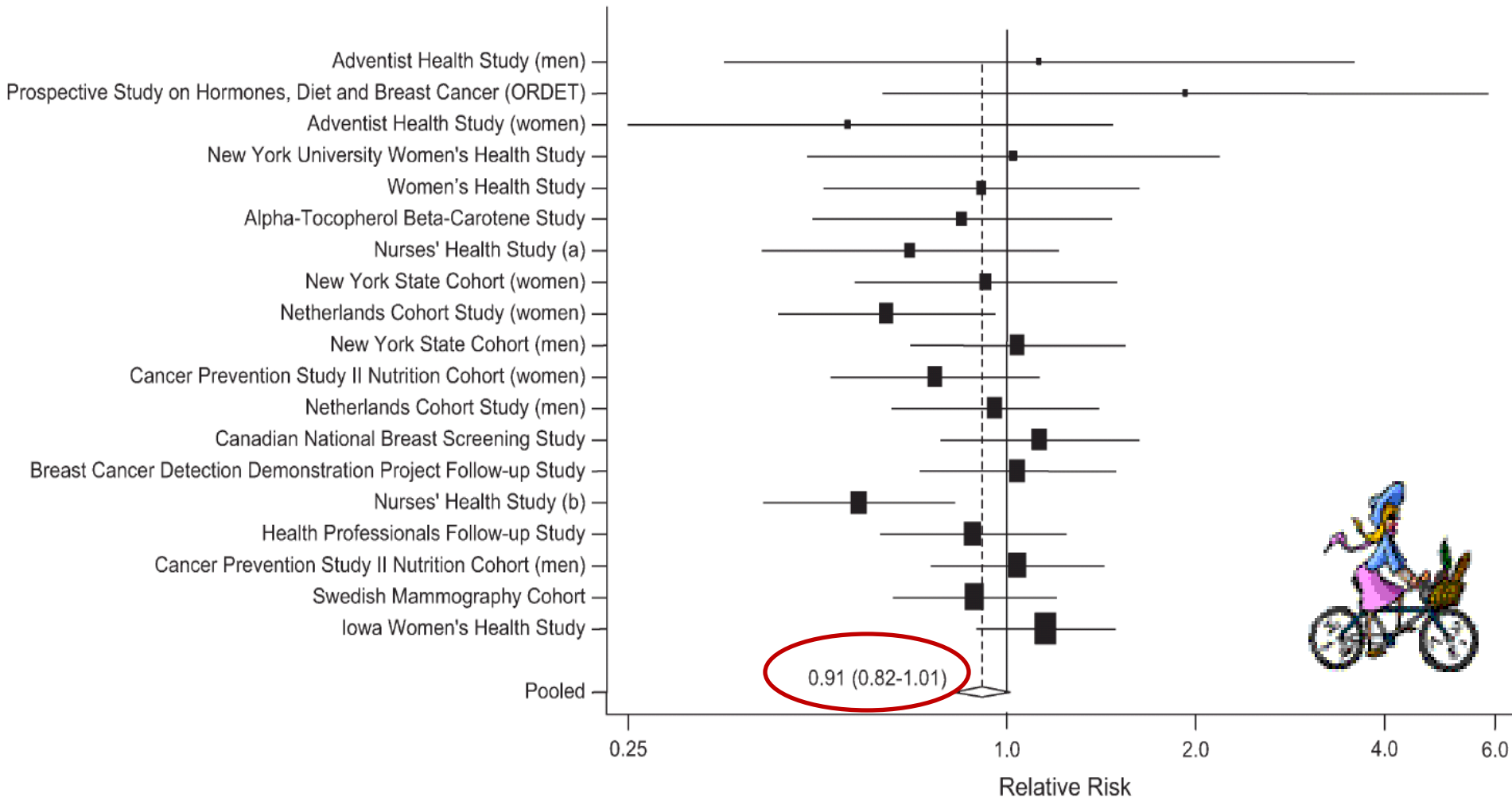
Fruit and Vegetable Intakes Are Associated with Lower Risk of Bladder Cancer among Women in the Multiethnic Cohort Study

Park SY., et al. Journal of Nutrition 2013;143:1283–1292
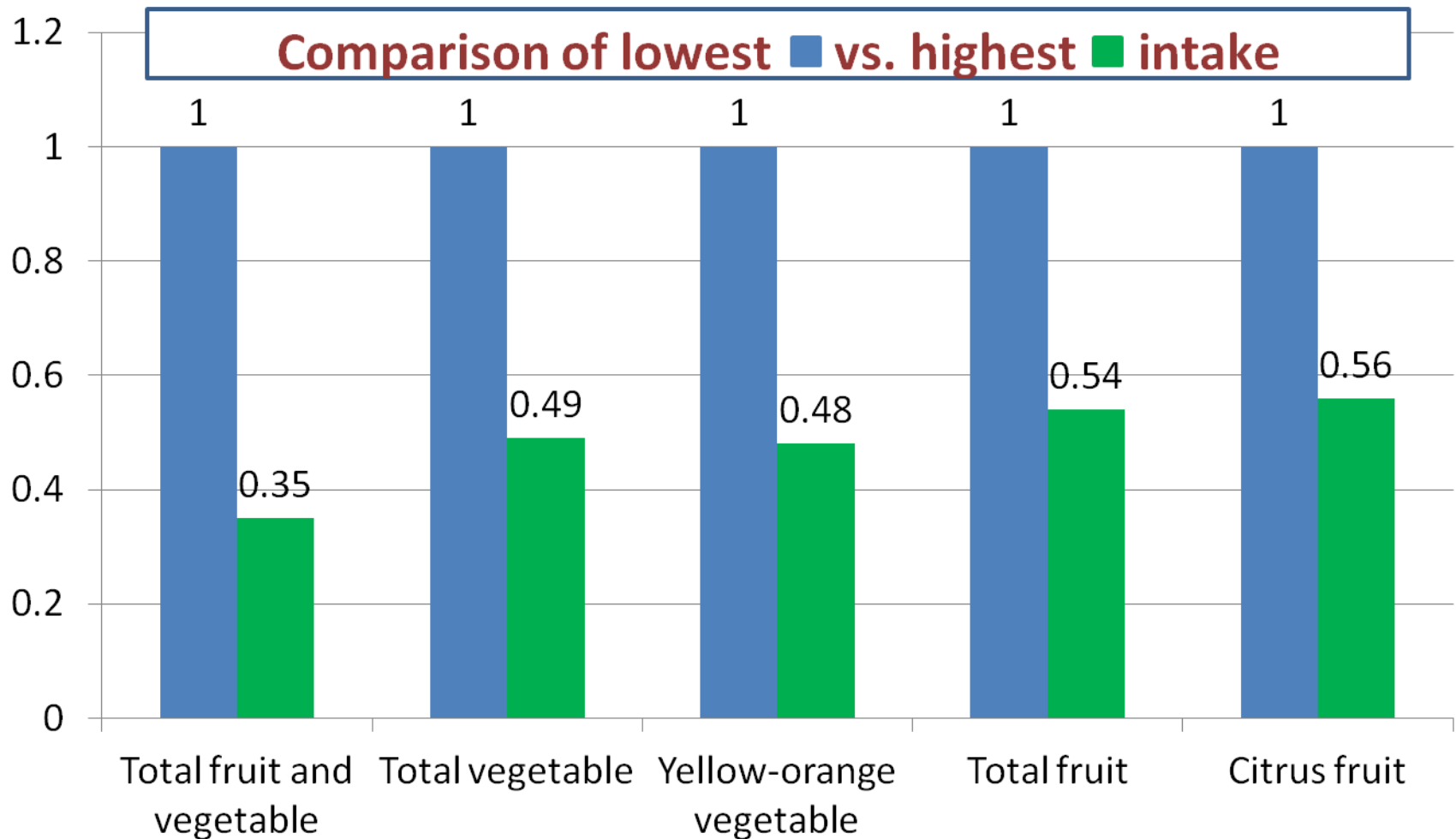
Citrus Fruit Intake and Breast Cancer Risk: A Quantitative Systematic Review

Song & Bae

Study or sub-category	OR (fixed) 95% CI	Weight (%)	OR (fixed) 95% CI
Zhang 2009 [18]		14.7	0.87 [0.74, 1.03]
Shannon 2005 [17]		10.2	0.96 [0.79, 1.17]
Malin 2003 [19]		38.4	0.85 [0.76, 0.94]
Ingram 1991 [20]		5.7	1.04 [0.80, 1.35]
Gaudet (premenopause) 2004 [15]		9.1	0.87 [0.71, 1.07]
Gaudet (postmenopause) 2004[15]		21.9	0.97 [0.85, 1.11]
Total (95%CI)		100.0	0.90 [0.85, 0.96]

Test for heterogeneity. Chi^2=4.47, df=5 (p=0.48), I^2=0%
Test for overall effect: Z=3.30 (p=0.001)

0.5 0.7 1 1.5 2
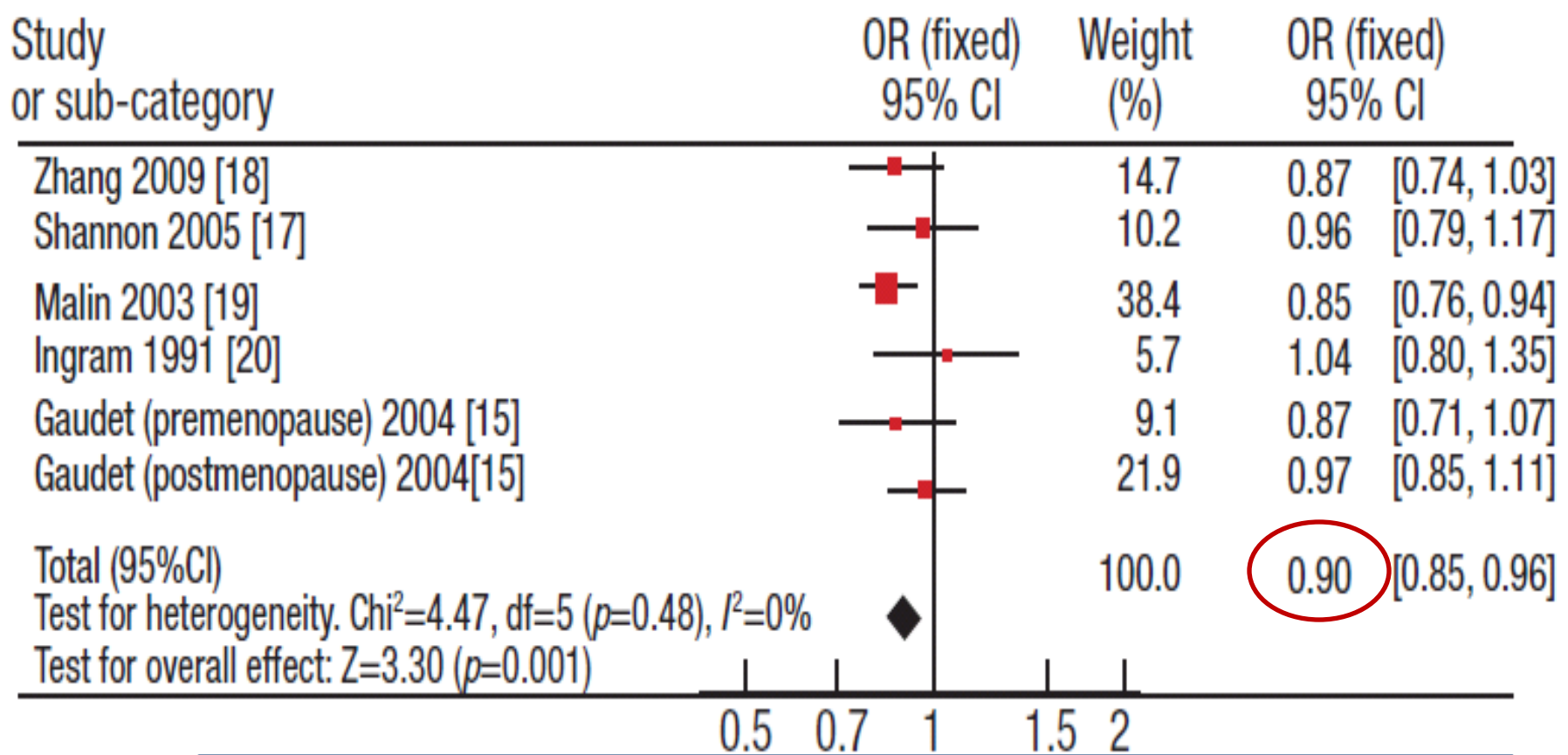
Comparison of highest ■ vs. lowest | intake

Fruits and Vegetables and Endometrial Cancer Risk: A Systematic Literature Review and Meta-Analysis.

Odds for highest vs. lowest total vegetable intake
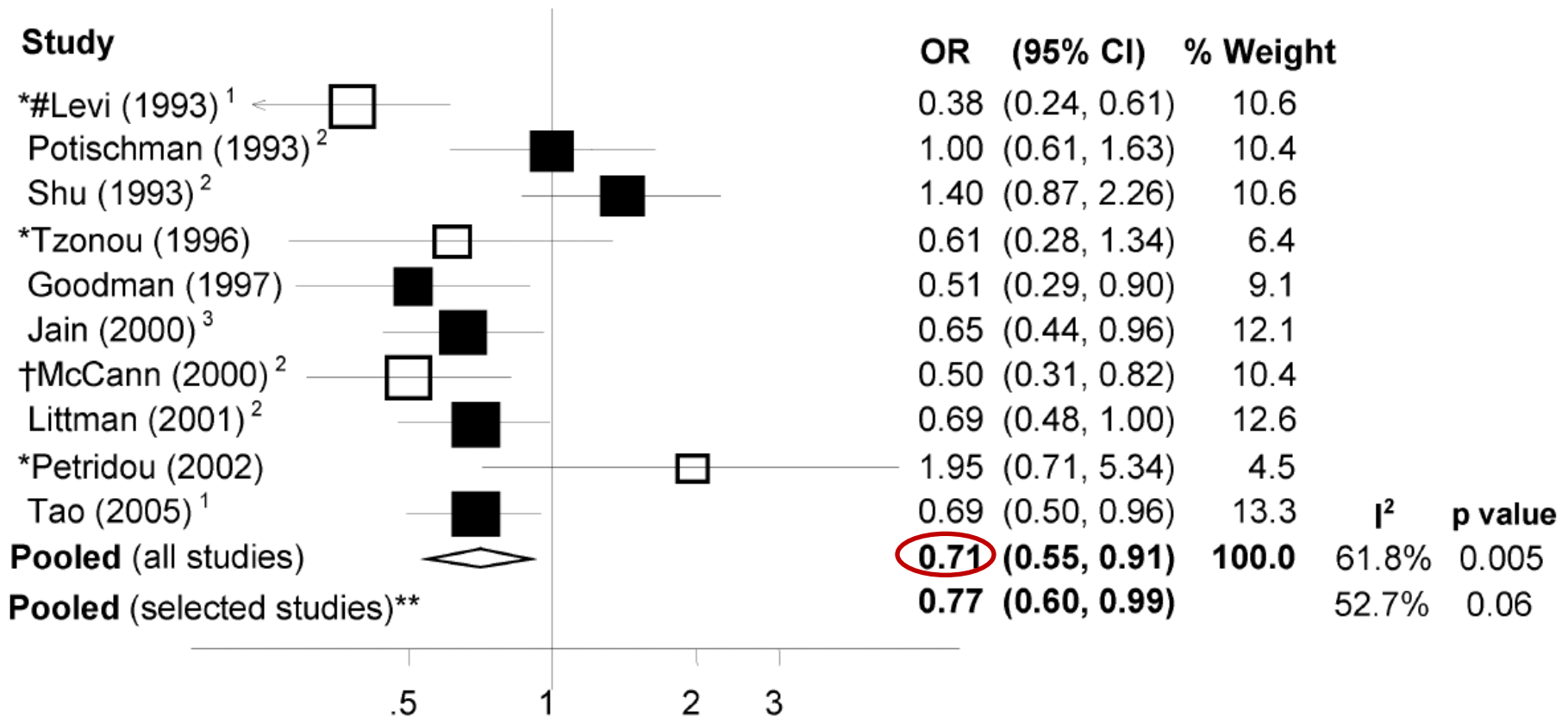
Study	OR	(95% CI)	% Weight	I²	p value
*#Levi (1993)[1]	0.38	(0.24, 0.61)	10.6		
Potischman (1993)[2]	1.00	(0.61, 1.63)	10.4		
Shu (1993)[2]	1.40	(0.87, 2.26)	10.6		
*Tzonou (1996)	0.61	(0.28, 1.34)	6.4		
Goodman (1997)	0.51	(0.29, 0.90)	9.1		
Jain (2000)[3]	0.65	(0.44, 0.96)	12.1		
†McCann (2000)[2]	0.50	(0.31, 0.82)	10.4		
Littman (2001)[2]	0.69	(0.48, 1.00)	12.6		
*Petridou (2002)	1.95	(0.71, 5.34)	4.5		
Tao (2005)[1]	0.69	(0.50, 0.96)	13.3		
Pooled (all studies)	0.71	(0.55, 0.91)	100.0	61.8%	0.005
Pooled (selected studies)**	0.77	(0.60, 0.99)		52.7%	0.06

.5   1   2   3

Fruits and Vegetables and Endometrial Cancer Risk: A Systematic Literature Review and Meta-Analysis.

Bandera EV., et al. Nutrition & Cancer 2007;58(1):6–21

Odds for highest vs. lowest cruciferous vegetable intake

Study	OR	(95% CI)	% Weight	I²	p value
*#Levi (1993)	1.20	(0.83, 1.74)	12.7		
Potischman (1993)	0.80	(0.50, 1.29)	7.9		
Shu (1993)	1.10	(0.68, 1.78)	7.8		
Goodman (1997)	0.80	(0.54, 1.18)	11.6		
Littman (2001)	0.71	(0.54, 0.94)	21.5		
†Terry (2002)	0.80	(0.59, 1.08)	18.8		
Tao (2005)	0.83	(0.62, 1.12)	19.7		
Pooled (all studies)	0.85	(0.74, 0.97)	100.0	4.5%	0.39
Pooled (selected studies)**	0.81	(0.69, 0.95)		0.0%	0.66

Fruits and Vegetables and Endometrial Cancer Risk: A Systematic Literature Review and Meta-Analysis.

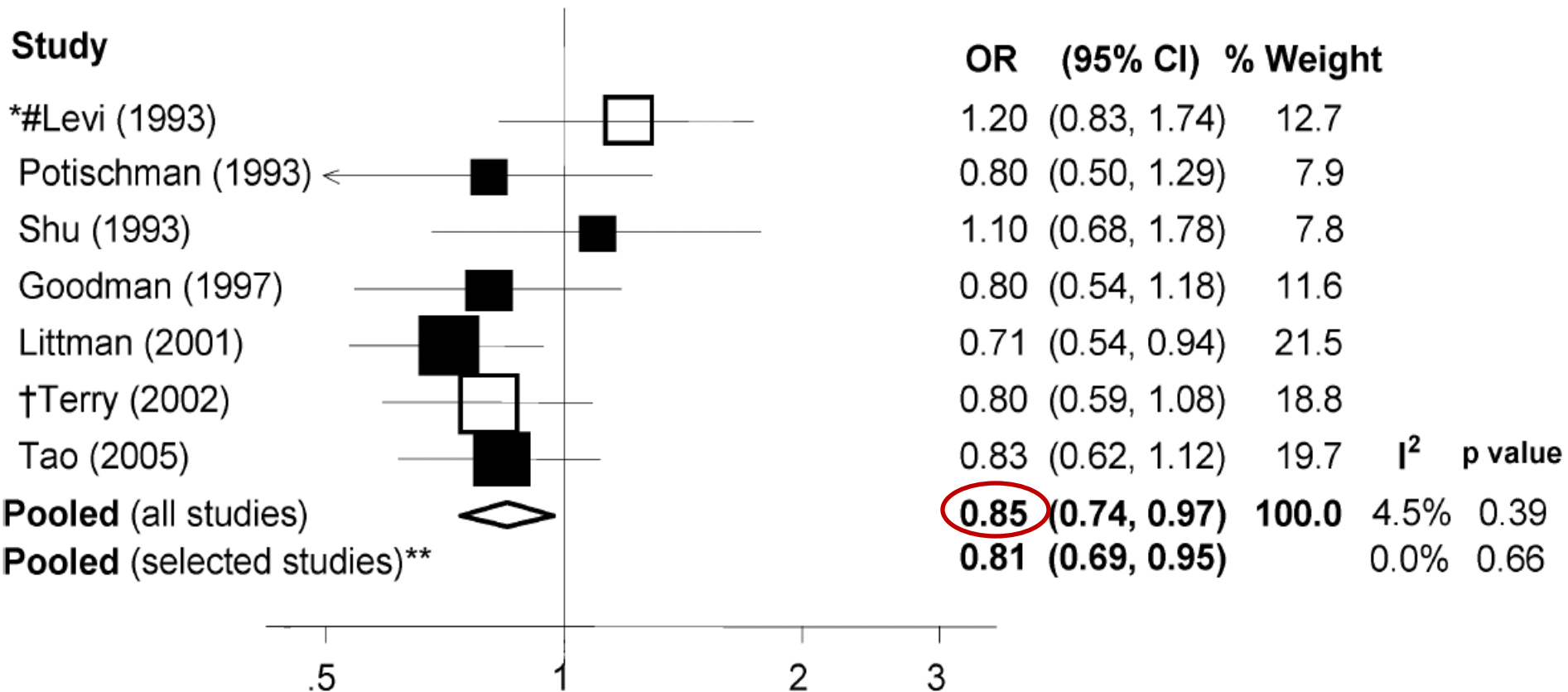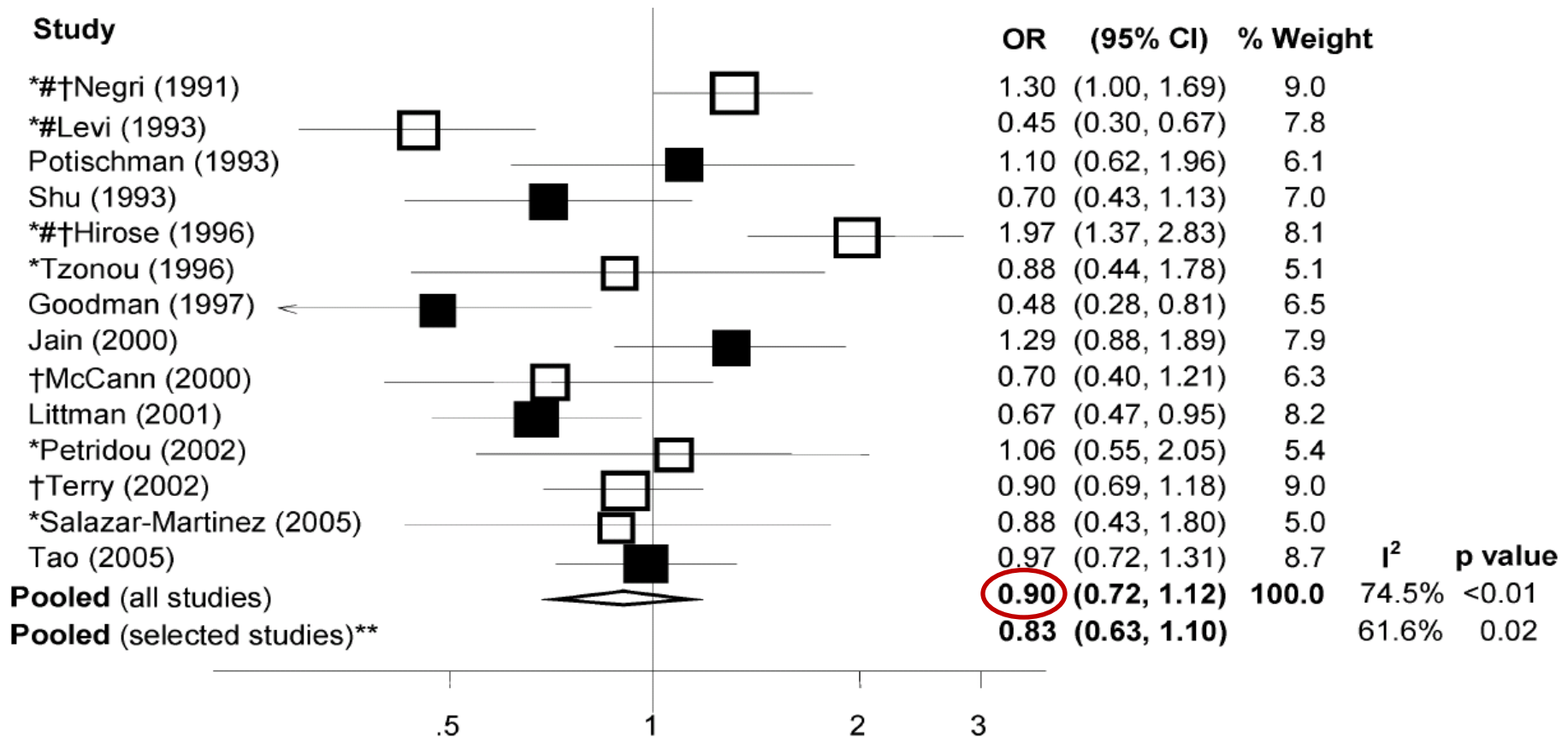Bandera EV., et al. Nutrition & Cancer 2007;58(1):6–21

Odds for highest vs. lowest total fruit intake

| Study	OR	(95% CI)	% Weight	I²	p value
*#†Negri (1991)	1.30	(1.00, 1.69)	9.0		
*#Levi (1993)	0.45	(0.30, 0.67)	7.8		
Potischman (1993)	1.10	(0.62, 1.96)	6.1		
Shu (1993)	0.70	(0.43, 1.13)	7.0		
*#†Hirose (1996)	1.97	(1.37, 2.83)	8.1		
*Tzonou (1996)	0.88	(0.44, 1.78)	5.1		
Goodman (1997)	0.48	(0.28, 0.81)	6.5		
Jain (2000)	1.29	(0.88, 1.89)	7.9		
†McCann (2000)	0.70	(0.40, 1.21)	6.3		
Littman (2001)	0.67	(0.47, 0.95)	8.2		
*Petridou (2002)	1.06	(0.55, 2.05)	5.4		
†Terry (2002)	0.90	(0.69, 1.18)	9.0		
*Salazar-Martinez (2005)	0.88	(0.43, 1.80)	5.0		
Tao (2005)	0.97	(0.72, 1.31)	8.7		
Pooled (all studies)	0.90	(0.72, 1.12)	100.0	74.5%	<0.01
Pooled (selected studies)**	0.83	(0.63, 1.10)		61.6%	0.02

.5   1   2   3

Lycopene/tomato consumption and the risk of prostate cancer: A systemic review and meta-analysis of prospective studies

"Compared with consumers with lower raw tomato intake, the odds ratio (OR) of incidence of prostate cancer among consumers of higher raw tomato intake was 0.81; for consumers of higher level of cooked tomato intake, this odds ratio was 0.85; the OR for higher lycopene intake versus lower lycopene intake for prostate cancer was 0.93 (…)"

Intake of green leafy vegetables and risk for squamous cell carcinoma (skin cancer)

Green leafy vegetables intake (grams/day)
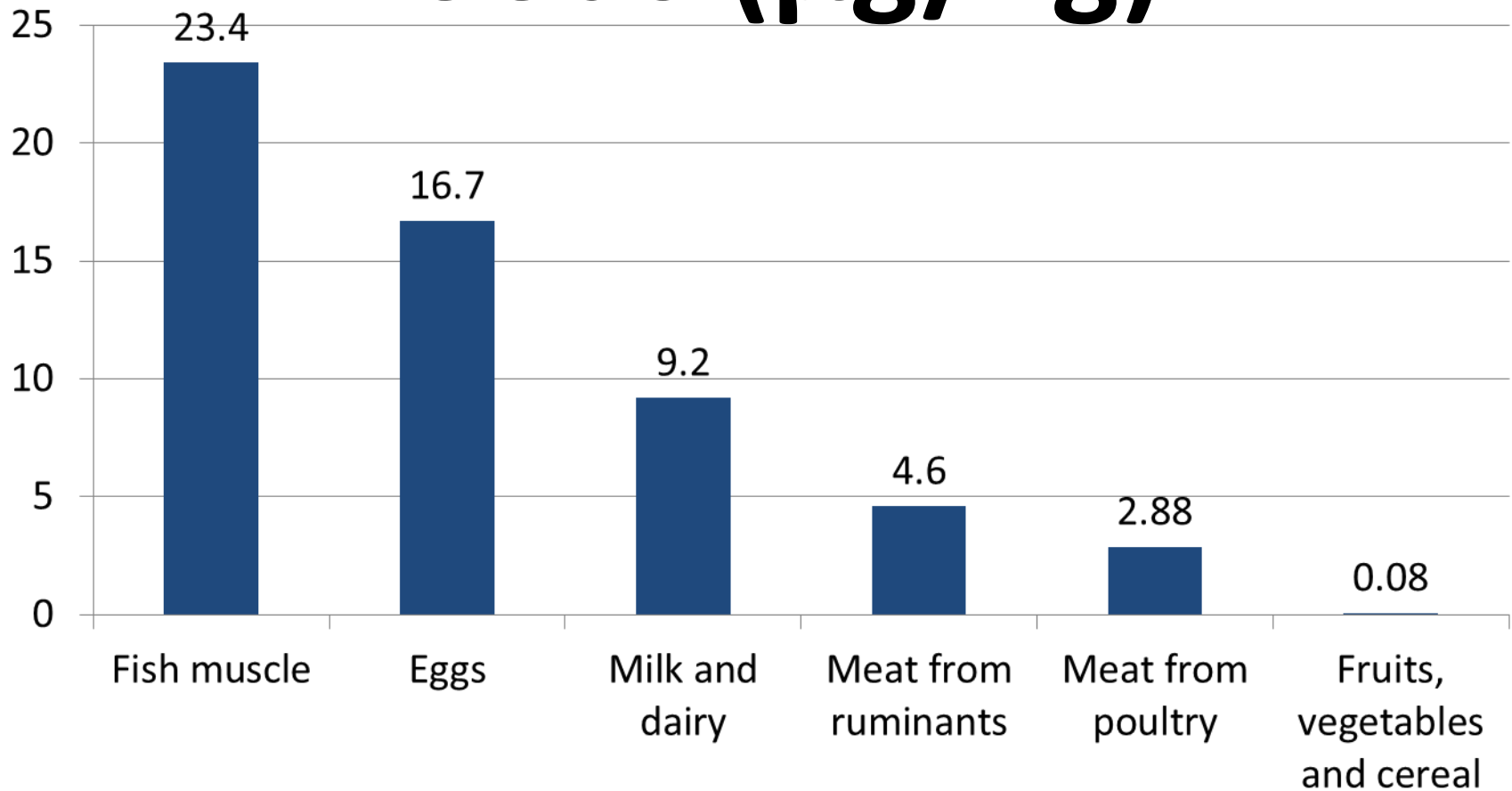
P < 0.07
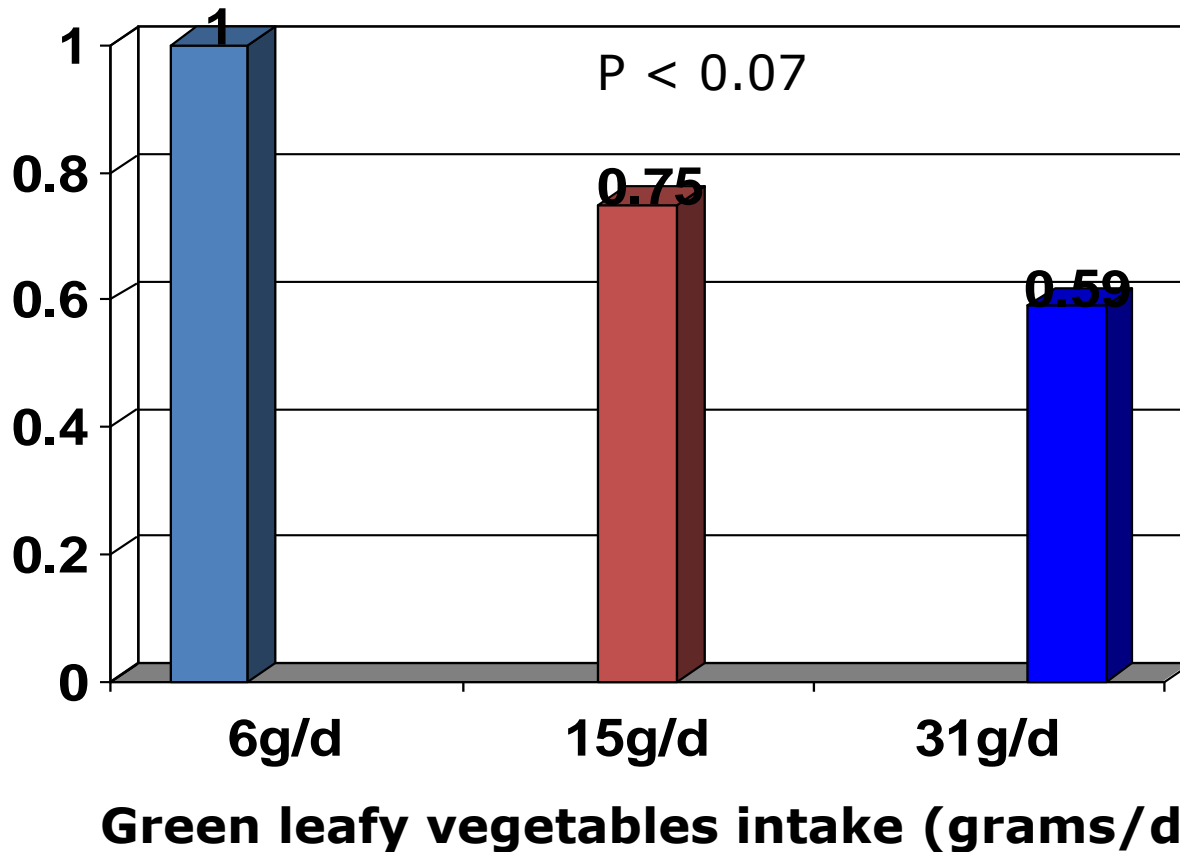
Squamous cell carcinoma is the second most common cancer of the skin in white-skinned populations worldwide, accounting for up to 20% of all deaths from skin cancer.

Hughes et al., Int. J. Cancer 2006;119:1953–1960

PCBs content of selected foods (μg/kg)

Adopted from: European Food Safety Authority. 2010.
http://www.efsa.europa.eu/en/efsajournal/doc/1701.pdf

Dietary fiber and grain consumption in relation to **head** and **neck** cancer in the NIH-AARP Diet and Health Study

"Women with higher intake of total fiber and total grains had a lower risk of head and neck cancer ($HR_{10g/day}$=0.77, $HR_{serving/1000kcal}$ =0.89, respectively); this inverse relation was consistent across subtypes of fiber and grains."

Intake of whole grains and risk for endometrial cancer in 23,014 Iowa Women, 1986–98

Servings per week
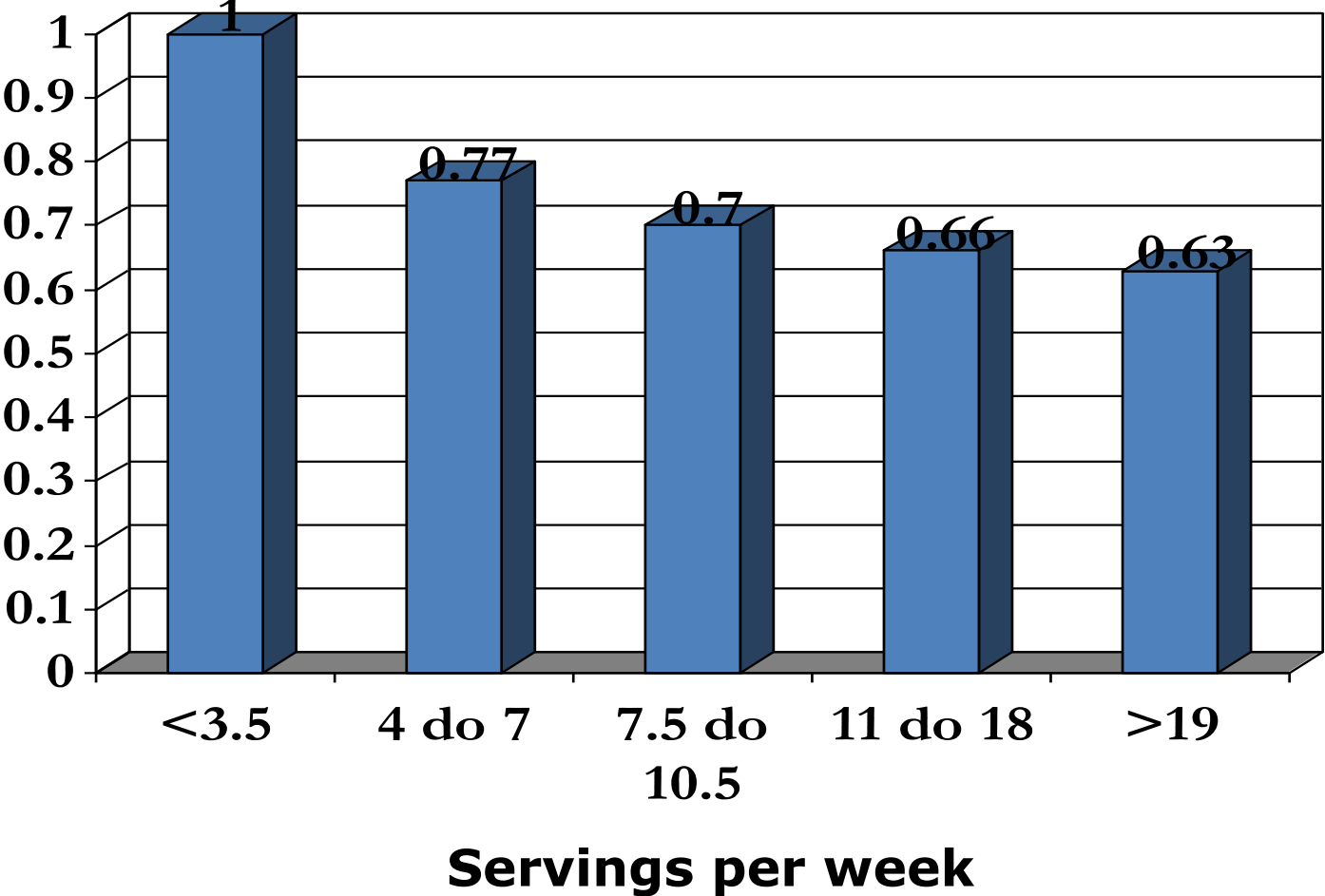
Kasum et al., Nutrition and Cancer, 2001;39(2):180-186

Post-diagnosis Soy Food Intake and Breast Cancer Survival: A Meta-analysis of Cohort Studies

"(…) soy food intake after diagnosis was associated with reduced mortality (HR 0.85, …) and recurrence (HR 0.79, …)."

Recommendation 5 – animal foods

Limit intake of red meat and avoid processed meat.

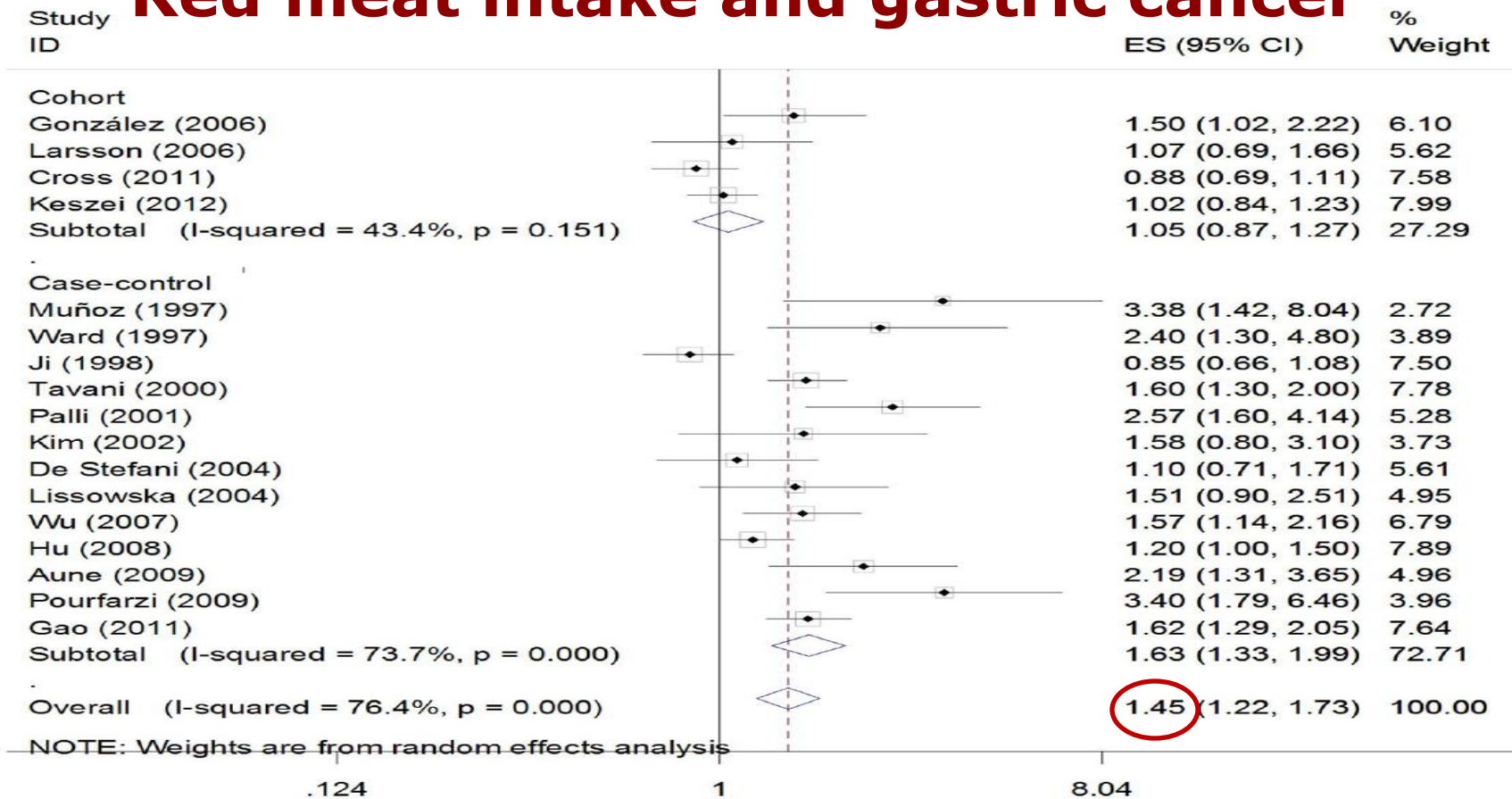Population average consumption of red meat to be no more than 300g (11oz) per week, very little if any of which should be processed.

Red and Processed Meat Intake Is Associated with Higher Gastric Cancer Risk: A Meta-Analysis of Epidemiological Observational Studies

Red meat intake and gastric cancer

Red and Processed Meat Intake Is Associated with Higher Gastric Cancer Risk: A Meta-Analysis of Epidemiological Observational Studies

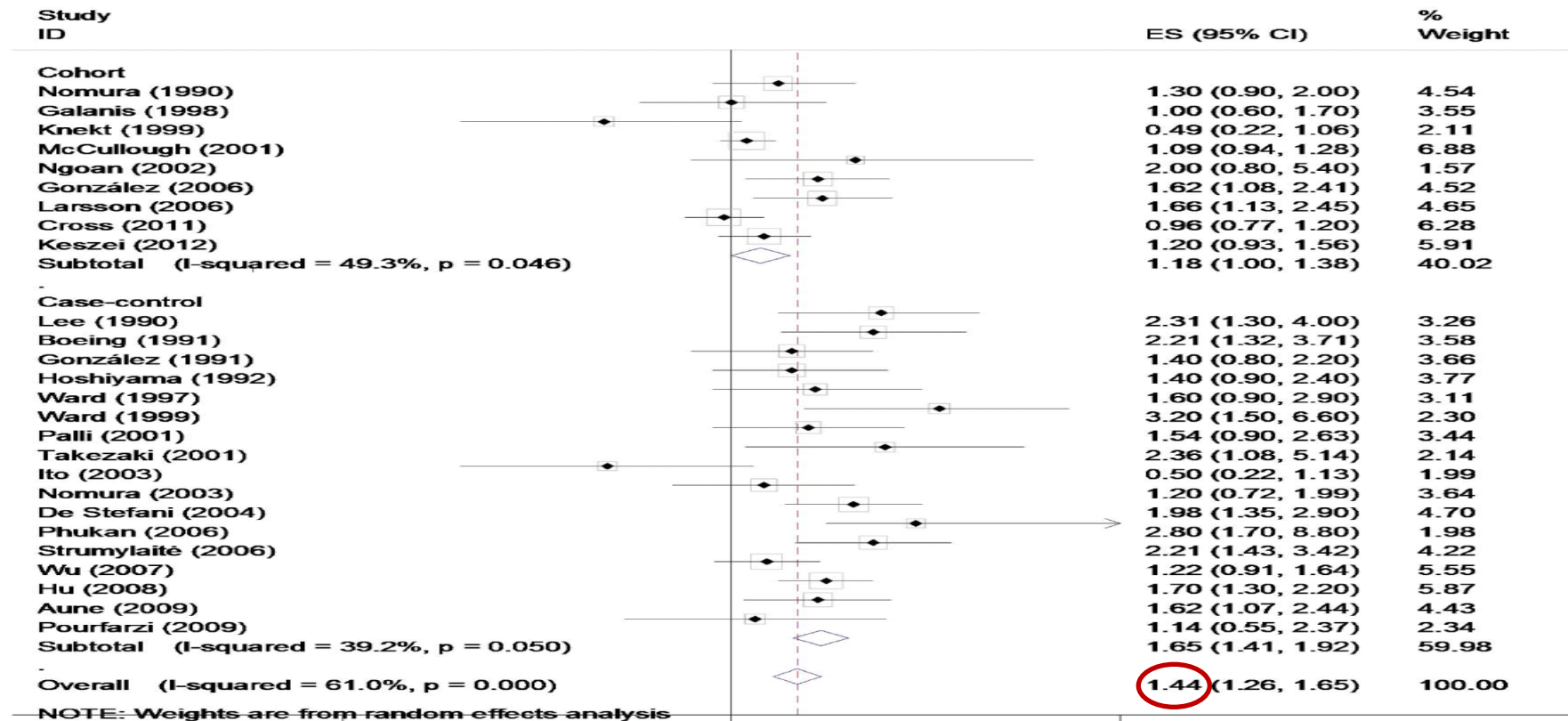Zhu H, PLoS ONE 8(8): e70955. doi:10.1371/journal.pone.0070955

Beef intake and gastric cancer

Study ID	ES (95% CI)	% Weight
Cohort		
Nomura (1990)	1.30 (0.90, 2.00)	4.54
Galanis (1998)	1.00 (0.60, 1.70)	3.55
Knekt (1999)	0.49 (0.22, 1.06)	2.11
McCullough (2001)	1.09 (0.94, 1.28)	6.88
Ngoan (2002)	2.00 (0.80, 5.40)	1.57
González (2006)	1.62 (1.08, 2.41)	4.52
Larsson (2006)	1.66 (1.13, 2.45)	4.65
Cross (2011)	0.96 (0.77, 1.20)	6.28
Keszei (2012)	1.20 (0.93, 1.56)	5.91
Subtotal (I-squared = 49.3%, p = 0.046)	1.18 (1.00, 1.38)	40.02
Case-control		
Lee (1990)	2.31 (1.30, 4.00)	3.26
Boeing (1991)	2.21 (1.32, 3.71)	3.58
González (1991)	1.40 (0.80, 2.20)	3.66
Hoshiyama (1992)	1.40 (0.90, 2.40)	3.77
Ward (1997)	1.60 (0.90, 2.90)	3.11
Ward (1999)	3.20 (1.50, 6.60)	2.30
Palli (2001)	1.54 (0.90, 2.63)	3.44
Takezaki (2001)	2.36 (1.08, 5.14)	2.14
Ito (2003)	0.50 (0.22, 1.13)	1.99
Nomura (2003)	1.20 (0.72, 1.99)	3.64
De Stefani (2004)	1.98 (1.35, 2.90)	4.70
Phukan (2006)	2.80 (1.70, 8.80)	1.98
Strumylaité (2006)	2.21 (1.43, 3.42)	4.22
Wu (2007)	1.22 (0.91, 1.64)	5.55
Hu (2008)	1.70 (1.30, 2.20)	5.87
Aune (2009)	1.62 (1.07, 2.44)	4.43
Pourfarzi (2009)	1.14 (0.55, 2.37)	2.34
Subtotal (I-squared = 39.2%, p = 0.050)	1.65 (1.41, 1.92)	59.98
Overall (I-squared = 61.0%, p = 0.000)	1.44 (1.26, 1.65)	100.00

NOTE: Weights are from random effects analysis

.114   1   8.8

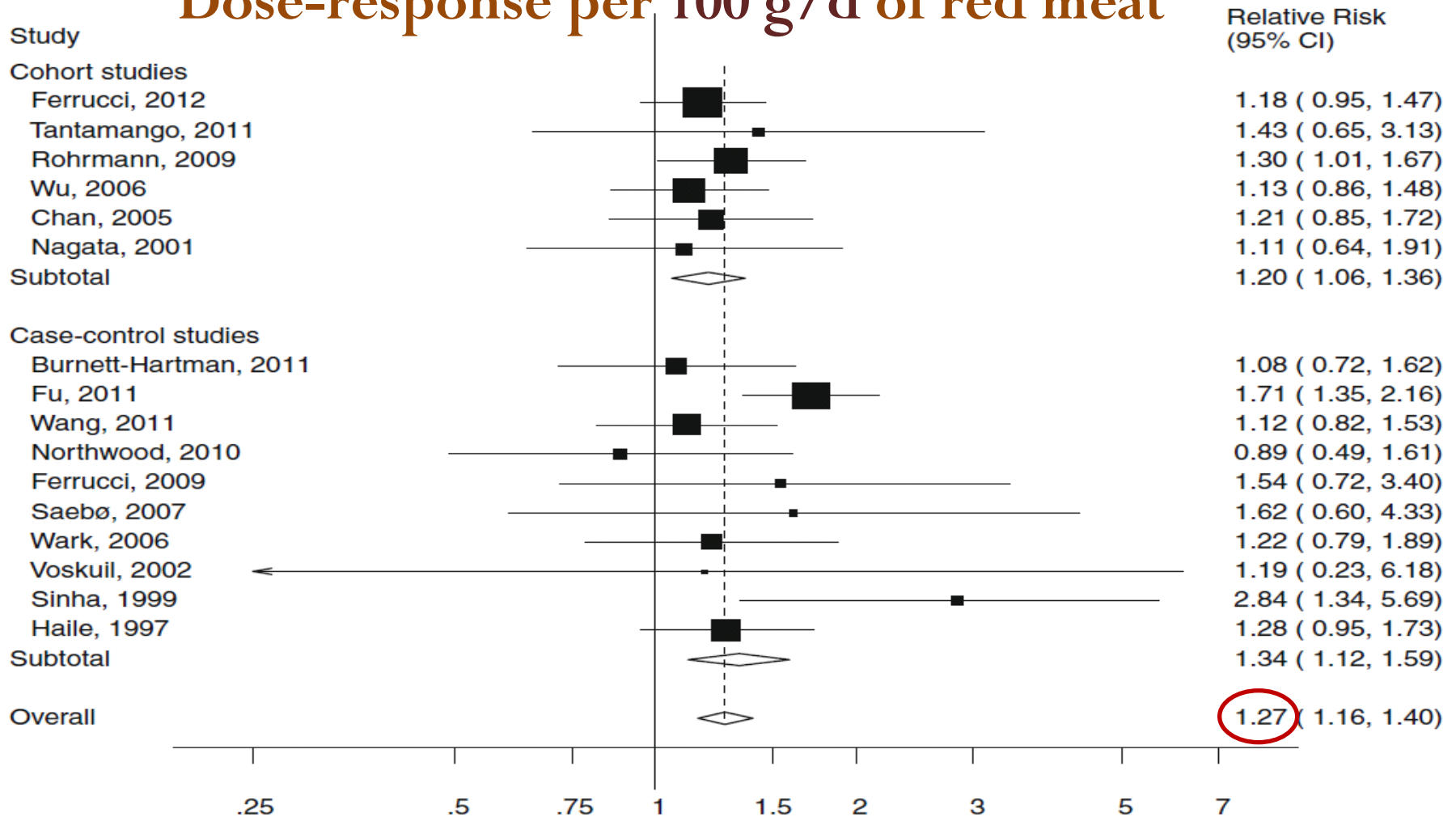PLOS ONE

Red and processed meat intake and risk of colorectal adenomas: a systematic review and meta-analysis of epidemiological studies

Aune D., et al. Cancer Causes Control, 2013;24:611-627

Dose-response per 100 g/d of red meat

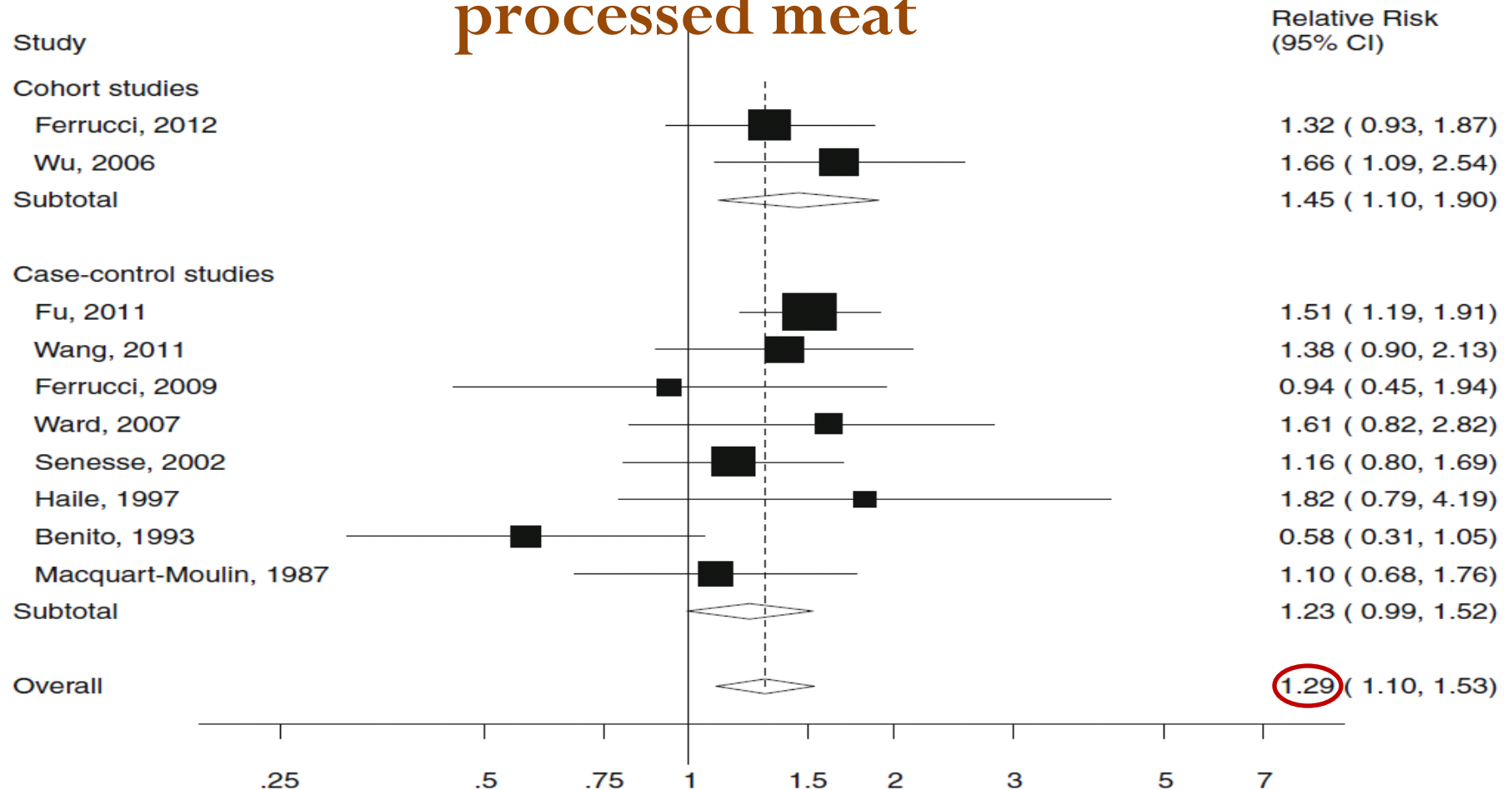| Study		Relative Risk (95% CI)
Cohort studies		
Ferrucci, 2012		1.18 (0.95, 1.47)
Tantamango, 2011		1.43 (0.65, 3.13)
Rohrmann, 2009		1.30 (1.01, 1.67)
Wu, 2006		1.13 (0.86, 1.48)
Chan, 2005		1.21 (0.85, 1.72)
Nagata, 2001		1.11 (0.64, 1.91)
Subtotal		1.20 (1.06, 1.36)
Case-control studies		
Burnett-Hartman, 2011		1.08 (0.72, 1.62)
Fu, 2011		1.71 (1.35, 2.16)
Wang, 2011		1.12 (0.82, 1.53)
Northwood, 2010		0.89 (0.49, 1.61)
Ferrucci, 2009		1.54 (0.72, 3.40)
Saebø, 2007		1.62 (0.60, 4.33)
Wark, 2006		1.22 (0.79, 1.89)
Voskuil, 2002		1.19 (0.23, 6.18)
Sinha, 1999		2.84 (1.34, 5.69)
Haile, 1997		1.28 (0.95, 1.73)
Subtotal		1.34 (1.12, 1.59)
Overall		1.27 (1.16, 1.40)

.25   .5   .75   1   1.5   2   3   5   7

Red and processed meat intake and risk of colorectal adenomas: a systematic review and meta-analysis of epidemiological studies

Aune D., et al. Cancer Causes Control, 2013;24:611-627

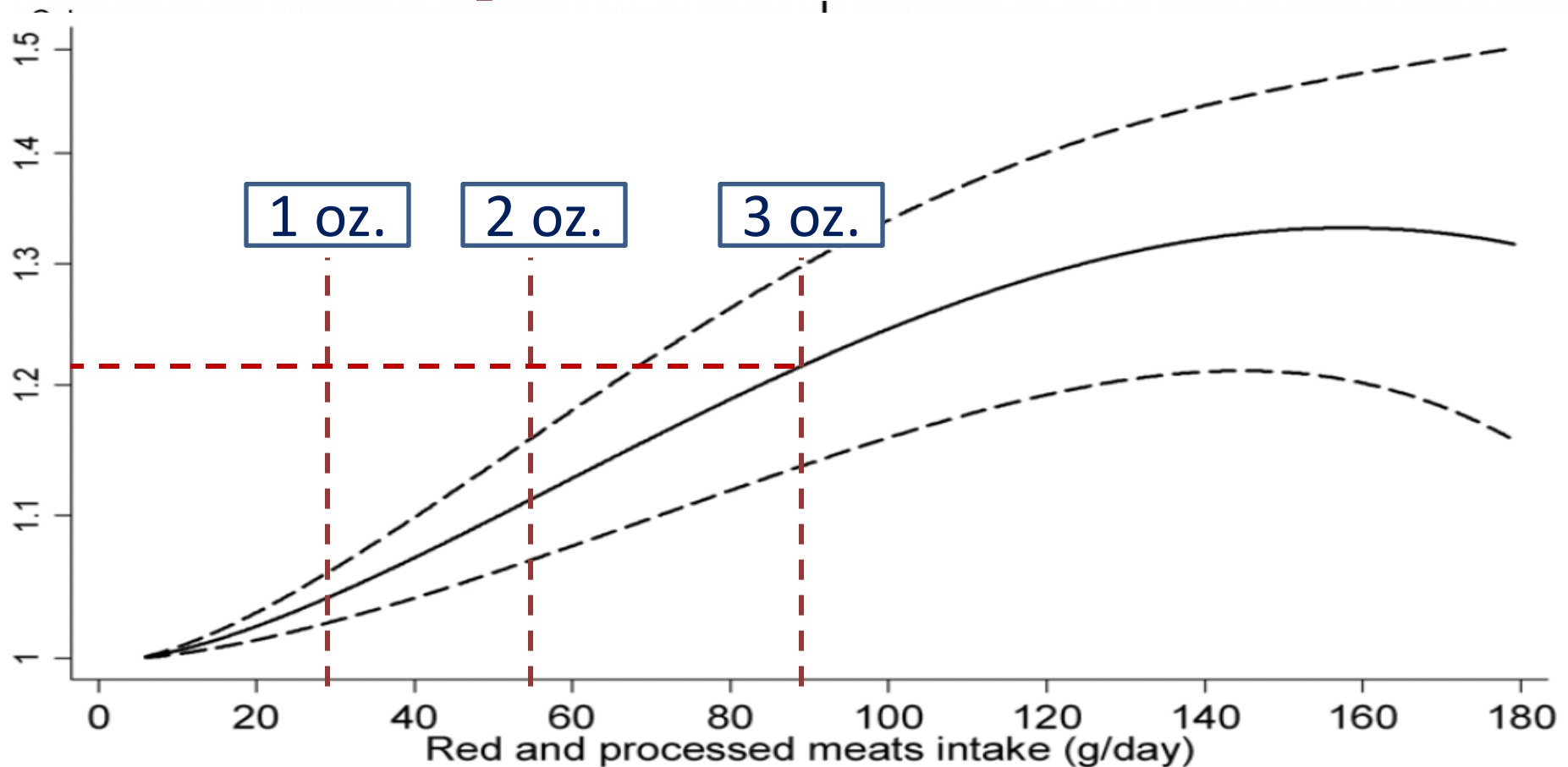## Dose-response per 50 g/d of processed meat

Study	Relative Risk (95% CI)
Cohort studies	
Ferrucci, 2012	1.32 (0.93, 1.87)
Wu, 2006	1.66 (1.09, 2.54)
Subtotal	1.45 (1.10, 1.90)
Case-control studies	
Fu, 2011	1.51 (1.19, 1.91)
Wang, 2011	1.38 (0.90, 2.13)
Ferrucci, 2009	0.94 (0.45, 1.94)
Ward, 2007	1.61 (0.82, 2.82)
Senesse, 2002	1.16 (0.80, 1.69)
Haile, 1997	1.82 (0.79, 4.19)
Benito, 1993	0.58 (0.31, 1.05)
Macquart-Moulin, 1987	1.10 (0.68, 1.76)
Subtotal	1.23 (0.99, 1.52)
Overall	1.29 (1.10, 1.53)

Red and Processed Meat and Colorectal Cancer Incidence: Meta-Analysis of Prospective Studies
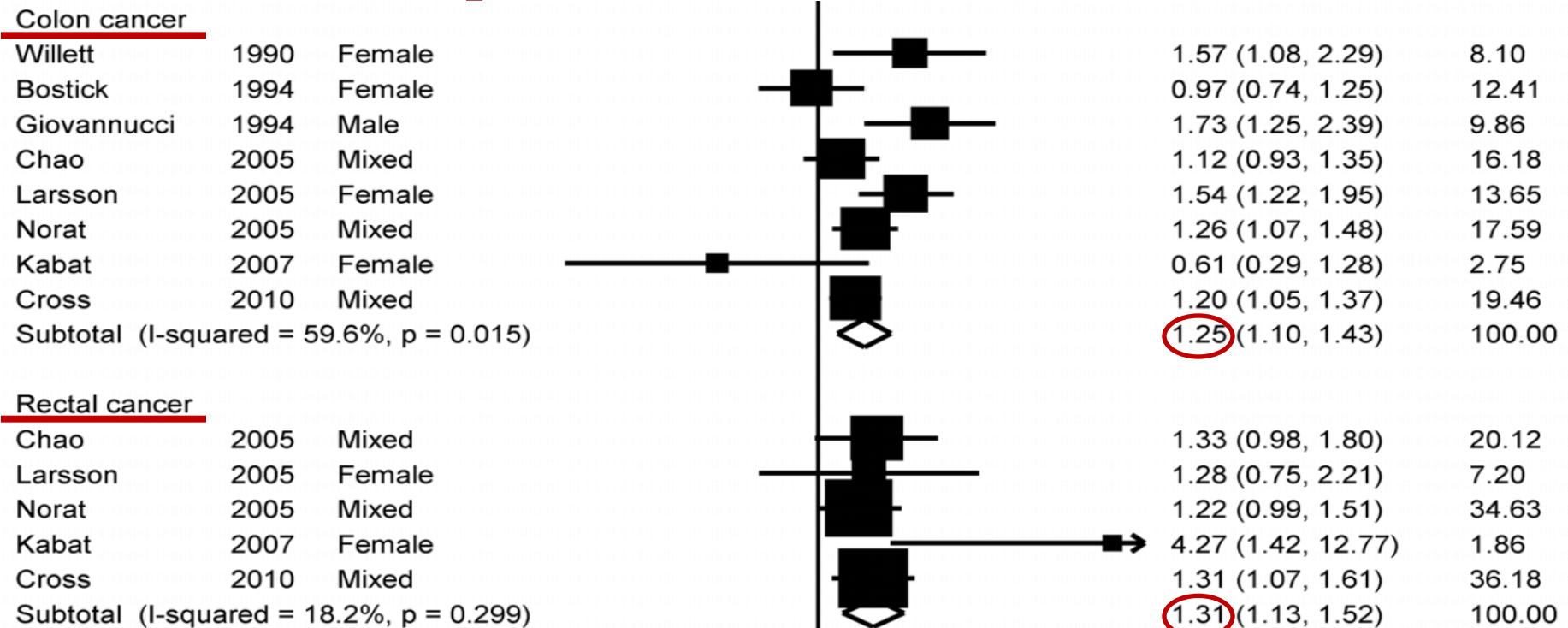
Chan DS., et al.

Red and processed meat intake and cancer

Red and Processed Meat and Colorectal Cancer Incidence: Meta-Analysis of Prospective Studies

Chan DS., et al. PLoS ONE 6(6): e20456. doi:10.1371/journal.pone.0020456

Red and processed meat intake and cancer

Colon cancer

| Author	Year	Sex	HR (95% CI)	Weight
Willett	1990	Female	1.57 (1.08, 2.29)	8.10
Bostick	1994	Female	0.97 (0.74, 1.25)	12.41
Giovannucci	1994	Male	1.73 (1.25, 2.39)	9.86
Chao	2005	Mixed	1.12 (0.93, 1.35)	16.18
Larsson	2005	Female	1.54 (1.22, 1.95)	13.65
Norat	2005	Mixed	1.26 (1.07, 1.48)	17.59
Kabat	2007	Female	0.61 (0.29, 1.28)	2.75
Cross	2010	Mixed	1.20 (1.05, 1.37)	19.46
Subtotal (I-squared = 59.6%, p = 0.015)			1.25 (1.10, 1.43)	100.00

Rectal cancer

Author	Year	Sex	HR (95% CI)	Weight
Chao	2005	Mixed	1.33 (0.98, 1.80)	20.12
Larsson	2005	Female	1.28 (0.75, 2.21)	7.20
Norat	2005	Mixed	1.22 (0.99, 1.51)	34.63
Kabat	2007	Female	4.27 (1.42, 12.77)	1.86
Cross	2010	Mixed	1.31 (1.07, 1.61)	36.18
Subtotal (I-squared = 18.2%, p = 0.299)			1.31 (1.13, 1.52)	100.00

NOTE: Weights are from random effects analysis

Meat & cereal consumption & colorectal cancer in Korea and Japan

Lee et al., Journal of Gastroenterology and Hepatology, 2008;23:138–140
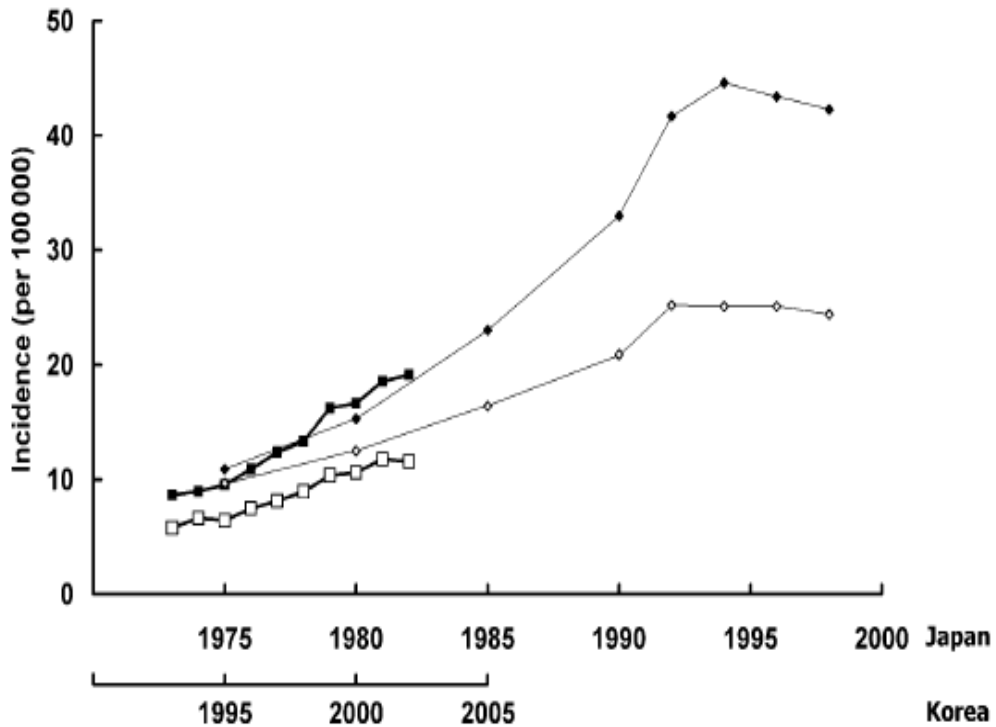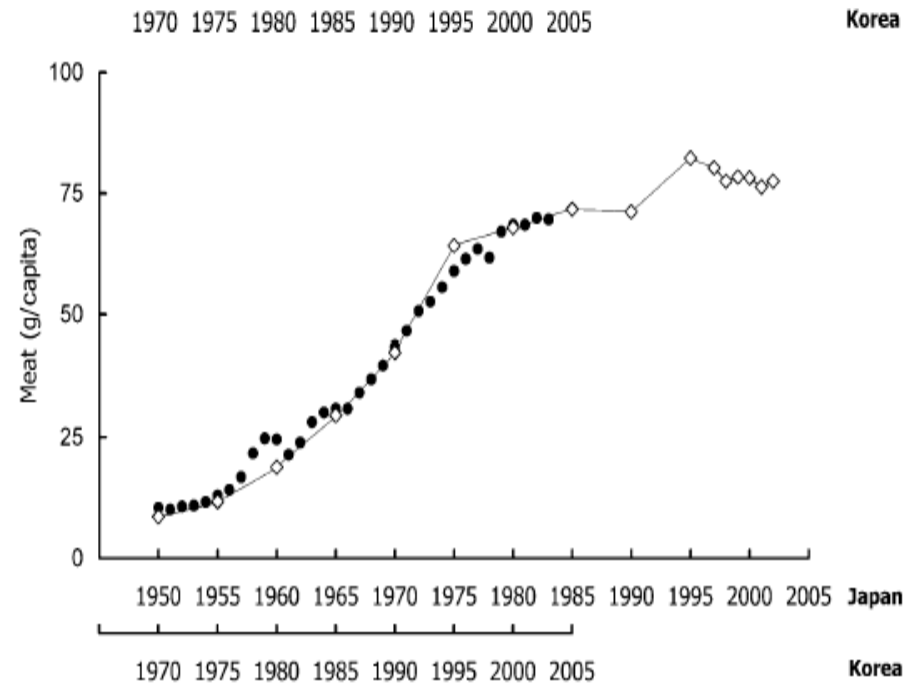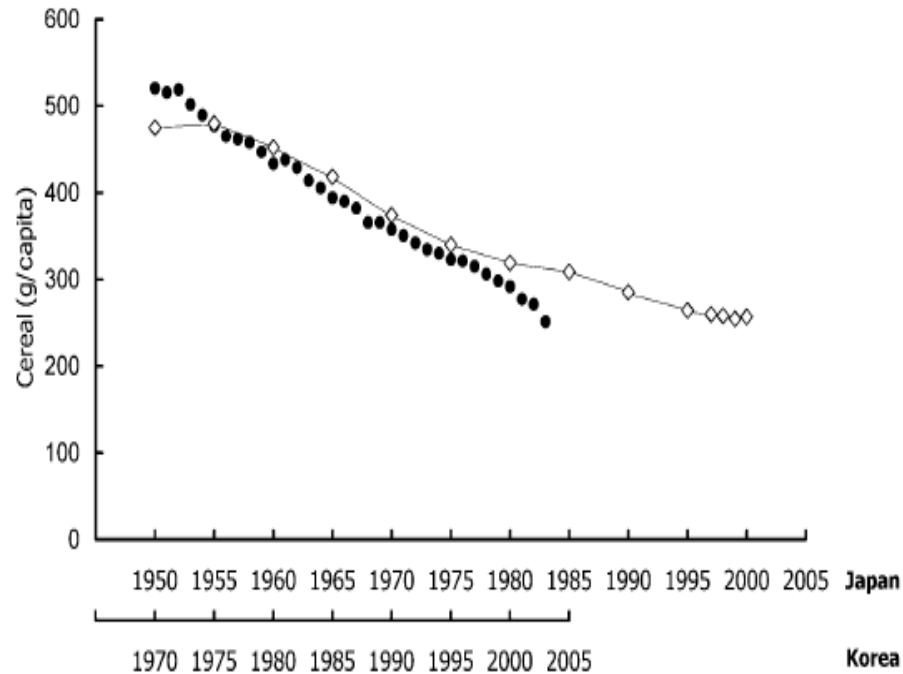
Risk for skin cancer in people with history of skin cancer the Nambour Skin Cancer Study, 1992–2002
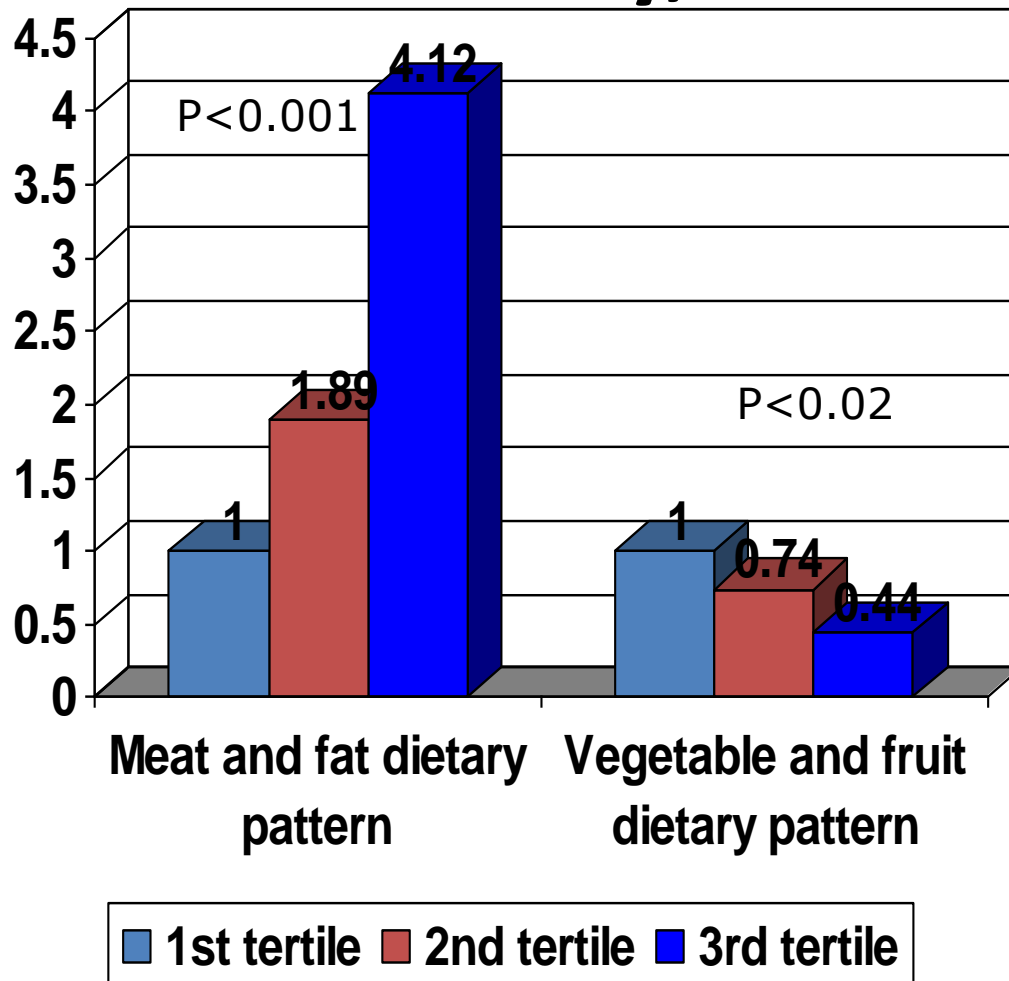
More than 1 million people in U.S. are diagnosed with Skin cancer each year.

Ibiebele et al., Am J Clin Nutr 2007;85:1401–1408

Recommendation 6 – alcohol

The evidence that all types of alcoholic drinks increase the risk of a number of cancers is now stronger than it was in the mid-1990s.

American Institute for Cancer Research

Alcohol intake and risk for cancer of different organs; a meta-analysis

Results based on 156 studies, including a total of 116,702 subjects

Legend:
- Oral cavity and pharynx
- Esophagus
- Larynx
- Colon
- Rectum
- Liver
- breast

25g/d: 86%, 39%, 43%, 5%, 9%, 19%, 25%

50g/d: 211%, 93%, 102%, 10%, 19%, 40%, 55%

100g/d: 545%, 259%, 286%, 21%, 42%, 81%, 141%

Corrao G. et al., Preventive Medicine 38 (2004) 613–619
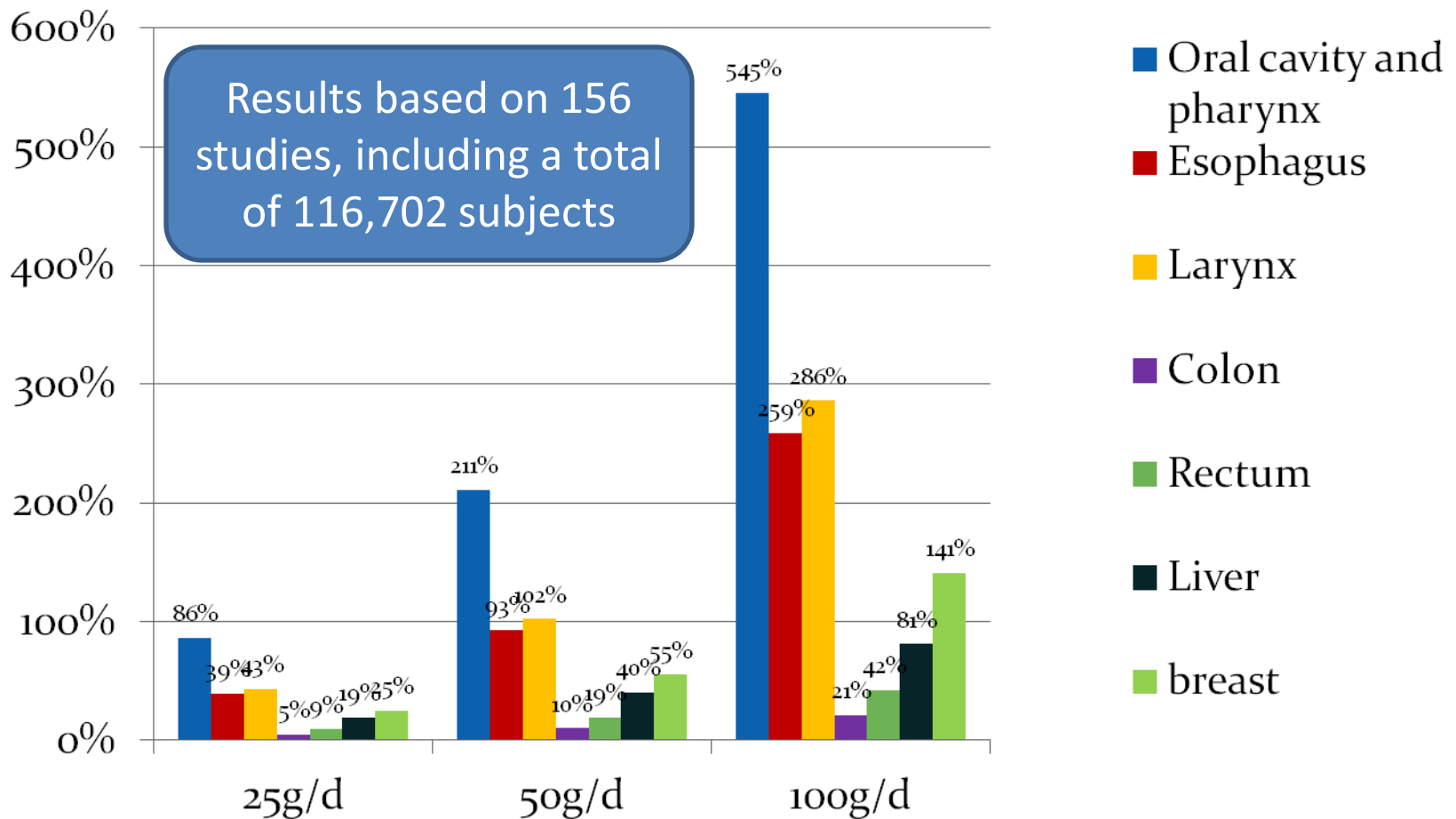
Recommendation 7 - salt

Limit consumption of processed foods with added salt.

Population average consumption of salt from all sources to be less than 5g (2g of sodium) a day.

Recommendation 8 – dietary supplements

Aim to meet dietary needs through diet alone.

Dietary supplements are not recommended for cancer prevention.

Vitamins E and C in the Prevention of Prostate and Total Cancer in Men

The Physicians' Health Study II Randomized Controlled Trial

- **N = 14 641 male physicians ≥50 years**

  - N of prostate cancer cases = 1008

  - N of total cancer = 1943

- **Follow-up = 8.0 years**

Vitamins E and C in the Prevention of Prostate and Total Cancer in Men

Gaziano et al. JAMA. 2009;301(1):52-62

The Physicians' Health Study II Randomized Controlled Trial

Vitamins E and C in the Prevention of Prostate and Total Cancer in Men

The Physicians' Health Study II Randomized Controlled Trial

"In this large, long-term trial of male physicians, neither vitamin E nor C supplementation reduced the risk of prostate or total cancer. These data provide no support for the use of these supplements for the prevention of cancer in middle-aged and older men."

Vitamin E and the Risk of Prostate Cancer
The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

- N = 34 887men from 427 study sites in the United States, Canada, and Puerto Rico who were randomly assigned to the following groups

  - 200 µg/d selenium - N = 8752

  - 400 IU/d vitamin E – N = 8737

  - Both vitamin E and selenium – N = 8702

Vitamin E and the Risk of Prostate Cancer
The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

No. at risk									
Placebo	8565	8344	8081	7831	7471	6399	4044	1833	70
Cumulative cases	32	127	201	268	367	446	503	524	529
Vitamin E	8620	8397	8150	7839	7442	6394	4010	1821	50
Cumulative cases	29	135	223	314	415	512	586	614	620

Vitamin E and the Risk of Prostate Cancer
The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

	Placebo (n = 8696)	Vitamin E Alone (n = 8737)	Selenium Alone (n = 8752)	Vitamin E + Selenium (n = 8702)
Colorectal cancer, No.	75	85	74	93
Hazard ratio (99% CI)		1.09 (0.72-1.64)	0.96 (0.63-1.46)	1.21 (0.81-1.81)
P value		.60	.79	.22
Lung cancer, No.	92	104	94	104
Hazard ratio (99% CI)		1.11 (0.76-1.61)	1.02 (0.70-1.50)	1.11 (0.76-1.62)
P value		.49	.89	.48
All other primary cancers, excludes prostate, includes colorectal and lung, No.	579	570	557	594
Hazard ratio (99% CI)		0.97 (0.83-1.14)	0.96 (0.83-1.13)	1.02 (0.88-1.19)
P value		.65	.54	.74
All cancers, including prostate	1108	1190	1132	1149
Hazard ratio (99% CI)		1.07 (0.96-1.19)	1.02 (0.92-1.14)	1.02 (0.92-1.14)
P value		.13	.59	.60

Vitamin E and the Risk of Prostate Cancer
The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

"**Dietary supplementation with vitamin E significantly increased the risk of prostate cancer among healthy men.**"

Vitamin E and the Risk of Prostate Cancer
The Selenium and Vitamin E Cancer Prevention Trial (SELECT)

Klein, E. et al., *JAMA. 2011;306(14):1549-1556*

"The lack of benefit from dietary supplementation with vitamin E or other agents with respect to preventing common health conditions and cancers or improving overall survival, and their potential harm, underscore the need for consumers to be skeptical of health claims for unregulated over-the-counter products in the absence of strong evidence of benefit demonstrated in clinical trials."

Multivitamin Supplement Use and Risk of Breast Cancer: A Meta-Analysis

Chan et al. Ann Pharmacother 2011;45:476-484

- "A meta-analysis of 5 cohort studies and 3 case-control studies showed no association between multivitamin use and the risk of breast cancer (RR 0.99 [95% CI 0.60 to 1.60] and OR 1.00 [95% CI 0.51 to 1.97], respectively)."

A Systematic Review of Multivitamin–Multimineral Use and Cardiovascular Disease and Cancer Incidence and Total Mortality
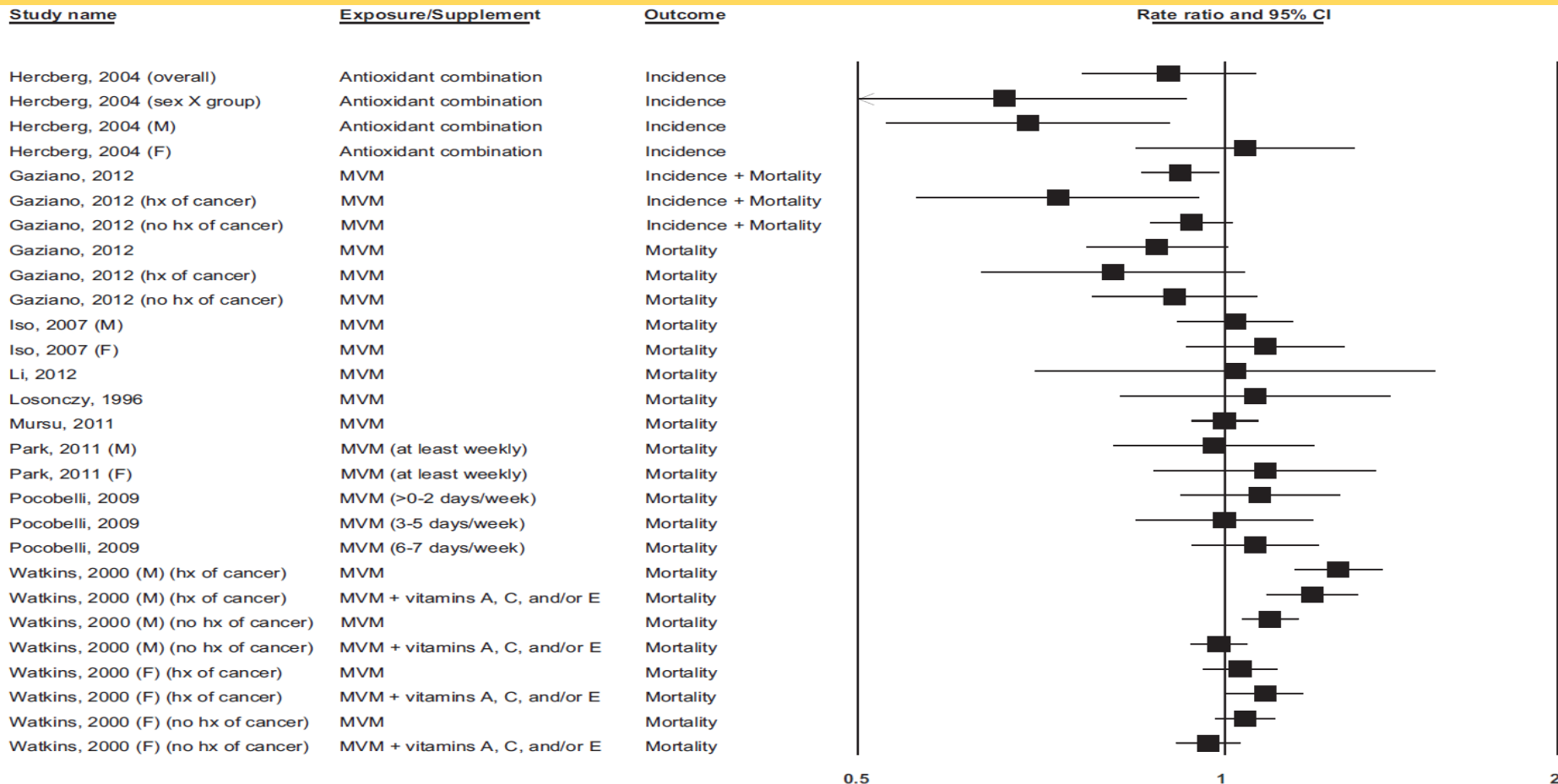
Alexander et al. J Am Coll Nutr. 2013;32:339-354

- N = 12 cohort studies and 3 primary prevention randomized controlled trials
  - United States n = 11,
  - European countries n = 3
  - Japan n = 1
- Publication dates from 1982 to 2012
- Duration of follow-up between 5 and 12 years

A Systematic Review of Multivitamin–Multimineral Use and Cardiovascular Disease and Cancer Incidence and Total Mortality

Alexander et al. J Am Coll Nutr. 2013;32:339-354

Cancer incidence and mortality based on cohort studies

A Systematic Review of Multivitamin–Multimineral Use and Cardiovascular Disease and Cancer Incidence and Total Mortality

Alexander et al. J Am Coll Nutr. 2013;32:339-354

"Collectively, MVM supplementation appears to have a slight inverse association with all-cause mortality. Evidence from 2 RCTs suggests that MVM supplementation may modestly lower cancer incidence and mortality, although observational epidemiologic studies do not confirm this inverse Association."

Editorial comment

"… almost every time we take a hard look at objective evidence regarding nutritional supplements, the balance tips away from benefit and toward harm. Over the past two decades, we have been repeatedly disappointed in the ability of vitamin supplements to reduce risk for cancers at several sites, including the stomach, colorectum, breast, and lung.

Editorial comment

Foods that are rich in vitamins seem to be associated with reduced risk of cancer, but vitamins packaged as pills clearly do not have the same effect."

Byers T., Am J Respir Crit Care Med., 2008;177:470-471