# **Supplemental Tables**

Supplemental Table 1. Search strategy in PubMed

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#### Nonlinear analyses

**Supplemental Table 6.** Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable intake and type 2 diabetes

**Supplemental Table 7.** Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

**Supplemental Table 8.** Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

**Supplemental Table 9.** Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

**Supplemental Table 10.** Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

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### Subgroup analyses

**Supplemental Table 14.** Subgroup analyses of fruit and vegetable intake and type 2 diabetes, high vs. low and dose-response

**Supplemental Table 15.** Subgroup analyses of fruit intake and type 2 diabetes, high vs. low and dose-response

**Supplemental Table 16.** Subgroup analyses of vegetable intake and type 2 diabetes, high vs. low and dose-response

**Supplemental Table 17.** Subgroup analyses of cruciferous vegetable intake and type 2 diabetes, dose-response

**Supplemental Table 18.** Subgroup analyses of green leafy vegetable intake and type 2 diabetes, dose-response

**Supplemental Table 19.** Subgroup analyses of potato (total) intake and type 2 diabetes, dose-response

Supplemental Table 20. World Cancer Research Fund grading criteria

Supplemental Table 21. Justification for evidence grading for fruit and vegetables and type 2 diabetes

Supplemental Table 22. Evidence grading for fruit and vegetables and subtypes and type 2 diabetes

## **Supplemental Table 1.** Search strategy in PubMed

1. fruits		
2. vegetables		
3. fruit		
4. vegetable		
5. berry		
6. berries		
7. strawberries		
8. blueberries		
9. citrus		
10. "citrus fruits"		
11. orange		
12. apples		
13. pears		
14. banana		
15. cruciferae		
16. "cruciferous vegetables"		
17. broccoli		
18. cauliflower		
19. cabbages		
20. "allium vegetables"		
21. onion		
22. garlic		
23. tomato		
24. tomatoes		
25. potato		
26. "french fries"		
27. juice		
28. food		
29. "food groups"		
30. (1 OR 2 OR 3 OR 4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12 OR 13 OR 14 OR 15 OR 16 OR		
17 OR 18 OR 19 OR 20 OR 21 OR 22 OR 23 OR 24 OR 25 OR 26 OR 27 OR 28 OR 29)		
31. diabetes		
32. "case-control"		
33. cohort		
34. cohorts		
35. prospective		
36. longitudinal		
37. retrospective		
38. "follow-up"		
39. "cross-sectional"		
40. "population-based"		
41. "relative risk"		
42. "odds ratio"		
43. "hazard ratio"		
44. "incidence rate ratio"		
45. (32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38 OR 39 OR 40 OR 41 OR 42 OR 43 OR 44)		
46. (30 AND 31 AND 45)		

## Supplemental Table 2. List of excluded studies and exclusion reason

Exclusion reason	Reference number
Abstract	(1-4)
Case-control study	(5-8)
Commentary	(9)
Cross-sectional study	(10-55)
Diabetes mortality	(56)
Dietary pattern, dietary index	(57-59)
Duplicate	(60-70)
Impaired glucose tolerance population	(71)
Meta-analysis	(72-88)
No risk estimates	(89-91)
Not original data	(92;93)
Not relevant data	(94-195)
Not relevant exposure	(196-424)
Not relevant outcome	(425-477)
Only one study on exposure	(478;479)
Patient population	(480)
Protocol	(481-483)
Review	(484-517)
Substitution of juice with water	(518)
Unadjusted risk estimates	(519)
Unspecific exposure (plant foods)	(520)

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## **Supplemental Table 3.** Serving sizes

Exposure	Serving size (g/d) <sup>a</sup>	Serving size (g/d) <sup>b</sup>
Main exposures		
Fruit and vegetables		
Fruits	-	80
Vegetables	-	80
Subtypes of fruit		
Apples	138	-
Apples and pears	138	-
Bananas	114	-
Berries	-	75
Blueberries	-	70
Cantaloupe	134	-
Citrus fruits	-	110
Fruit drinks	-	250
Fruit juice	-	250
100% fruit juice	-	250
Grapefruit	120	-
Grapes and raisins	-	49
Oranges	131	-
Peaches, plums and apricots	87	=
Prunes	_	85
Strawberries	75	-
Watermelon	_	286
Subtypes of vegetables		
Allium vegetables	-	160
Boiled potato	-	202
Broccoli	78	-
Brussel sprouts	78	-
Cabbage	68	-
Cauliflower	62	-
Cruciferous vegetables	-	72
Green leafy vegetables	-	73
Kale, mustard and chard	-	73
greens Mushrooms	-	30
Potatoes	202	-
Tomatoes	122	-
Yellow vegetables	_	93

<sup>&</sup>lt;sup>a</sup> Serving sizes retrieved from Lee et al. (2009)

Lee, J. E., Mannisto, S., Spiegelman, D., Hunter, D. J., Bernstein, L., van den Brandt, P. A., . . . Smith-Warner, S. A. (2009). Intakes of fruit, vegetables, and carotenoids and renal cell cancer risk: a pooled analysis of 13 prospective studies. *Cancer Epidemiol Biomarkers Prev, 18*(6), 1730-1739. doi:10.1158/1055-9965.epi-09-0045

<sup>&</sup>lt;sup>b</sup> Estimated values based on Lee et al. (2009)

## **Supplemental Table 4.** Cohort studies of fruit and vegetables and type 2 diabetes

Author, publication year, country	Study name or description	Follow-up period	Study size, gender, age, number of cases	Dietary assessment	Outcome assessment	Exposure	Quantity	RR (95% CI)	Adjustment for confounders
Ford ES et al, 2000, USA	NHANES I Epidemiologic Follow-Up Study	1971-1975 to 1992-1993, 15.8 years follow-up	9665 participants, age 25-74 years, 1018 cases	Single 24-hour dietary recall	Self-report, hospitalization record, death certificate	Fruit and vegetable (total)  Fruit and vegetable (men)  Fruit and vegetable (women)	0 serv/d 1-4 ≥5 0 serv/d 1-4 ≥5 0 serv/d 1-4 ≥5	1.00 1.01 (0.78, 1.29) 0.79 (0.59, 1.06) 1.00 1.23 (0.76, 1.99) 1.14 (0.67, 1.93) 1.00 0.85 (0.62, 1.16) 0.61 (0.42, 0.88)	Age, sex, smoking, systolic blood pressure, cholesterol concentration, use of antihypertensive medication, recreational exercise, nonrecreational activity, alcohol use, BMI, education
Meyer KA et al, 2000, USA	Iowa Women's Health Study (IWHS)	1986-1992, 6 years follow- up	35 988 women, age 55-69 years, 1141 cases	Validated FFQ, 127 items	Self-reported, validated by physician/med ical records	Total fruit and vegetable  Total fruit  Total vegetable	18.0 serv/wk 27.0 35.0 44.0 62.0 4.0 serv/wk 8.5 12.0 16.0 23.5 11.0 serv/wk 17.0 22.0 28.5 41.5	1.00 1.00 (0.82, 1.22) 1.12 (0.92, 1.36) 1.21 (0.99, 1.49) 1.05 (0.84, 1.31) 1.00 1.05 (0.87, 1.26) 1.00 (0.82, 1.22) 1.08 (0.88, 1.32) 1.14 (0.93, 1.39) 1.00 1.03 (0.85, 1.24) 0.99 (0.82, 1.21) 1.09 (0.90, 1.34) 1.07 (0.86, 1.32)	Age, total energy intake, BMI, WHR, education, smoking, alcohol intake, physical activity
Knekt P et al, 2002, Finland	Finnish Mobile Clinic Health Examination Survey (FMCHES)	1966-1972 to 1994, 28 years follow-up	9878 participants, age >15 years, 526 cases	Dietary history interview, >100 items	Linkage to the Social Insurance Institution	Apple	>47 vs. 0 g/d	0.73 (0.57, 0.92)	Sex, age, intakes of vegetables and fruit other than apples

Hodge AM	Melbourne	1990-1994, 4	31 641	Self-	Self-reported/	Vegetable	<3.0 times/d	1.00	Age, sex, country of
et al, 2004,	Collaborative	years follow-	participants,	administered	doctor	, egetable	3.0-4.9	1.09 (0.78, 1.54)	birth, physical
Australia	Cohort Study	up	age 27-75	FFQ, 121 items	confirmation		5.0-6.9	0.97 (0.68, 1.39)	activity, family
rastrana	(MCCS)	up.	years, 365	11 Q, 121 Items	Communation		≥7.0	0.88 (0.60, 1.28)	history of diabetes,
	(MCCS)		cases				Increase of 1 time/wk	0.97 (0.91, 1.03)	alcohol, education,
			Cuscs			Potato	<2.0 times/wk	1.00	weight change in
						Totalo	2.0-3.9	0.84 (0.63, 1.12)	the last 5 years,
							4.0-6.4	0.82 (0.60, 1.12)	energy intake, BMI,
							±.0 · 0.4 ≥6.5	0.98 (0.70, 1.37)	WHR
							Increase of 1 time/wk	0.99 (0.94, 1.04)	WIIK
						Fruit	<2.0 times/d	1.00	
						Truit	2.0-3.9	0.81 (0.59, 1.12)	
							4.0-5.9	0.82 (0.58, 1.16)	
							>6.0	0.85 (0.59, 1.22)	
							Increase of 1 time/wk	0.85 (0.35, 1.22)	
Liu S et al,	Women's	1993-2003,	38 018	Validated semi-	Self-	All fruits and	2.54 serv/d	1.00	Age, smoking, total
2004, USA	Health Study	8.8 years		quantitative	reported/ADA	vegetables	4.13	1.03 (0.88, 1.20)	calories, alcohol
2004, USA	(WHS)	follow-up	women, age			vegetables	5.49	0.94 (0.79, 1.11)	use, BMI, exercise,
	(WHS)	ionow-up	≥45 years, 1614 cases	FFQ, 131 items	criteria		7.09	0.94 (0.79, 1.11)	history of
			1014 cases				10.16		
						A 11 C		1.04 (0.87, 1.25)	hypertension,
						All fruits	0.62 serv/d 1.32	1.00 0.93 (0.79, 1.09)	history of high cholesterol and
							1.91 2.62	0.87 (0.74, 1.03)	family history of
							3.91	0.94 (0.80, 1.11)	diabetes
						A 11		0.97 (0.82, 1.16)	
						All vegetables	1.47 serv/d	1.00	
							2.49	1.01 (0.86, 1.19)	
							3.40	0.98 (0.83, 1.16)	
							4.58	0.99 (0.84, 1.18)	
						G:4 C :4	6.84	1.03 (0.86, 1.23)	
						Citrus fruits	0.07 serv/d	1.00	
							0.28	1.06 (0.90, 1.24)	
							0.57	0.90 (0.76, 1.07)	
							1.00	1.14 (0.98, 1.34)	
							1.57	1.07 (0.90, 1.26)	
						Green leafy	0.14 serv/d	1.00	
						vegetables	0.35	0.92 (0.79, 1.08)	
							0.56	0.93 (0.79, 1.09)	
							0.92	0.84 (0.72, 0.99)	
							1.42	0.96 (0.81, 1.13)	

Montonen J et al, 2005, Finland	Finnish Mobile Clinic Health Examination	1967-1972 to 1995, 23 years follow-up	4304 participants, age 40-69	Dietary history interview, > 100 food items	Linkage to the Social Insurance Institution	Potato	<132 g/d 132-196 197-283 >283	1.00 1.09 (0.82, 1.46) 1.27 (0.94, 1.72) 1.42 (1.02, 1.98)	consumption of sugar-sweetened soft drinks, diet soft drinks, fruit juice, and fruit punch (other than the main exposure, depending on model)  Age, sex, BMI, energy intake, smoking, family
Schulze M et al, 2004, USA	Nurses' Health Study II (NHS II)	1991-1999, 7.8 years follow- up	91 249 women, age 24-44 years, 741 cases	Validated semi- quantitative FFQ, 133 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes criteria (after 1998)	Fruit punch	<1/mo 1-4/ 2-6/wk ≥1/d	1.00 0.90 (0.68, 1.18) 1.15 (0.79, 1.66) 2.00 (1.33, 3.03)	Alcohol intake, physical activity, family history of diabetes, smoking, postmenopausal hormone use, oral contraceptive use, intake of cereal fiber, magnesium, trans-fat, and ratio of polyunsaturated to saturated fat; and
						vegetables  Dark yellow vegetables  Potatoes	0.21 0.35 0.57 1.00 0.07 serv/d 0.2 0.34 0.57 1.00 0.13 serv/d 0.28 0.43 0.56 0.93	0.91 (0.76, 1.09) 0.98 (0.84, 1.14) 0.96 (0.81, 1.14) 0.95 (0.80, 1.12) 1.00 0.90 (0.76, 1.07) 0.89 (0.75, 1.07) 0.92 (0.76, 1.11) 0.81 (0.67, 0.98) 1.00 1.03 (0.87, 1.22) 0.97 (0.79, 1.19) 0.96 (0.81, 1.13) 1.02 (0.86, 1.22)	
						Cruciferous	0.13 serv/d	1.00	

	Survey		years, 383			Vegetables	<42 g/d	1.00	history of diabetes,
	(FMCHES)		cases				42-78	0.75 (0.56, 1.00)	geographic area
	(						79-130	0.93 (0.70, 1.22)	88
							>130	0.77 (0.57, 1.03)	
						Yellow and red	<19 g/d	1.00	
						vegetables	19-41	0.78 (0.59, 1.04)	
							42-77	0.90 (0.68, 1.18)	
							>77	0.80 (0.60, 1.06)	
						Green vegetables	<11 g/d	1.00	
							11-24	0.92 (0.71, 1.21)	
							25-43	0.91 (0.69, 1.20)	
							>43	0.69 (0.50, 0.93)	
						Other vegetables	<1 g/d	1.00	
							1-3	0.97 (0.73, 1.30)	
							4-10	0.94 (0.71, 1.24)	
							>10	0.79 (0.58, 1.07)	
						Fruits and berries	<33 g/d	1.00	
							33-83	0.77 (0.58, 1.02)	
							84-156	0.83 (0.63, 1.10)	
							>156	0.69 (0.51, 0.92)	
						Fruit	<20 g/d	1.00	
							20-66	0.89 (0.67, 1.18)	
							67-138	0.88 (0.66, 1.17)	
							>138	0.82 (0.61, 1.11)	
						Berries	<4 g/d	1.00	
							4-10	0.69 (0.53, 0.92)	
							11-20	0.65 (0.49, 0.87)	
							>20	0.63 (0.47, 0.85)	
Song Y et al,	Women's	1993-2003,	38 018	Validated semi-	Self-reported,	Broccoli	None	1.00	Age, BMI, total
2005, USA	Health Study	8.8 years	women, age	quantitative	validated by		≤1 serv/wk	0.95 (0.77, 1.16)	energy intake,
	(WHS)	follow-up	≥45 years,	FFQ, 131 items	supplementary		2-4	0.94 (0.75, 1.18)	smoking, exercise,
			1614 cases		questionnaire		≥5	0.95 (0.69, 1.31)	alcohol use, history
					and ADA	Apples	None	1.00	of hypertension,
					criteria		≤1 serv/wk	0.83 (0.70, 0.98)	history of high
							2-6	0.73 (0.60, 0.88)	cholesterol, family
							≥1/d	0.72 (0.55, 0.94)	history of diabetes,
						Onions	None	1.00	fiber intake,
							≤1 serv/wk	1.09 (0.97, 1.22)	glycemic load,
							2-4	1.10 (0.92, 1.33)	magnesium, total fat
							≥5	1.18 (0.94, 1.48)	

Wang L et al, 2006, USA	Women's Health Study (WHS)	1992-2003, 10.2 years follow-up	35 783 women, age ≥45 years, 1544 cases	Validated semi- quantitative FFQ, 131 food items	Self-reported, validated by supplementary questionnaire and ADA criteria	Tomatoes  Tomato juice	None 1-3 serv/mo 1-4 serv/wk ≥5 None 1-3 serv/mo 1 serv/wk ≥2	1.00 0.81 (0.64, 1.03) 0.94 (0.76, 1.17) 0.95 (0.74, 1.22) 1.00 1.00 (0.88, 1.13) 1.11 (0.94, 1.31) 0.93 (0.74, 1.15)	Age, energy, randomized treatment assignment, smoking, alcohol, exercise, family history of diabetes, post-menopause, postmenopausal hormone use, multivitamin use, BMI, history of hypertension, history of hyper-cholesterolemia
Montonen J et al, 2007, Finland	Finnish Mobile Clinic Health Examination Survey (FMCHES)	1967-1972 to 1994-1995, 12 years follow-up	4284 participants, age 40-69 years, 177 cases	Dietary history interview, >100 food items	Linkage to the Social Insurance Institution	Sweetened berry juice	0 g/d 7.5 21 51	1.00 0.68 (0.41, 1.14) 0.95 (0.60, 1.49) 1.56 (1.08, 2.26)	Age, sex, BMI, energy intake, smoking, geographic area, physical activity, family history of diabetes, prudent dietary pattern score, conservative pattern score, serum cholesterol, blood pressure, history of infarction, history of angina pectoris, history of cardiac failure
Bazzano LA et al, 2008, USA	Nurses' Health Study (NHS)	1984-2002, 18 years follow- up	71 346 women, age 38-63 years, 4529 cases	Validated semi- quantitative FFQ, 116 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes	Vegetables  Fruit and vegetables (fruit juice excluded)	1.61 serv/d 2.35 3.09 4.25 5.40 3 serv/d increase 2.35 serv/d 3.41 4.47	1.00 1.00 (0.91, 1.10) 1.02 (0.93, 1.12) 1.08 (0.98, 1.19) 1.05 (0.94, 1.16) 1.04 (0.97, 1.13) 1.00 1.01 (0.92, 1.11) 1.00 (0.91, 1.10)	Age, BMI, physical activity, family history of diabetes, postmenopausal hormone use, alcohol, smoking, total energy intake, whole grains, nuts, processed meats,

					criteria (after 1998)	Green leafy vegetables  Apple, orange, grapefruit/other fruit juices	6.07 7.66 3 serv/d increase 0.25 serv/d 0.49 0.72 1.10 1.48 1 serv/d increase 0.04 serv/d 0.29 0.54 0.94	0.99 (0.89, 1.09) 1.01 (0.90, 1.12) 0.99 (0.94, 1.05) 1.00 1.00 (0.91, 1.10) 1.02 (0.93, 1.11) 0.93 (0.85, 1.03) 0.90 (0.82, 1.00) 0.91 (0.84, 0.98) 1.00 1.21 (1.10, 1.33) 1.29 (1.17, 1.42) 1.25 (1.14, 1.38)	coffee, potatoes, and sugar- sweetened soft drinks
Palmer JR et al, 2008, USA	Black Women's Health Study (BWHS)	1995-2005, 10 years follow-up	43 960 women, age 21-69 years, 2713 cases	Validated FFQ, 68-items	Self-reported, validated by physician	Sweetened fruit drink  Orange or grapefruit juice	1.33 1 serv/d increase  <1 drink/mo  1-7  2-6 drinks/wk 1 drink/d ≥2 <1 drink/mo  1-7  2-6 drinks/wk 1 drink/d ≥2	1.35 (1.22, 1.50) 1.18 (1.10, 1.26) 1.00 1.08 (0.96, 1.22) 1.08 (0.96, 1.21) 1.17 (1.02, 1.33) 1.31 (1.13, 1.52) 1 0.93 (0.83, 1.05) 0.99 (0.88, 1.11) 0.99 (0.87, 1.14) 1.11 (0.92, 1.35)	Age, family history of diabetes, physical activity, cigarette smoking, years of education, and each of the 2 other types of drinks, intake of red meat, processed meats, cereal fiber, and coffee, and glycemic index
Villegas R et al, 2008, China	Shanghai Women's Health Study (SWHS)	2000-2002 and 2002-2004, 4.6 years follow- up	64 191 women, age 40-70 years, 1608 cases	In-person interview with FFQ, 77 items	Self-reported/ validated by fasting glucose level (ADA criteria) and/or an oral glucose tolerance test (OGTT) and/or use of hypoglycaemi c medication	All vegetables  Cruciferous vegetables  Green leafy vegetables	121.5 g/d 181.6 236.0 302.6 428.0 5.0 g/d 10.9 17.0 25.8 45.2 28.0 g/d 51.3 70.7 94.1	1.00 0.74 (0.64, 0.87) 0.68 (0.58, 0.80) 0.72 (0.61, 0.84) 0.72 (0.61, 0.85) 1.00 0.79 (0.68, 0.91) 0.69 (0.60, 0.81) 0.60 (0.51, 0.71) 0.72 (0.61, 0.83) 1.00 0.78 (0.68, 0.91) 0.61 (0.52, 0.71) 0.58 (0.49, 0.68)	Age, daily energy intake, meat intake, BMI, WHR, smoking, alcohol consumption, physical activity, income level, education level, occupational status, and hypertension

	136.1	0.82 (0.71, 0.95)
Yellow	0.04 g/d	1.00
vegetables	0.62	0.69 (0.60, 0.80)
regetables	2.0	0.63 (0.54, 0.73)
	5.6	0.51 (0.43, 0.60)
	17.3	0.55 (0.47, 0.64)
Allium	2.2 g/d	1.00
vegetables	4.2	0.79 (0.68, 0.92)
	6.5	0.70 (0.60, 0.81)
	9.8	0.70 (0.60, 0.82)
	17.9	0.69 (0.59, 0.81)
Tomatoes	6.8 g/d	1.00
	17.0	0.68 (0.59, 0.79)
	30.3	0.73 (0.63, 0.85)
	49.2	0.61 (0.52, 0.71)
	88.5	0.78 (0.67, 0.91)
Other vegetables	40.7 g/d	1.00
	66.8	0.76 (0.65, 0.88)
	90.9	0.84 (0.72, 0.98)
	121.4	0.76 (0.64, 0.89)
	181.0	0.76 (0.64, 0.89)
All fruits	87.0 g/d	1.00
	170.4	0.76 (0.65, 0.88)
	239.4	0.79 (0.67, 0.92)
	315.0	0.87 (0.74, 1.02)
	483	1.05 (0.90, 1.23)
Citrus fruit	2.5 g/d	1.00
	10.0	0.84 (0.72, 0.98)
	16.7	0.84 (0.72, 0.98)
	25.2	0.81 (0.69, 0.95)
	44.4	1.11 (0.95, 1.29)
Watermelon	29.6 g/d	1.00
	71.3	0.84 (0.72, 0.98)
	109.7	0.83 (0.71, 0.97)
	149.1	0.90 (0.77, 1.05)
	221.0	1.04 (0.89, 1.21)
Other fruit	27.6 g/d	1.00
	67.2	0.77 (0.66, 0.90)
	102.2	0.68 (0.58, 0.80)
	142.7	0.85 (0.73, 0.99)

							217.6	0.90 (0.77, 1.05)	
de Koning L et al, 2011, USA	Health Professionals Follow-up Study (HPFS)	1986-2006, 20 years follow- up	51 529 men, age 40-75 years, 2680 cases	Validated semi- quantitative FFQ, 131 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes criteria (after 1998). Questionnaire -confirmed diagnosis of T2D was reconfirmed by medical record review	Fruit punches, lemonades, other noncarbonated fruit drinks	Per 1 serv/d	1.05 (0.89, 1.25)	Age, smoking, physical activity, alcohol intake, multivitamin use, family history of type 2 diabetes, high triglycerides (in 1986), high blood pressure, and use of diuretics
Cooper AJ et al, 2012, UK	EPIC-InterAct Study	1991-2007, 11 years follow- up	Sub-cohort: 14 800 participants, age 40-79 years, 10 821 cases	Country- specific, validated dietary questionnaires	Self-reported/ registers/drug registers/ hospital admissions/ mortality data	Total fruit and vegetables  Total fruit  Citrus fruit  Non-citrus fruit  Total vegetable	<pre>&lt;235.7 g/d ≥235.7 - &lt;369.1 ≥369.1 - &lt;544.8 ≥544.8 &lt;103.7 g/d ≥103.7 - &lt;193.4 ≥193.4 - &lt;315.9 ≤315.9 &lt;10.1 g/d ≥10.1 - &lt;35.9 ≥35.9 - &lt;79.4 ≥79.4 &lt;53.0 g/d ≥53.0 - &lt;120.9 ≥120.9 - &lt;213.5 ≤213.5 &lt;100.5 g/d ≥100.5 - &lt;154.8</pre>	1.00 0.92 (0.83, 1.03) 0.93 (0.84, 1.03) 0.90 (0.80, 1.01) 1.00 0.92 (0.83, 1.03) 0.94 (0.83, 1.05) 0.89 (0.76, 1.04) 1.00 0.96 (0.86, 1.07) 1.00 (0.90, 1.10) 1.01 (0.86, 1.19) 1.00 1.02 (0.92, 1.13) 0.97 (0.87, 1.08) 0.94 (0.79, 1.13) 1.00 0.92 (0.84, 1.01)	Country, age, centre, sex, education, BMI, physical activity, smoking, total energy intake and alcohol intake  Total fruit: additionally adjusted for total vegetable intake  Citrus-and noncitrus fruit: adjusted for other fruit subtypes
							≥100.5 - <154.8 ≥154.8 - <237.6 ≥237.6 <3.2 g/d	0.92 (0.84, 1.01) 0.93 (0.83, 1.05) 0.94 (0.84, 1.05) 1.00	Non-citrus fruit: Umea (Sweden) excluded (no info)

						Green leafy	≥3.2 - <14.1	0.74 (0.65, 0.84)	
						vegetables	≥14.1 - <37.7	0.75 (0.65, 0.86)	Total vegetables:
						8	≥37.7	0.84 (0.65, 1.07)	additionally
							<28.6 g/d	1.00	adjusted for total
						Fruiting	≥28.6 - <50.5	0.94 (0.86, 1.04)	fruit intake
						vegetables	≥50.5 - <87.1	0.96 (0.86, 1.06)	
						8	≥87.1	0.97 (0.85, 1.12)	Green leafy
							<3.9 g/d	1.00	vegetables,
						Root vegetables	≥3.9 - <11.1	0.98 (0.88, 1.08)	cabbages, onion and
							≥11.1 - <27.3	0.85 (0.76, 0.95)	garlic, stalk
							<u>≥</u> 27.3	0.87 (0.77, 0.99)	vegetables and
							<1.5 g/d	1.00	sprouts, other
						Cabbages	≥1.5 - <8.5	0.94 (0.74, 1.19)	vegetables: Umea
						6	<u>-</u> 8.5 - <21.4	0.93 (0.80, 1.07)	(Sweden) excluded
							<u>≥</u> 21.4	0.90 (0.75, 1.09)	(no info)
							<2.6 g/d	1.00	
						Onion & garlic	≥2.6 - <7.0	0.94 (0.75, 1.18)	Green leafy
							≥7.0 - <17.7	0.88 (0.71, 1.10)	vegetable: Denmark
							≥17.7	0.92 (0.63, 1.33)	excluded from
							<0.2 g/d	1.00	analysis as there
						Stalk vegetables,	≥0.2 - <3.8	0.91 (0.70, 1.18)	was not enough
						sprouts	≥3.8 - <9.8	0.78 (0.68, 0.91)	information to
						•	≥9.8	0.82 (0.63, 1.07)	calculate HRs and
							<3.4 g/d	1.00	95% CIs
						Other vegetables	≥3.4 - <10.2	1.01 (0.87, 1.19)	
							≥10.2 - <23.0	0.90 (0.78, 1.04)	Onion and garlic:
							≥23.0	0.96 (0.76, 1.22)	France excluded (no
									info)
Elwood P et	Caerphilly	1979-2009, 30	2235 men,	FFQ	Self-reported,	Fruit and	3 + vs. <3 serv/d	0.91 (0.62, 1.33)	Age and social class
al, 2013, UK	Cohort Study	years follow-	age 45-59		validated by	vegetables			
	(CaPS)	up	years, 214		medical				
			cases		records				
Eshak ES et	Japan Public	1990-1995 to	27 585	Validated FFQ,	Self-reported,	100% fruit juice	Rarely	1.00	Age, BMI, family
al, 2013,	Health Center-	1990-2000, 10	participants,	44 items	validated by		≤2 times/wk	0.81 (0.65, 1.01)	history of diabetes,
Japan	based	years follow-	(12 137		medical		3-4 times/wk	0.93 (0.65, 1.35)	education,
	Prospective	up	men, 15 448		records		Almost every day	1.17 (0.69, 2.00)	occupation,
	Study (JPHC)	_	women),			100% fruit juice	Rarely	1.00	smoking status,
	,		age 40-59				≤2 times/wk	0.94 (0.73, 1.21)	alcohol, history of
			years, 824				3-4 times/wk	0.90 (0.58, 1.40)	hypertension,
			cases (484				Almost every day	1.37 (0.79, 2.37)	physical activity,

Fagherazzi G et al, 2013, France	Etude Epide ´miologique aupre `s des femmes de la Mutuelle Ge ´ne ´rale de l'Education Nationale— European Prospective Investigation into Cancer and Nutrition cohort (E3N)	1993-2007, 14 years follow- up	men, 340 women)  66 118 women, age 40-65 years, 1369 cases	Validated diet- history questionnaire, 208 items	Self-reported/ a diabetes diet plan/ the use of diabetic drugs/ a hospitalization for diabetes, validated by drug registries or supplementary questionnaire	Vegetable juice  Vegetable juice  100% fruit juice	Rarely ≤2 times/wk 3-4 times/wk Almost every day Rarely ≤2 times/wk 3-4 times/wk Almost every day Non-consumers <180 180–447 mL/wk 448–967 mL/wk >967 mL/wk	1.00 0.84 (0.65, 1.09) 0.81 (0.49, 1.39) 1.27 (0.65, 2.51) 1.00 0.97 (0.69, 1.35) 0.92 (0.47, 1.79) 0.71 (0.28, 1.82) 1.00 0.90 (0.76, 1.07) 0.95 (0.81, 1.12) 1.18 (1.01, 1.38) 0.93 (0.78, 1.10)	coffee, green tea, energy-adjusted intakes of dietary magnesium, calcium, vitamin D, rice and total dietary fiber, and total energy intake  Age, years of education, smoking, physical activity, hypertension, hypercholesterolemi a, use of hormone replacement therapy, family history of diabetes, self-reported use of antidiabetic drugs, alcohol, omega-3 fatty acid intake, carbohydrate, coffee, fruit and vegetables, and processed-meat consumption, dietary pattern, total energy intake and BMI
Jacques PF et al, 2013, USA	Framingham Heart Study Offspring (FHSO)	1991-2008, 11.9 years follow-up	2 915 participants, age 10-70 years, 308 cases	Semi- quantitative FFQ, 145 items	Fasting glucose concentrations and/or a medical and medication use history	Apples and pears  Banana	<pre>&lt;138 g/wk 138-620 621-896 ≥897 &lt;114 g/wk 114-512 513-740 ≥741</pre>	1.00 0.99 (0.67, 1.46) 0.63 (0.31, 1.26) 0.73 (0.35, 1.56) 1.00 1.16 (0.78, 1.73) 1.06 (0.59, 1.89) 1.36 (0.76, 2.43)	Sex, time- dependent variables age, cardiovascular disease, current smoker, BMI, cumulative mean energy intake
Kurotani K et al, 2013, Japan	Japan Public Health Center- based	1995-1998 to 2000-2003, 5	48 437 men and women (21 269	Validated self- administered FFQ, 147 items	Self-reported, validated by	Total vegetable and fruit intake (men)	146 g/d 273.1 414.1	1.00 0.85 (0.66, 1.10) 1.08 (0.83, 1.40)	Age, public health centre area, BMI, smoking, alcohol

Prospective	years follow-	men, 27 168	medical		686.8	0.93 (0.67, 1.29)	consumption,
Study	up	women),	records	Total vegetable	209.7 g/d	1.00	leisure-time
(JPHC)	1	age 45-75		and fruit intake	365.7	0.94 (0.69, 1.28)	activity, history of
		years,		(women)	532.9	0.79 (0.56, 1.11)	hypertension, coffee
		896 cases			858.7	1.04 (0.69, 1.55)	consumption,
		(530 men,		Total vegetable	75.2 g/d	1.00	family history of
		366 women)		intake (men)	141.7	0.93 (0.73, 1.19)	diabetes,
					213.1	0.92 (0.70, 1.20)	magnesium intake,
					355.4	0.81 (0.59, 1.13)	calcium intake,
				Total vegetable	99.5 g/d	1.00	energy intake
				intake (women)	172.7	1.04 (0.77, 1.41)	
					252.5	0.76 (0.54, 1.08)	
					406.9	0.99 (0.66, 1.47)	
				Total fruit intake	36.4 g/d	1.00	
				(men)	113.1	0.94 (0.73, 1.19)	
					191.6	0.91 (0.70, 1.18)	
					362.4	0.94 (0.71, 1.26)	
				Total fruit intake	74.4 g/d	1.00	
				(women)	166.3	0.73 (0.53, 1.00)	
					272.2	0.96 (0.70, 1.32)	
					487.1	1.04 (0.73, 1.48)	
				Total green and	24.7 g/d	1.00	
				yellow vegetables	58.8	0.82 (0.64, 1.06)	
				(men)	94.6	1.05 (0.82, 1.36)	
					172.4	0.90 (0.66, 1.22)	
				Total green and	35.4 g/d	1.00	
				yellow vegetables	70.9	1.06 (0.79, 1.42)	
				(women)	113.2	0.84 (0.61, 1.17)	
					197.5	0.89 (0.61, 1.29)	
				Green leafy	4.5 g/d	1.00	
				vegetables (men)	11.8	0.92 (0.72, 1.17)	
					22.7	0.88 (0.68, 1.14)	
					47.2	0.83 (0.62, 1.12)	
				Green leafy	7.4 g/d	1.00	
				vegetables	16.7	0.81 (0.60, 1.10)	
				(women)	29.5	0.88 (0.65, 1.20)	
					57.5	0.81 (0.57, 1.16)	
				Cruciferous	17.6 g/d	1.00	
				vegetables (men)	37.3	1.02 (0.80, 1.30)	
					60.8	0.94 (0.73, 1.22)	

						Cruciferous	103.9 24.0 g/d	0.78 (0.58, 1.06) 1.00	
						vegetables	47.6	1.09 (0.80, 1.48)	
						(women)	72.5	1.13 (0.82, 1.55)	
							119.8	1.10 (0.77, 1.57)	
						Citrus fruits	7.2 g/d	1.00	
						(men)	46.5	1.00 (0.79, 1.28)	
							79.3	0.85 (0.65, 1.10)	
							165.4	1.04 (0.79, 1.36)	
						Citrus fruits	19.1 g/d	1.00	
						(women)	66.0	0.91 (0.67, 1.23)	
							114.8	0.92 (0.67, 1.27)	
							248.9	1.14 (0.82, 1.58)	
Muraki I et	Nurses' Health	1984-2008, 21	66 105	Validated semi-	Self-reported/	Total whole fruit	<4 serv/wk	1.00	Age, ethnicity,
al, 2013,	Study (NHS)	years follow-	women, age	quantitative	supplemental	consumption	5-6	0.92 (0.85, 0.99)	BMI, smoking,
USA		up	30-55 years,	FFQ, 116 items	questionnaire/		1 serv/d	0.96 (0.80, 0.93)	multivitamin use,
			6358 cases		the National		2	0.86 (0,79, 0.93)	physical activity,
					Diabetes Data		≥3	0.90 (0.81, 0.99)	family history of
					group criteria		Every 3 serv/wk	0.98, 0.96, 1.00)	diabetes,
					(before 1997)	Grapes and	<1 serv/mo	1.00	menopausal status
					or American	raisins	1-3	0.91 (0.86, 0.97)	and post-
					Diabetes		1 serv/wk	0.88 (0.80, 0.95)	menopausal
					criteria		2-4	0.80 (0.72, 0.88)	hormone use, oral
					(after 1998).		≥5	0.77 (0.64, 0.92)	contraceptive use,
					Questionnaire		Every 3 serv/wk	0.84 (0.78, 0.91)	total energy intake,
					-confirmed	Peaches, plums	<1 serv/mo	1.00	fruit juice
					diagnosis of	and apricots	1-3	0.99 (0.93, 1.07)	consumption and
					T2D was		1 serv/wk	1.00 (0.92, 1.08)	modified alternate
					reconfirmed		2-4	1.04 (0.94, 1.14)	healthy eating index
					by medical		≥5	0.92 (0.78, 1.09)	score. Individual
					record review		Every 3 serv/wk	1.00 (0.93, 1.07)	fruit consumption
						Prunes	<1 serv/mo	1.00	was mutually
							1-3	0.99 (0.92, 1.07)	adjusted
							1 serv/wk	0.86 (0.73, 1.02)	
							2-≥5	0.89 (0.75, 1.06)	
							Every 3 serv/wk	0.87 (0.74, 1.03)	
						Bananas	<1 serv/mo	1.00	
							1-3	1.08 (0.98, 1.19)	
							1 serv/wk	1.05 (0.95, 1.17)	
							2-4	1.04 (0.94, 1.15)	

	≥5	1.08 (0.96, 1.21)
	Every 3 serv/wk	1.01 (0.96, 1.06)
Cantaloupe	<1 serv/mo	1.00
	1-3	1.00 (0.93, 1.08)
	1 serv/wk	1.06 (0.98, 1.15)
	2-≥5	1.07 (0.96, 1.19)
	Every 3 serv/wk	1.08 (0.98, 1.18)
Apples and pears	<1 serv/mo	1.00
	1-3	0.94 (0.84, 1.04)
	1 serv/wk	0.94 (0.84, 1.05)
	2-4	0.85 (0.77, 0.95)
	≥5	0.82 (0.73, 0.92)
	Every 3 serv/wk	0.91 (0.87, 0.95)
Oranges	<1 serv/mo	1.00
	1-3	0.96 (0.89, 1.04)
	1 serv/wk	1.03 (0.94, 1.13)
	2-4	0.96 (0.87, 1.05)
	≥5	1.03 (0.92, 1.15)
	Every 3 serv/wk	1.00 (0.95, 1.06)
Grapefruit	<1 serv/mo	1.00
	1-3	0.91 (0.85, 0.97)
	1 serv/wk	0.95 (0.88, 1.03)
	2-4	0.88 (0.80, 0.96)
	≥5	0.86 (0.75, 0.98)
	Every 3 serv/wk	0.92 (0.87, 0.98)
Total berries	<1 serv/mo	1.00
	1-3	0.93 (0.86, 1.01)
	1 serv/wk	0.95 (0.87, 1.03)
	2-4	0.91 (0.82, 0.99)
	≥5	0.96 (0.83, 1.11)
	Every 3 serv/wk	0.97 (0.91, 1.03)
Strawberries	<1 serv/mo	1.00
Saawsenies	1-3	0.94 (0.87, 1.01)
	1 serv/wk	0.98 (0.90, 1.07)
	2-4	0.87 (0.77, 0.98)
	≥5	0.99 (0.79, 1.25)
	Every 3 serv/wk	0.94 (0.85, 1.03)
Blueberries	<1 serv/mo	1.00
Diucocifies	1-3	0.90 (0.85, 0.96)
	1 serv/wk	0.89 (0.82, 0.98)

			1				2-≥5	0.82 (0.69, 0.98)	
						Emile in its	Every 3 serv/wk	0.77 (0.66, 0.91)	
						Fruit juice	<1 serv/wk	1.00	
								1.09 (0.98, 1.21)	
							2-4	1.13 (1.03, 1.23)	
							5-6	1.13 (1.03, 1.24)	
							≥1 serv/d	1.21 (1.12, 1.31)	
							Per 3 serv/wk	1.07 (1.04, 1.11)	
Muraki I et	Nurses' Health	1991-2009, 20	85 104	Validated semi-	Self-reported/	Total whole fruit	<4 serv/wk	1.00	Age, ethnicity,
al, 2013,	Study II (NHS	years follow-	women, age	quantitative	supplemental	consumption	5-6	0.86 (0.77, 0.95)	BMI, smoking,
USA	II)	up	25-42 years,	FFQ, 131 items	questionnaire/		1 serv/d	0.84 (0.76, 0.94)	multivitamin use,
			3153 cases		the National		2	0.88 (0.78, 0.98)	physical activity,
					Diabetes Data		≥3	0.92 (0.78, 1.08)	family history of
					group criteria		Every 3 serv/wk	0.99 (0.96, 1.00)	diabetes,
					(before 1997)	Grapes and	<1 serv/mo	1.00	menopausal status
					or American	raisins	1-3	0.81 (0.74, 0.88)	and post-
					Diabetes		1 serv/wk	0.85 (0.75, 0.96)	menopausal
					criteria (after		2-4	0.83 (0.72, 0.97)	hormone use, oral
					1998)		≥5	0.88 (0.66, 1.16)	contraceptive use,
							Every 3 serv/wk	0.91 (0.81, 1.02)	total energy intake,
						Peaches, plums	<1 serv/mo	1.00	fruit juice
						and apricots	1-3	1.07 (0.97, 1.18)	consumption and
							1 serv/wk	1.03 (0.91, 1.16)	modified alternate
							2-4	0.99 (0.86, 1.14)	healthy eating index
							≥5	1.01 (0.78, 1.31)	score. Individual
							Every 3 serv/wk	0.97 (0.87, 1.08)	fruit consumption
						Prunes	<1 serv/mo	1.00	was mutually
							1-3	0.85 (0.75, 0.96)	adjusted
							1 serv/wk	1.00 (0.77, 1.31)	1
							2-≥5	1.16 (0.88, 1.53)	
							Every 3 serv/wk	1.03 (0.79, 1.34)	
						Bananas	<1 serv/mo	1.00	
						Dunanao	1-3	0.95 (0.84, 1.07)	
							1 serv/wk	0.95 (0.84, 1.07)	
							2-4	0.82 (0.72, 0.94)	
							≥5 ≥5	0.82 (0.72, 0.94)	
							Every 3 serv/wk	0.87 (0.81, 0.94)	
						Cantaloupe	<1 serv/mo	1.00	
						Cantaloupe	1-3		
								0.99 (0.90, 1.09)	
							1 serv/wk	1.05 (0.94, 1.17)	

	2-≥5	1.11 (0.94, 1.30)
	Every 3 serv/wk	1.11 (0.94, 1.30)
A pplas and page		1.12 (0.96, 1.52)
Apples and pear	1-3	
	1 serv/wk	0.83 (0.72, 0.95)
	2-4	0.83 (0.72, 0.96)
		0.79 (0.68, 0.91)
	≥5 F 2 / 1	0.76 (0.64, 0.90)
	Every 3 serv/wk	0.92 (0.86, 0.99)
Oranges	<1 serv/mo	1.00
	1-3	0.94 (0.85, 1.04)
	1 serv/wk	0.93 (0.82, 1.05)
	2-4	0.93 (0.81, 1.07)
	≥5 To 2 / 1	0.97 (0.78, 1.21)
	Every 3 serv/wk	0.99 (0.89, 1.09)
Grapefruit	<1 serv/mo	1.00
	1-3	1.00 (0.91, 1.09)
	1 serv/wk	1.06 (0.94, 1.20)
	2-4	0.97 (0.83, 1.14)
	≥5	0.91 (0.69, 1.21)
	Every 3 serv/wk	0.97 (0.86, 1.09)
Total berries	<1 serv/mo	1.00
	1-3	0.93 (0.84, 1.05)
	1 serv/wk	0.93 (0.82, 1.05)
	2-4	0.92 (0.80, 1.05)
	≥5	1.03 (0.86, 1.24)
	Every 3 serv/wk	1.02 (0.94, 1.11)
Strawberries	<1 serv/mo	1.00
	1-3	0.97 (0.87, 1.08)
	1 serv/wk	1.01 (0.89, 1.15)
	2-4	1.09 (0.93, 1.27)
	≥5	1.08 (0.81, 1.43)
	Every 3 serv/wk	1.09 (0.97, 1.22)
Blueberries	<1 serv/mo	1.00
	1-3	0.83 (0.76, 0.91)
	1 serv/wk	0.90 (0.79, 1.04)
	2-≥5	0.69 (0.55, 0.87)
	Every 3 serv/wk	0.67 (0.54, 0.83)
Fruit juice	<1 serv/wk	1.00
	1	0.92 (0.81, 1.05)
	2-4	0.97 (0.87, 1.00)

							5.6	0.07 (0.06 1.00)	1
							5-6	0.97 (0.86, 1.09)	
							≥1 serv/d	1.14 (1.02, 1.27)	
							Per 3 serv/wk	1.07 (1.02, 1.11)	
Muraki I et	Health	1986-2008, 22	36 173 men,	Validated semi-	Self-reported/	Total whole fruit	<4 serv/wk	1.00	Age, ethnicity,
al, 2013,	Professionals	years follow-	age 40-75	quantitative	supplemental	consumption	5-6	1.00 (0.88, 1.12)	BMI, smoking,
USA	Follow-up	up	years, 2687	FFQ, 131 items	questionnaire/		1 serv/d	0.92 (0.82, 1.03)	multivitamin use,
	Study (HPFS)		cases		the National		2	0.89 (0.79, 1.01)	physical activity,
					Diabetes Data		≥3	0.90 (0.78, 1.04)	family history of
					group criteria		Every 3 serv/wk	0.98 (0.95, 1.00)	diabetes, total
					(before 1997)	Grapes and	<1 serv/mo	1.00	energy intake, fruit
					or American	raisins	1-3	0.95 (0.87, 1.05)	juice consumption
					Diabetes		1 serv/wk	0.95 (0.84, 1.08)	and modified
					criteria		2-4	0.87 (0.76, 1.01)	alternate healthy
					(after 1998).		≥5	0.84 (0.69, 1.04)	eating index score.
					Questionnaire		Every 3 serv/wk	0.91 (0.82, 0.99)	Individual fruit
					-confirmed	Peaches, plums	<1 serv/mo	1.00	consumption was
					diagnosis of	and apricots	1-3	0.98 (0.88, 1.08)	mutually adjusted
					T2D was	and apricots	1 serv/wk	1.03 (0.90, 1.18)	mataany aajastea
					reconfirmed		2-4	0.88 (0.75, 1.04)	
					by medical		≥5	0.75 (0.55, 1.04)	
					record review		Every 3 serv/wk	0.87 (0.77, 0.99)	
					record review	Prunes	<1 serv/mo	1.00	
						Trunes	1-3	0.92 (0.80, 1.06)	
							1 serv/wk	0.83 (0.63, 1.10)	
							2-≥5	0.86 (0.66, 1.12)	
							Every 3 serv/wk	0.82 (0.63, 1.07)	
						Bananas	<1 serv/mo	1.00	
						Dananas	1-3	1.00 (0.95, 1.25)	
							1 serv/wk	1.09 (0.93, 1.23)	
							2-4		
							≥5 ≥5	0.93 (0.80, 1.07)	
								0.86 (0.73, 1.01)	
						G 1	Every 3 serv/wk	0.89 (0.83, 0.95)	
						Cantaloupe	<1 serv/mo	1.00	
							1-3	1.15 (1.03, 1.27)	
							1 serv/wk	1.17 (1.03, 1.34)	
							2-≥5	1.19 (1.01, 1.40)	
							Every 3 serv/wk	1.14 (0.98, 1.34)	
						Apples and pears	<1 serv/mo	1.00	
							1-3	0.91 (0.78, 1.06)	
							1 serv/wk	0.98 (0.83, 1.16)	

			2-4	0.91 (0.77, 1.07)
			≥ 5	0.93 (0.78, 1.11)
			Every 3 serv/wk	0.98 (0.92, 1.06)
	Oı	ranges	<1 serv/mo	1.00
		i un ges	1-3	0.89 (0.79, 1.01)
			1 serv/wk	0.91 (0.79, 1.04)
			2-4	0.89 (0.78, 1.03)
			≥5	0.89 (0.76, 1.05)
			Every 3 serv/wk	0.97 (0.90, 1.05)
	Gı	rapefruit	<1 serv/mo	1.00
			1-3	1.03 (0.93, 1.14)
			1 serv/wk	1.09 (0.96, 1.24)
			2-4	0.93 (0.81, 1.06)
			≥5	1.08 (0.90, 1.30)
			Every 3 serv/wk	0.99 (0.91, 1.08)
	To	otal berries	<1 serv/mo	1.00
			1-3	0.93 (0.83, 1.03)
			1 serv/wk	0.95 (0.84, 1.07)
			2-4	0.94 (0.81, 1.09)
			≥5	1.22 (0.98, 1.52)
			Per 3 serv/wk	1.24 (1.08, 1.42)
	St	rawberries	<1 serv/mo	1.00
			1-3	0.95 (0.85, 1.05)
			1 serv/wk	0.98 (0.85, 1.13)
			2-4	1.16 (0.95, 1.42)
			≥5	1.51 (1.00, 2.28)
			Every 3 serv/wk	1.22 (1.03, 1.43)
	Bl	ueberries	<1 serv/mo	1.00
			1-3	0.94 (0.85, 1.03)
			1 serv/wk	0.96 (0.80, 1.15)
			2-≥5	0.74 (0.55, 1.00)
			Every 3 serv/wk	0.75 (0.58, 0.98)
	Fr	uit juice	<1 serv/wk	1.00
			1	1.07 (0.91, 1.26)
			2-4	0.99 (0.86, 1.13)
			5-6	1.05 (0.92, 1.20)
			≥1 serv/d	1.13 (1.01, 1.27)
			Per 3 serv/wk	1.06 (1.01, 1.11)

Romaguera D et al, 2013, UK	EPIC-InterAct Study	1991-2007, 11.7 years follow-up	Sub-cohort: 15 374 participants, age 40-79, 11 684 cases	Country- specific validated dietary questionnaires	Self-report, validated by linkage to primary-care registers, secondary- care registers, medication use (drug registers), hospital admissions and mortality data	Juices and nectar	0.0 g/d 17.1 100.0 338.3	1.00 0.97 (0.86, 1.10) 1.04 (0.96, 1.13) 1.06 (0.90, 1.25)	Sex, educational level, physical activity, smoking status, alcohol consumption; juices and total soft drinks were mutually adjusted; sugarsweetened and artificially sweetened soft drinks were also mutually adjusted plus adjustment for juice consumption, energy intake and BMI
Mursu J et al, 2014, Finland	Kuopio Ischaemic Heart Disease Risk Factor Study (KIHD)	1984-1989 to 2006-2008, 19.3 years follow-up	2332 men, age 42-60 years, 432 cases	Instructed 4- day food recording	Self-reported, diabetes register, blood glucose measurements and OGTT	Total fruit and vegetables Fruit	90.94 g/d 192.50 284.80 469.26 0.71 g/d 33.82 99.13 241.25	1.00 0.79 (0.60, 1.03) 0.89 (0.68, 1.16) 0.76 (0.57, 1.02) 1.00 0.95 (0.72, 1.25) 0.87 (0.66, 1.15) 0.98 (0.75, 1.29)	Age, examination years, BMI, WHR, smoking, education, leisure time physical activity, family history of diabetes, intake of energy, alcohol
						Berries Fruit and berry juices	0.00 g/d 14.68 41.04 108.55 0.00 g/d 39.03 128.21	1.00 1.15 (0.90, 1.47) 0.89 (0.68, 1.17) 0.65 (0.49, 0.88) 1.00 1.07 (0.82, 1.39) 1.03 (0.78, 1.34)	energy, alcohor
						Vegetables  Cruciferous vegetable	387.25 36.29 g/d 82.73 128.18 231.92 0.00 g/d 3.76 14.28	0.99 (0.74, 1.31) 1.00 0.90 (0.69, 1.17) 0.92 (0.70, 1.20) 0.81 (0.61, 1.07) 1.00 1.15 (0.89, 1.49) 0.89 (0.67, 1.76)	

							43.95	0.79 (0.59, 1.05)	
Qiao Y et al, 2014, USA	Women's Health Initiative (WHI)	1993-2005, 7.6 years follow- up	154 493 participants, age 50-79 years, 10 307 cases	Validated FFQ, 122 items	Self-reported, validated by medication and laboratory data	Vegetables	<3.01 serv/d ≥3.01	1.00 1.10 (0.96, 1.26)	Age, education, cigarette smoking, BMI, WHR, physical activity, log (daily energy intake), family history of diabetes, study arms and hormone therapy use
Lacoppidan SA et al, 2015, Denmark	Diet, Cancer, and Health cohort (DCH)	1993-2011, 15.3 years follow-up	55 060 participants (28 953 women, 26 107 men), age 50-64 years, 7366 cases (3269 women, 4097 men)	Validated FFQ, 192-items	Linkage to National Diabetes Registry	Apples and pears (women) Apples and pears (men)	<70.99 g/d ≥71 <55.99 g/d ≥56	1.00 1.03 (0.96, 1.11) 1.00 0.97 (0.91, 1.04)	Age, schooling level, participation in sports, smoking status, alcohol intake, red and processed meat, total energy intake, BMI and waist circumference
Muraki I et al, 2016, USA	Nurses' Health Study (NHS)	1984-2010, 22.4 years follow-up	70 773 women, age 30-55 years, 7436 cases	Validated semi- quantitative FFQ, 116 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes criteria (after 1998). Questionnaire -confirmed diagnosis of T2D was reconfirmed by medical record review	Potatoes	<1 serv/wk 1 2-4 5-6 ≥7 Every 3 serv/wk	1.00 1.08 (0.93, 1.26) 1.15 (1.00, 1.32) 1.22 (1.05, 1.40) 1.27 (1.04, 1.56) 1.08 (1.04, 1.13)	Age, ethnicity, smoking status, alcohol intake, multivitamin use, physical activity, a family history of diabetes, menopausal status and postmenopausal hormone use, oral contraceptive use, total energy intake, modified aHEI score and baseline BMI

Muraki I et al, 2016, USA	Nurses' Health Study II (NHS II)	1991-2011, 18.4 years follow-up	87 739 women, age 25-42 years, 4621 cases	Validated semi- quantitative FFQ, 131 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes criteria (after 1998).	Potatoes	<1 serv/wk 1 2-4 5-6 ≥7 Every 3 serv/wk	1.00 0.95 (0.78, 1.16) 0.99 (0.82, 1.19) 1.09 (0.90, 1.31) 1.38 (1.08, 1.76) 1.12 (1.05, 1.18)	Age, ethnicity, smoking status, alcohol intake, multivitamin use, physical activity, family history of diabetes, menopausal status and postmenopausal hormone use, oral contraceptive use, total energy intake, modified aHEI score and baseline BMI
Muraki I et al, 2016, USA	Health Professionals Follow-up Study (HPFS)	1986-2010, 19.5 years follow-up	40 669 men, age 40-75 years, 3305 cases	Validated semi- quantitative FFQ, 131 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes criteria (after 1998). Questionnaire -confirmed diagnosis of T2D was reconfirmed by medical record review	Potatoes	<1 serv/wk 1 2-4 5-6 ≥7 Every 3 serv/wk	1.00 0.94 (0.76, 1.17) 1.03 (0.85, 1.24) 1.09 (0.89, 1.32) 1.38 (1.07, 1.78) 1.10 (1.03, 1.17)	Age, ethnicity, smoking status, alcohol intake, multivitamin use, physical activity, a family history of diabetes, total energy intake, modified aHEI score and baseline BMI
Muraki et al, 2016, USA	Nurses' Health Study (NHS)	1984-2010, 21 years follow-up	70 773 women, age 30-55 years, 7436 cases	Validated semi- quantitative FFQ, 116 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997)	Baked, boiled or mashed potatoes (pooled)	Almost never to 1-3 serv/mo 1 serv/wk 2-4 ≥5 Every 3 serv/wk Almost never	1.00 1.02 (0.95, 1.09) 1.03 (0.96, 1.10) 1.08 (1.00, 1.16) 1.04 (1.01, 1.08) 1.00	Age, ethnicity, smoking status, alcohol intake, multivitamin use, physical activity, a family history of diabetes,

	Nurses' Health Study II (NHS II) Health Professionals Follow-up Study (HPFS)	1991-2011, 18.4 years follow-up 1986-2010, 19.5 years follow-up Median follow-up 20.0 years	women, age 25-42 years, 4621 cases 40 669 men, age 40-75 years, 3305 cases	Validated semi- quantitative FFQ, 131 items Validated semi- quantitative FFQ, 131 items	or American Diabetes criteria (after 1998). In NHS and HPFS, questionnaire- confirmed diagnosis of T2D was reconfirmed by medical record review	French fries (pooled)	1-3 serv/mo 1 serv/wk 2-4 ≥5 Every 3 serv/wk	1.11 (1.06, 1.17) 1.17 (1.11, 1.24) 1.26 (1.18, 1.35) 1.32 (1.13, 1.55) 1.19 (1.13, 1.25)	menopausal status, postmenopausal hormone use, oral contraceptive use (NHS and NHS II), total energy intake, modified aHEI score, baked, boiled or mashed potatoes (for french fries), and french fries (for baked, boiled, or mashed potatoes) and baseline BMI
et al, 2017,	Singapore Chinese Health Study (SCHS)	1993-2010, 10.9 years follow-up	45 411 participants, age 45-74 years, 5207 cases	Validated semi- quantitative FFQ, 165 items	Self-reported, validated by linkage with a nationwide hospital-based discharge database and supplementary questionnaire	Total whole-fruit (all)  Total whole-fruit (men)  Total whole-fruit (women)  Temperate fruit (all) apples,	0.1 serv/wk 1.5 3.0 5.5 9.6 16.6 25.3 Per 3 serv/wk 0.0 serv/wk 1.5 3.0 5.5 9.7 16.7 25.5 Per 3 serv/wk 0.2 serv/wk 1.5 3.0 5.5 9.6 16.6 25.1 Per 3 serv/wk 0.0 serv/wk 0.0 serv/wk	1.00 1.10 (0.92, 1.30) 1.15 (1.00, 1.32) 1.11 (0.98, 1.27) 1.06 (0.93, 1.21) 1.08 (0.93, 1.25) 1.08 (0.91, 1.27) 0.99 (0.98, 1.01) 1.00 1.01 (0.75, 1.35) 1.24 (0.99, 1.56) 1.25 (1.00, 1.54) 1.16 (0.94, 1.43) 1.24 (0.99, 1.56) 1.33 (1.04, 1.71) 1.01 (0.99, 1.03) 1.00 1.14 (0.92, 1.41) 1.11 (0.93, 1.32) 1.04 (0.88, 1.23) 1.00 (0.85, 1.18) 0.97 (0.81, 1.17) 0.88 (0.71, 1.11) 0.97 (0.96, 0.99) 1.00	Age, sex, dialect group, year of baseline interview, total daily energy intake, physical activity, education, smoking, alcohol intake, BMI, total vegetable intake, unsweetened soy intake, saturated fat intake, dairy intake, soft drink consumption, coffee intake, black and green tea intake, fruit- and vegetable-juice intake, mutually adjusted for individual fruits  Juice: adjusted for all the above, included dietary fiber, but not adjusted for fruit-

	1	I	1.2	0.05 (0.05 1.06)	
		pears, apricots,	1.3	0.95 (0.85, 1.06)	and vegetable-juice
		peaches, grapes,	2.9	0.98 (0.88, 1.09)	intake
		persimmon	5.0	0.96 (0.87, 1.05)	
			8.1	0.94 (0.83, 1.05)	
		Temperate fruit	0.0 serv/wk	0.86 (0.77, 0.97)	
		(men)	0.5	1.00	
			1.3	0.99 (0.85, 1.16)	
			2.9	1.02 (0.87, 1.19)	
			5.0	1.03 (0.89, 1.19)	
			8.1	0.99 (0.83, 1.17)	
		Temperate fruit	0.0 serv/wk	0.97 (0.82, 1.16)	
		(women)	0.5	1.00	
			1.4	0.91 (0.78, 1.05)	
			3.0	0.95 (0.82, 1.09)	
			5.1	0.90 (0.79, 1.03)	
			8.1	0.89 (0.76, 1.04)	
		Apple (all)	0.0 serv/wk	0.79 (0.67, 0.92)	
			0.5	1.00	
			1.0	0.97 (0.89, 1.05)	
			2.5	0.93 (0.85, 1.02)	
			5.0	0.93 (0.86, 1.01)	
			7.0	0.90 (0.79, 1.03)	
			Per 3 serv/wk	0.82 (0.74, 0.92)	
		Apple (men)	0.0 serv/wk	0.93 (0.90, 0.97)	
			0.5	1.00	
			1.0	0.93 (0.81, 1.06)	
			2.5	0.98 (0.85, 1.12)	
			5.0	0.94 (0.83, 1.07)	
			7.0	0.94 (0.77, 1.14)	
			Per 3 serv/wk	0.95 (0.80, 1.13)	
		Apple (women)	0.0 serv/wk	0.98 (0.92, 1.04)	
			0.5	1.00	
			1.0	0.99 (0.88, 1.11)	
			2.5	0.91 (0.81, 1.02)	
			5.0	0.92 (0.83, 1.03)	
			7.0	0.87 (0.74, 1.03)	
			Per 3 serv/wk	0.75 (0.64, 0.87)	
		Pear (all)	0.0 serv/wk	0.90 (0.86, 0.95)	
		i cai (aii)	0.5 SCI V/WK	1.00	
			1.0	0.99 (0.93, 1.06)	
			1.0	0.99 (0.93, 1.00)	

1	<u> </u>		2.5	1.02 (0.04, 1.11)
			2.5	1.02 (0.94, 1.11)
			Per 3 serv/wk	1.07 (0.97, 1.18
		Pear (men)	0.0 serv/wk	1.08 (0.99, 1.19)
			0.5	1.00
			1.0	1.03 (0.93, 1.14)
			2.5	1.01 (0.88, 1.14)
			Per 3 serv/wk	1.05 (0.90, 1.23)
		Pear (women)	0.0 serv/wk	1.07 (0.93, 1.23)
			0.5	1.00
			1.0	0.97 (0.89, 1.06)
			2.5	1.04 (0.93, 1.15)
			Per 3 serv/wk	1.09 (0.96, 1.23)
		Grapes (all)	0.0 serv/wk	1.10 (0.97, 1.23)
		¥ ( /	0.3	1.00
			1.3	0.95 (0.89, 1.01)
			2.0	0.98 (0.88, 1.08)
			Per 3 serv/wk	0.86 (0.75, 0.99)
		Grapes (men)	0.0 serv/wk	0.87 (0.76, 0.99)
		Grapes (men)	0.5 Servi w R	1.00
			1.3	0.97 (0.88, 1.06)
			2.0	1.02 (0.87, 1.19)
			Per 3 serv/wk	0.81 (0.65, 1.01)
		Cmamaa (waaman)	0.0 serv/wk	
		Grapes (women)		0.87 (0.71, 1.07)
			0.3	1.00
			1.3	0.94 (0.86, 1.02)
			2.0	0.95 (0.83, 1.08)
			Per 3 serv/wk	0.89 (0.75, 1.06)
		Subtropical fruits	0.0 serv/wk	0.87 (0.73, 1.03)
		(all)	0.5	1.00
			1.1	0.97 (0.89, 1.06)
			2.5	0.99 (0.90, 1.09)
			5.1	1.01 (0.93, 1.09)
			7.1	0.98 (0.88, 1.10)
			Per 3 serv/wk	1.01 (0.90, 1.12)
		Subtropical	0.0 serv/wk	1.00 (0.97, 1.04)
		fruits (men)	0.5	1.00
		, , ,	1.1	0.96 (0.84, 1.11)
			2.5	1.03 (0.89, 1.20)
			5.1	1.07 (0.94, 1.22)
			7.1	()
			/.1	

	Subtropical	0.0 serv/wk	1.02 (0.85, 1.21)
	fruits (women)	0.5 SCIV/WK	1.07 (0.91, 1.26)
	ituits (women)	1.1	1.00
		2.5	0.99 (0.88, 1.11)
		5.1	
		7.1	0.97 (0.86, 1.09)
	0		0.97 (0.87, 1.08)
	Oranges (all)	0.0 serv/wk	0.96 (0.83, 1.12)
		0.6	0.96 (0.84, 1.11)
		1.0	1.00
		2.5	0.96 (0.88, 1.05)
		5.0	1.00 (0.92, 1.10)
		7.0	1.01 (0.94, 1.09)
		Per 3 serv/wk	1.07 (0.95, 1.21)
	Oranges (men)	0.0 serv/wk	1.01 (0.91, 1.13)
		0.6	1.02 (0.98, 1.06)
		1.0	1.00
		2.5	0.93 (0.81, 1.07)
		5.0	1.02 (0.89, 1.18)
		7.0	1.09 (0.96, 1.22)
		Per 3 serv/wk	1.10 (0.92, 1.32)
	Oranges	0.0 serv/wk	1.05 (0.89, 1.23)
	(women)	0.6	1.03 (0.98, 1.09)
		1.0	1.00
		2.5	0.99 (0.89, 1.12)
		5.0	1.00 (0.89, 1.12)
		7.0	0.98 (0.88, 1.08
		Per 3 serv/wk	1.06 (0.90, 1.24)
	Tangerine (all)	0.0 serv/wk	1.00 (0.87, 1.15)
		0.1	1.01 (0.96, 1.06)
		1.5	1.00
		4.1	1.05 (0.99, 1.11)
		Per 3 serv/wk	0.91 (0.77, 1.06)
	Tangerine (men)	0.0 serv/wk	0.90 (0.79, 1.04)
		0.1	0.90 (0.81, 1.00)
		1.5	1.00
		4.1	1.03 (0.94, 1.13)
		Per 3 serv/wk	0.94 (0.73, 1.20)
	Tangerine	0.0 serv/wk	0.87 (0.70, 1.08)
	(women)	0.1	0.90 (0.77, 1.05)
		1.5	1.00

	4.1	1.06 (0.00, 1.15)
		1.06 (0.98, 1.15)
	Per 3 serv/wk	0.89 (0.72, 1.10)
Tropical fruit	0.0 serv/wk	0.90 (0.75, 1.08)
(all)	0.6	0.88 (0.77, 1.01)
	1.4	1.00
	2.8	1.02 (0.91, 1.16)
	5.0	1.05 (0.93, 1.18)
	10.0	1.05 (0.94, 1.17)
Tropical fruit	0.0 serv/wk	1.01 (0.89, 1.14)
(men)	0.6	1.08 (0.95, 1.22)
	1.4	1.00
	2.8	1.20 (0.97, 1.50)
	5.0	1.12 (0.91, 1.38)
	10.1	1.19 (0.98, 1.45)
Tropical fruit	0.0 serv/wk	1.16 (0.95, 1.41)
(women)	0.6	1.24 (1.01, 1.53)
("omon)	1.4	1.00
	2.8	0.95 (0.81, 1.10)
	5.0	1.02 (0.88, 1.17)
	9.5	0.98 (0.86, 1.13)
Banana (all)	0.0 serv/wk	0.94 (0.80, 1.10)
Danana (an)	0.5 SCIV/WK	0.99 (0.83, 1.17)
	1.0	1.00
	2.5	0.99 (0.92, 1.07)
	5.0	0.99 (0.92, 1.07) 0.96 (0.89, 1.05)
	7.0	
		0.96 (0.87, 1.05)
	Per 3 serv/wk	1.04 (0.91, 1.19)
Banana (men)	0.0 serv/wk	1.09 (0.93, 1.29)
	0.6	1.03 (0.98, 1.08)
	1.0	1.00
	2.5	1.13 (0.99, 1.28)
	5.0	1.12 (0.98, 1.28)
	7.0	1.06 (0.92, 1.23)
	Per 3 serv/wk	1.19 (0.99, 1.43)
Banana (women)	0.0 serv/wk	1.49 (1.20, 1.84)
	0.5	1.11 (1.04, 1.19)
	1.0	1.00
	2.5	0.93 (0.85, 1.03)
	5.0	0.89 (0.80, 0.99)
	7.0	0.91 (0.81, 1.03)

	T		1 = -	T = = = = = = = = = = = = = = = = = = =
			Per 3 serv/wk	0.96 (0.78, 1.18)
		Papaya	0.0 serv/wk	0.77 (0.59, 1.01)
			0.5	0.94 (0.87, 1.01)
			1.0	1.00
			2.5	1.00 (0.93, 1.07)
			5.0	0.92 (0.85, 1.00)
			Per 3 serv/wk	0.94 (0.85, 1.03)
		Papaya (men)	0.0 serv/wk	0.89 (0.78, 1.02)
			0.5	0.94 (0.88, 1.00)
			1.0	1.00
			2.5	1.01 (0.90, 1.13)
			5.0	0.91 (0.80, 1.04)
			Per 3 serv/wk	0.94 (0.81, 1.08)
		Papaya	0.0 serv/wk	0.83 (0.68, 1.00)
		(women)	0.5	0.91 (0.83, 1.00)
			1.0	1.00
			2.5	1.00 (0.91, 1.09)
			5.0	0.93 (0.83, 1.03)
			Per 3 serv/wk	0.94 (0.82, 1.07)
		Watermelon (all)	0.0 serv/wk	0.97 (0.80, 1.17)
		, , ,	0.5	0.97 (0.88, 1.06)
			1.0	1.00
			2.5	1.05 (0.98, 1.12)
			5.0	1.06 (0.97, 1.15)
			Per 3 serv/wk	1.10 (0.98, 1.24)
		Watermelon	0.0 serv/wk	1.10 (0.92, 1.32)
		(men)	0.5	1.08 (0.98, 1.18)
		()	1.0	1.00
			2.5	1.05 (0.95, 1.17)
			5.0	1.10 (0.97, 1.26)
			Per 3 serv/wk	1.14 (0.97, 1.34)
		Watermelon	0.0 serv/wk	1.17 (0.92, 1.49)
		(women)	0.5	1.11 (0.98, 1.26)
		( Sillell)	1.0	1.00
			2.5	1.05 (0.96, 1.14
			5.0	1.02 (0.91, 1.15)
			Per 3 serv/wk	1.08 (0.91, 1.13)
		Honeydew melon	0.0 serv/wk	1.01 (0.76, 1.36)
		(all)	0.3	1.05 (0.70, 1.30)
		(an)	1.0	1.00 (0.91, 1.20)
			1.0	1.00

							2.5	1.03 (0.97, 1.10)	
							Per 3 serv/wk	0.94 (0.85, 1.04)	
						Honeydew melon	0.0 serv/wk	1.05 (0.92, 1.19)	
						(men)	0.3	1.02 (0.90, 1.16)	
							1.0	1.00	
							2.5	0.98 (0.89, 1.09)	
							Per 3 serv/wk	0.88 (0.76, 1.03)	
						Honeydew melon	0.0 serv/wk	0.98 (0.82, 1.18)	
						(women)	0.3	0.92 (0.76, 1.10)	
							1.0	1.00	
							2.5	1.06 (0.98, 1.15)	
							Per 3 serv/wk	0.99 (0.87, 1.13)	
						Total juice (all)	0.0 serv/wk	1.10 (0.92, 1.32)	
						Total Juice (uii)	0.5	1.12 (0.94, 1.34)	
							1.0	1.00	
							2.5	1.03 (0.95, 1.12)	
							7.0	1.13 (1.04, 1.24)	
							Per 3 serv/wk	1.05 (0.93, 1.18)	
						Total juice (men)	0.0 serv/wk	1.16 (1.00, 1.34)	
						Total Juice (Illell)	0.0 serv/wk 0.5		
								1.08 (1.02, 1.16)	
							1.0	1.00	
							2.5	1.09 (0.96, 1.23)	
							5.5	1.16 (1.03, 1.32)	
							Per 3 serv/wk	1.09 (0.93, 1.29)	
						Total juice	0.0 serv/wk	1.15 (0.93, 1.41)	
						(women)	0.5	1.09 (1.00, 1.20)	
							1.0	1.00	
							2.5	0.99 (0.89, 1.11)	
							7.0	1.11 (0.99, 1.25)	
							Per 3 serv/wk	1.01 (0.86, 1.20)	
								1.16 (0.94, 1.42)	
								1.07 (0.98, 1.18)	
Auerbach BJ	The Women's	1993-1998 to	114 219	Validated semi-	Self-reported,	100% fruit juice	≤4 serv/wk	1.00	Age, education
et al, 2017,	Health	2005, 7.8 years	women, age	quantitative	validated by	ľ	5–6	1.01 (0.97, 1.07)	level, race/ethnicity,
USA	Initiative	follow-up	50-79 years,	FFQ, 122 items	medication		1 serv/d	0.97 (0.93, 1.02)	smoking status,
	(WHI)		11 488		inventory and		2–3	0.97 (0.87, 1.08)	physical activity,
			cases		fasting plasma		≥4 ≥4	0.82 (0.53, 1.27)	body mass index,
					glucose levels	Whole fruit	≤4 serv/wk	1.00	hormone
					Sideose ie (eis		5–6	1.03 (0.97, 1.08)	replacement therapy
							1 serv/d	1.00 (0.94, 1.06)	status, study arm,
					l	<u> </u>	1 301 1/4	1.00 (0.54, 1.00)	status, study arm,

Bahadoran Z	Tehran Lipid	2006-2008 to	3052	Validated FFQ,	Fasting	Citrus fruits  Allium	2–3 ≥4 <4 serv/wk 5-6 1 serv/d 2-3 1.0 g/wk	1.04 (0.96, 1.11) 0.93 (0.73, 1.18) 1.00 0.93 (0.87, 0.99) 0.96 (0.85, 1.08) 0.98 (0.65, 1.47) 1.00	and total energy intake  Age, diabetes risk
et al, 2017, Iran	and Glucose Study (TLGS)	2012-2014, 6 years follow- up	participants, age ≥19 years, 150 cases	168 items	plasma glucose or medication use	vegetables	10 g/wk 39 g/wk Per each 10 g/wk	1.05 (0.69, 1.61) 0.86 (0.57, 1.31) 0.95 (0.91, 1.05)	score, physical activity, and dietary pattern scores
Du H et al, 2017, China	The China Kadoorie Biobank Study (CKB)	2004-2008 to 2013-2014 7 years follow- up	482 591 participants, age 30-79 years, 9504 cases	Administered laptop-based questionnaire on diet	Linkage with local disease and death registries, health insurance databases	Fresh fruit consumption	Never/rarely Monthly 1-3 d/wk 4-6 d/wk Daily	1.00 0.99 (0.90, 1.09) 0.93 (0.84, 1.02) 0.93 (0.83, 1.04) 0.88 (0.83, 0.93)	Age, sex, region, education, income, alcohol, smoking, physical activity, survey season, BMI, family history of diabetes, dairy products, meat, preserved vegetables
Lv J et al, 2017, China	China Kadoorie Biobank (CKB)	2004-2008 to 2013, 7.2 years follow-up	461 211 participants, age 30-79 years, 8784 cases	Validated qualitative FFQ	Linkage with local disease and death registries	Vegetables and fruits	Less than daily (either or both) Daily (both)	1.00 0.91 (0.85, 0.97)	Age, sex, education, marital status, family history of diabetes, smoking, alcohol consumption, physical activity, red meat and wheat, BMI, WHR
Huang M et al, 2017, USA	The Women's Health Initiative (WHI)	1993-1998 to 2010, 8.4 years follow-up	64 850 women, age 50-79 years, 4675 cases	Validated semi- quantitative FFQ, 122 items	Self-report, validated by medical record review and laboratory data	Fruit drinks	<1 serv/wk 1 serv/wk - <1 serv/d ≥ 1 serv/d	1.00 0.99 (0.85, 1.15) 1.33 (0.89, 1.98)	Age, race, marital status, family income, education, family history of diabetes, BMI, change in BMI, WHR, systolic blood pressure, insurance status, antihypertensive

Mamluk L,	The	1995-1996 to	401 909	Validated self-	Self-	Fruit intake	0.82 portions/d	1.00	use, antihyperlipidemic use, hormone replacement therapy use, calibrated energy, sugar- sweetened beverages, glycemic load, glycemic index, Alternate Healthy Eating Index, cardiovascular history, hysterectomy history, smoking status, physical activity, sitting time, alcohol consumption Age, sex, BMI,
2017, USA	NIH-AARP	2004-2006,	participants,	reported FFQ,	administered		1.99	0.96 (0.91, 1.02)	physical activity,
	Diet and Health Study	10.6 years follow-up	age >50 years,	124-items	questionnaires or in		3.24 7.73	0.95 (0.91, 0.99) 0.95 (0.91, 0.99)	energy intake, alcohol
	(NIH-AARP)	<b>.</b>	22 782		interviews		Total intake 1	1.00 (0.99, 1.01)	consumption,
			cases			37 (11 ' (1	portion/d	1.00	education, smoking
						Vegetable intake	1.04 portions/d 2.02	1.00 0.92 (0.87, 0.97)	
							3.20	0.88 (0.84, 0.94)	
							6.41	0.92 (0.87, 0.97)	
							Total intake 1	1.00 (0.99, 1.01)	
						Leafy green	portion/d 0.65 portions/wk	1.00	
						vegetables	1.98	0.90 (0.86, 0.94)	
						, egemoies	3.10	0.89 (0.85, 0.94)	
							8.06	0.87 (0.84, 0.90)	
							Total intake 1	0.98 (0.98, 0.99)	
						Cabbasa	portion/d	1.00	
1			ĺ		1	Cabbage	0.32 portions/wk	1.00	1

							3.90 9.79 Total intake 1 portion/d	1.09 (1.00, 1.18) 1.07 (0.94, 1.21) 1.02 (1.01, 1.03)	
Mamluk L, 2017, Greece	EPIC-elderly Greece	1994-ongoing, 10 years follow-up	7567 participants, age >50 years, 1077 cases	Validated FFQ, 200 items	Self- administered questionnaires or in interviews	Fruit intake	1.06 portions/d 2.08 3.28 5.29 Total intake 1	1.00 1.12 (0.77, 1.64) 1.09 (0.77, 1.54) 1.09 (0.77, 1.55) 1.00 (0.96, 1.04)	Age, sex, BMI, physical activity, energy intake, alcohol consumption,
						Vegetable intake	portion/d 1.15 portions/d 2.12 3.39 5.61 Total intake 1 portion/d	1.00 1.96 (0.81, 4.77) 2.29 (0.99, 5.36) 2.15 (0.93, 5.03) 0.99 (0.95, 1.04)	education, smoking
						Leafy green vegetables	0.87 portions/wk 2.13 3.13 6.18 Total intake 1 portion/d	1.00 1.23 (0.89, 1.71) 1.55 (1.14, 2.11) 1.52 (1.13, 2.04) 1.02 (0.99, 1.04)	
						Cabbage	0.84 portions/wk 2.06 3.06 4.88 Total intake 1 portion/d	1.00 0.93 (0.77, 1.11) 1.21 (1.07, 1.44) 1.09 (0.85, 1.41) 1.02 (0.98, 1.07)	
Chen GC et al, 2018, Singapore	Singapore Chinese Health Study (SCHS)	1993-2010, 10.9 years follow-up	45 411 participants, age 45-74 years, 5207 cases	Validated semi- quantitative FFQ, 165 items	Self-reported, validated by linkage with a nationwide hospital-based	Total vegetables	57.431 g/d 83.286 105.459 132.489 184.357	1.00 1.16 (1.06, 1.26) 0.98 (0.89, 1.07) 1.02 (0.93, 1.11) 1.08 (0.98, 1.18)	Age, sex, dialect group, year of baseline interview, energy intake, physical activity,
					discharge database and supplementary questionnaire	Light green vegetables  Dark green leafy vegetables	14.181 g/d 22.094 28.989 37.608 55.001 13.946 g/d 23.505	1.00 0.99 (0.90, 1.08) 0.98 (0.90, 1.08) 1.02 (0.93, 1.11) 0.95 (0.87, 1.04) 1.00 0.96 (0.88, 1.04)	education, smoking, alcohol, soft drink, coffee, energy- adjusted intakes of red meat, poultry, fish, nuts and seeds, soya products and

							32.201	1.03 (0.94, 1.12)	wholegrains, BMI,
							43.484	0.96 (0.88, 1.05)	history of
							65.735	1.05 (0.96, 1.15)	hypertension
						Cruciferous	18.882 g/d	1.00 (0.50, 1.15)	nypertension
						vegetables	30.243	0.97 (0.89, 1.06)	
						vegetables	40.428	1.02 (0.94, 1.12)	
							53.278	0.90 (0.82, 0.98)	
							79.211	0.97 (0.88, 1.06)	
						Yellow	0.938 g/d	1.00	
						vegetables	3.525	0.94 (0.87, 1.03)	
						vegetables	5.954	0.95 (0.87, 1.03)	
							9.480	1.05 (0.96, 1.14)	
							18.568	0.97 (0.88, 1.06)	
						Potatoes	0.023 g/d	1.00	
						Totatoes	1.802	1.02 (0.94, 1.11)	
							3.604	0.97 (0.89, 1.06)	
							5.876	1.02 (0.94, 1.11)	
							11.517	0.95 (0.87, 1.04)	
						Tomatoes	0.579 g/d	1.00	
						Tomatoes	2.898	1.02 (0.93, 1.11)	
							5.249	1.08 (0.99, 1.11)	
							8.226	1.09 (1.00, 1.19)	
							17.315	1.06 (0.97, 1.16)	
						Preserved	1.488 g/d	1.00 (0.57, 1.10)	
						vegetables	3.839	0.91 (0.84, 1.00)	
						vegetables	5.719	0.95 (0.87, 1.04)	
							8.461	0.99 (0.90, 1.08)	
							16.375	0.97 (0.89, 1.06)	
Farhadnejad	Tehran Lipid	2006-2008 to	1981	Validated FFQ,	Fasting	Total potato	7.30 g/d	1.00	Age, sex, BMI,
H et al,	and Glucose	2012-2014,	participants,	168 items	plasma	Total potato	16.05	0.60 (0.34, 1.01)	physical activity,
2018, Iran	Study (TLGS)	6 years follow-	age 18-75	100 Items	glucose levels		29.22	0.75 (0.45, 1.26)	smoking, family
2010, Itali	Study (TEGS)	up	years, 132		(ADA criteria)		55.50	0.46 (0.25, 0.84)	history of diabetes,
		up	cases		(ADA CITCHA)	Boiled potato	2.42 g/d	1.00	hypertension, serum
			cases			Boned potato	10.38	0.65 (0.39, 1.08)	triglycerides, high-
							20.76	0.74 (0.43, 1.28)	density lipoprotein
							36.3	0.47 (0.26, 0.85)	cholesterol, daily
						Fried potato	1.30 g/d	1.00	intakes of energy,
						11100 pouno	4.66	0.82 (0.50, 1.35)	saturated fat and
							10.33	0.60 (0.35, 1.03)	food groups intake,
							25.71	0.50 (0.25, 1.07)	including fruit,
	<u> </u>						23.71	0.50 (0.25, 1.07)	meraanig man,

									whole grains, vegetables, nuts and legumes
Khalili- Moghadam S et al, 2018, Iran	Tehran Lipid and Glucose Study (TLGS)	2006-2008 to 2012-2014, 5.8 years follow- up	2139 participants (1168 women, 971	Validated semi- quantitative FFQ, 168 items	Fasting plasma glucose levels	Vegetables Fruit	1.7 serv/d 2.6 3.8 2.1 serv/d	1.00 0.75 (0.48, 1.17) 0.89 (0.57, 1.39) 1.00	Diabetes risk score: family history of diabetes, FPG concentrations,
Trun		up	men), age 20-70 years, 143 cases			Truc	3.5 5.1	1.14 (0.74, 1.75) 0.75 (0.46, 1.22)	SBP, WHtR and TG/HDL-C
Ma L et al, 2018, USA	The Nurses' Health Study (NHS)	1984-2012, 23.6 years follow-up	71 256 women, age 30-55 years, 7586 cases	Validated FFQ, 116 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data	Total cruciferous vegetables	<1 serv/wk 1-3 4-6 ≥1 serv/d Every 2 serv/wk	1.00 1.14 (1.04, 1.25) 1.23 (1.11, 1.36) 1.22 (1.07, 1.38) 1.03 (1.01, 1.05)	Age, race/ethnicity, family history of diabetes, smoking status, alcohol intake, physical
					group criteria (before 1997) or American Diabetes	Broccoli	<0.5 serv/wk 0.5-1 2-3 ≥4	1.00 1.03 (0.95, 1.11) 1.07 (1.00, 1.15) 0.92 (0.77, 1.09)	activity, menopausal status and postmenopausal hormone use, oral
					criteria (after 1998). Questionnaire -confirmed diagnosis of T2D was	Cabbage	Every 2 serv/wk Never/almost never <0.5 serv/wk 0.5-1 ≥1 Every 2 serv/wk	1.01 (0.96, 1.05) 1.00 1.12 (1.00, 1.24) 1.22 (1.09, 1.36) 1.25 (1.12, 1.39) 1.10 (1.04, 1.17)	contraceptive use, multivitamin use, hypertension, hypercholesterolemi a, BMI, total energy intake, the modified
					reconfirmed by medical record review	Cauliflower	Never/almost never <0.5 serv/wk 0.5-1 ≥1 Every 2 serv/wk	1.00 0.99 (0.91, 1.08) 1.04 (0.96, 1.14) 1.07 (0.98, 1.17) 1.05 (0.99, 1.10)	alternate healthy eating index score
						Brussel sprouts	Never/almost never <0.5 serv/wk 0.5-1 ≥1 Every 2 serv/wk	1.00 1.08 (1.03, 1.14) 1.14 (1.06, 1.24) 1.27 (1.16, 1.40) 1.28 (1.16, 1.40)	
						Kale, mustard or chard greens	Never/almost never <0.5 serv/wk 0.5-1 ≥1 Every 2 serv/wk	1.00 1.03 (0.96, 1.10) 0.98 (0.84, 1.15) 1.04 (0.87, 1.24) 1.04 (0.89, 1.21)	

Ma L et al,	The Nurses'	1991-2013,	88 293	Validated FFQ,	Self-reported/	Total cruciferous	<1 serv/wk	1.00	Age, race/ethnicity,
2018, USA	Health Study II	20.2 years	women, age	131 items	supplemental	vegetables	1-3	1.00 (0.93, 1.07)	family history of
2010, 0011	(NHS II)	follow-up	24-44 years,	131 Reins	questionnaire/	regetatores	4-6	1.10 (1.00, 1.20)	diabetes, smoking
	(1,115,11)	Tono up	5438 cases		the National		$\geq 1 \text{ serv/d}$	1.10 (0.98, 1.24)	status, alcohol
			3 130 cases		Diabetes Data		Every 2 serv/wk	1.02 (1.00, 1.04)	intake, physical
					group criteria	Broccoli	<0.5 serv/wk	1.00	activity,
					(before 1997)	Broccon	0.5-1	0.91 (0.82, 1.01)	menopausal status
					or American		2-3	0.98 (0.92, 1.05)	and postmenopausal
					Diabetes		≥4 ≥4	1.06 (0.91, 1.23)	hormone use, oral
					criteria		Every 2 serv/wk	1.00 (0.96, 1.04)	contraceptive use,
					(after 1998)	Cabbage	Never/almost never	1.00	multivitamin use,
					(arter 1990)	Cubbage	<0.5 serv/wk	0.97 (0.91, 1.04)	hypertension,
							0.5-1	0.95 (0.85, 1.07)	hypercholesterolemi
							o.5 1 ≥1	1.13 (1.04, 1.23)	a, BMI, total energy
							Every 2 serv/wk	1.05 (0.99, 1.11)	intake, and the
						Cauliflower	Never/almost never	1.00	modified alternate
						Cadilliowel	<0.5 serv/wk	0.95 (0.88, 1.02)	healthy eating index
							0.5-1	0.91 (0.81, 1.02)	score
							≥1	1.05 (0.98, 1.14)	50010
							Every 2 serv/wk	1.05 (1.00, 1.11)	
						Brussel sprouts	Never/almost never	1.00	
						Brasser sproats	<0.5 serv/wk	1.04 (0.97, 1.11)	
							0.5-1	1.09 (0.93, 1.27)	
							≥1	1.09 (0.98, 1.22)	
							Every 2 serv/wk	1.11 (1.01, 1.23)	
						Kale, mustard or	Never/almost never	1.00	
						chard greens	<0.5 serv/wk	1.05 (0.95, 1.16)	
						8-11-11	0.5-1	1.20 (0.93, 1.54)	
							≥1	1.16 (0.97, 1.38)	
							Every 2 serv/wk	1.07 (1.00, 1.16)	
Ma L et al,	The Health	1986-2012,	41 358 men,	Validated FFQ,	Self-reported/	Total cruciferous	<1 serv/wk	1.00	Age, race/ethnicity,
2018, USA	Professionals	20.3 years	age 40-75	131 items	supplemental	vegetables	1-3	0.98 (0.88, 1.09)	family history of
,	Follow-up	follow-up	years, 3543		questionnaire/		4-6	1.04 (0.92, 1.18)	diabetes, smoking
	Study (HPFS)	1	cases		the National		≥ 1 serv/d	1.17 (1.00, 1.36)	status, alcohol
					Diabetes Data		Every 2 serv/wk	1.03 (1.01, 1.06)	intake, physical
					group criteria	Broccoli	<0.5 serv/wk	1.00	activity,
					(before 1997)		0.5-1	1.07 (0.97, 1.19)	multivitamin use,
					or American		2-3	1.02 (0.93, 1.11)	hypertension,
					Diabetes		≥4	1.38 (1.10, 1.72)	hypercholesterolemi
					criteria		Every 2 serv/wk	1.03 (0.98, 1.09)	a, BMI, total energy

					(after 1998). Questionnaire -confirmed diagnosis of T2D was	Cabbage	Never/almost never <0.5 serv/wk 0.5-1 ≥1 Every 2 serv/wk	1.00 0.99 (0.86, 1.13) 1.11 (0.94, 1.32) 1.09 (0.97, 1.23) 1.00 (0.99, 1.02)	intake, and the modified alternate healthy eating index score
					reconfirmed by medical record review	Cauliflower	Never/almost never <0.5 serv/wk 0.5-1 ≥1 Every 2 serv/wk	1.00 0.92 (0.84, 1.02) 1.00 (0.89, 1.12) 1.01 (0.90, 1.12) 1.04 (0.96, 1.13)	
						Brussel sprouts	Never/almost never <0.5 serv/wk 0.5-1 ≥1	1.00 1.01 (0.94, 1.09) 1.11 (0.98, 1.25) 1.16 (1.03, 1.31)	
						Kale, mustard or chard greens	Every 2 serv/wk Never/almost never <0.5 serv/wk 0.5-1 ≥1	1.11 (1.00, 1.24) 1.00 1.04 (0.95, 1.14) 1.07 (0.88, 1.30) 1.09 (0.90, 1.31)	
Dow C et al, 2019, Australia	The Australian Diabetes, Obesity and Lifestyle Study	1999-2012, 11.7 years follow-up	6242 participants, age ≥ 25 years, 376	Validated semi- quantitative FFQ, 80 items	Standard oral glucose tolerance test	Vegetables	Every 2 serv/wk  <2.5 serv/d  2.5-4.9  5.0-5.9 ≥6	1.08 (0.94, 1.24) 1.00 0.89 (0.72, 1.11) 0.83 (0.37, 1.88) 0.29 (0.04, 2.10)	Age, sex, education, smoking status, recreational physical activity,
	(AusDiab)		cases			Fruit	<0.75 serv/d 0.75-1.4 1.5-2.4 ≥2.5	1.00 0.81 (0.62, 1.05) 0.68 (0.51, 0.91) 1.04 (0.76, 1.43)	high triglycerides, low HDL cholesterol, family history of diabetes, energy intake, hypertension and waist circumference
Lee DH et al, 2019, USA	The Nurses' Health Study (NHS)	1986-2012, 22 years follow- up	67 139 women, age 30-55 years, 6946 cases	Validated FFQ, 116 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American	Mushrooms	Never/almost never <1 serv/wk 1 2-4 ≥5 Per 2 serv/wk increase	1.00 1.03 (0.96, 1.10) 1.10 (1.02, 1.18) 1.18 (1.08, 1.28) 1.04 (0.91, 1.19) 1.00 (0.98, 1.03)	Age, total calorie intake, smoking, physical activity, race, family history of type 2 diabetes, baseline high blood cholesterol, baseline high blood pressure, alcohol intake,

					Diabetes criteria (after 1998). Questionnaire -confirmed diagnosis of T2D was reconfirmed by medical record review				multivitamin use, Prudent dietary pattern, Western dietary pattern, menopausal status and postmenopausal hormone use
Lee DH et al, 2019, USA	The Health Professionals Follow-up Study (HPFS)	1986-2012, 19.8 years follow-up	43 541 men, age 40-75 years, 3544 cases	Validated FFQ, 131 items	Self-reported/ supplemental questionnaire/ the National Diabetes Data group criteria (before 1997) or American Diabetes criteria (after 1998). Questionnaire -confirmed diagnosis of T2D was reconfirmed by medical record review	Mushrooms	Never/almost never <1 serv/wk 1 2-4 ≥5 Per 2 serv/wk increase	1.00 1.03 (0.94, 1.13) 1.02 (0.92, 1.13) 1.01 (0.89, 1.14) 1.04 (0.83, 1.31) 0.98 (0.94, 1.03)	Age, total calorie intake, smoking, physical activity, race, family history of type 2 diabetes, baseline high blood cholesterol, baseline high blood pressure, alcohol intake, multivitamin use, Prudent dietary pattern and Western dietary pattern
Scheffers FR et al, 2020, Netherlands	European Prospective Investigation into Cancer and Nutrition- Netherlands Study	1993-1997 - 2010, 14.6 years follow- up	36 147 men and women, age 20-69 years, 1477 cases	Validated FFQ, 178 items	Linkage to hospital discharge, diagnosis registry, and follow-up questionnaires , validated (up to 2006) by consulting the general practitioner or	Pure fruit juice (150 ml/glass)	Non-drinker <1 glass/wk 1-<4 4-<8 ≥8	1.00 1.00 (0.85-1.17) 0.98 (0.84-1.14) 0.97 (0.84-1.14) 0.98 (0.80-1.21)	Age, sex, education, physical activity, smoking, family history of diabetes, Dutch Healthy Diet Index 2015, alcohol, coffee, sugar-sweetened beverages, fruit, BMI, waist circumference

					pharmacist and general practitioner (after 2006)				
Rayner J et al, 2020, Australia	Australian Longitudinal Study on Women's Health	2001-2016, 15 years follow- up	9689 women, age 50-55 years, 959 cases	Validated FFQ, 80 items	Self-reported T2D were obtained at follow-up surveys and validated against hospital discharge data in a subset of the cohort	Fruit juice Vegetables	0.62 serv/d 1.18 1.77 2.74 0.01 serv/d 0.10 0.43 1.30 1.11 serv/d 1.75 2.26 3.28	1.22 (1.01-1.48) 1.06 (0.88-1.26) 1.10 (0.88-1.36) 1.00 0.94 (0.80-1.10) 0.90 (0.75-1.07) 0.95 (0.82-1.11) 1.00 1.03 (0.84-1.26) 1.02 (0.82-1.26) 1.01 (0.87-1.19) 1.00	Age, country of birth, energy intake, highest educational qualification, employment status, years of follow-up, history of gestational diabetes, physical activity, cereal, high fiber bread, pasta and rice, discretionary foods, white bread, dairy, red and processed meat, fish, BMI, added sugar
Ahmed A et al, 2020, Sweden	Stockholm Public Health Cohort	2010-2014, 4 years follow- up	14 718 men and 20 589 women, age 25-84 years, 319 cases	FFQ	Self-report	Vegetables (men) Fruit (men) Fruit and vegetables (men) Vegetables (women) Fruit (women) Fruit and vegetables (women)	≥2 serv/d <2 ≥2 serv/d <2 ≥4 serv/d <4 ≥2 serv/d <4 ≥2 serv/d <2 ≥2 serv/d <2 ≥4 serv/d <4 <4	1.00 1.62 (1.00-2.61) 1.00 1.04 (0.60-1.59) 1.00 1.17 (0.66-2.08) 1.00 1.18 (0.82-1.71) 1.00 0.90 (0.65-1.26) 1.00 1.07 (0.73-1.58)	Age, education, BMI, smoking, alcohol, physical activity

# Supplemental Table 5. Modified Newcastle-Ottawa Scale (NOS) assessment of the included cohort studies

Author, year		Selection		Comparability	(	Outcome assessme	nt	Total
	Selection of	Exposure	Demonstration	0.25 points for	Outcome	Long enough	Adequacy of	
	non-exposed	ascertainment	of outcome not	each adjustment	assessment	follow-up	follow-up	
	cohort		present at start			(≥5 years)	(≤10% lost)	
Ford, 2000	1	1	1	2	0.5	1	0	6.5
Meyer, 2000	1	1	1	2	1	1	0	7
Knekt, 2002	1	1	1	0.75	0.5	1	0	5.25
Hodge, 2004	1	0	1	2	1	0	1	6
Liu, 2004	1	1	1	2	1	1	0	7
Schulze, 2004	1	1	1	2	1	1	1	8
Montonen, 2005	1	1	1	1.75	0.5	1	0	6.25
Song, 2005	1	1	1	2	1	1	0	7
Wang, 2006	1	1	1	2	1	1	0	7
Montonen, 2007	1	1	1	2	0.5	1	0	6.5
Bazzano, 2008	1	1	1	2	1	1	0	7
Palmer, 2008	1	1	1	2	1	1	0	7
Villegas, 2008	1	1	1	2	0	0	1	6
de Koning, 2011	1	1	1	2	1	1	1	8
Cooper, 2012	1	1	1	2	0.5	1	1	7.5
Elwood, 2013	1	0	0	0.5	0	1	0	2.5
Eshak, 2013	1	1	1	2	1	1	0	7
Fagherazzi, 2013	1	1	1	2	1	1	1	8
Jacques, 2013	1	0	1	1.5	1	1	0	5.5
Kurotani, 2013	1	1	1	2	1	1	0	7
Muraki (NHS), 2013	1	1	1	2	1	1	1	8
Muraki (NHS II), 2013	1	1	1	2	1	1	1	8

Muraki, (HPFS) 2013	1	1	1	2	1	1	1	8
Romaguera, 2013	1	1	1	2	0.5	1	0	6.5
Mursu, 2014	1	1	1	2	1	1	1	8
Qiao, 2014	1	1	1	2	1	1	0	7
Lacoppidan, 2015	1	0	1	2	0.5	1	0	5.5
Muraki (NHS), 2016	1	1	1	2	1	1	0	7
Muraki (NHS II), 2016	1	1	1	2	1	1	0	7
Muraki (HPFS), 2016	1	1	1	2	1	1	0	7
Muraki (NHS, NHS II,	1	1	1	2	1	1	0	7
HPFS), 2016								
Alperet, 2017	1	1	1	2	1	1	0	7
Auerbach, 2017	1	1	1	2	1	1	0	7
Bahadoran, 2017	1	1	1	1	1	1	0	6
Du, 2017	1	0	1	2	1	1	1	7.0
Huang, 2017	1	1	1	2	1	1	0	7
Lv, 2017	1	0	1	2	1	1	1	7.0
Mamluk (NIH-AARP),	1	1	1	2	0	1	0	6
2017								
Mamluk (EPIC-Elderly	1	1	1	2	0	1	0	6
Greece, 2017								
Chen, 2018	1	1	1	2	1	1	0	7
Farhadnejad, 2018	1	1	1	2	1	1	0	7
Khalili-Moghadam, 2018	1	1	1	1.25	1	1	0	6.25
Ma (NHS), 2018	1	1	1	2	1	1	0	7
Ma (NHS II), 2018	1	1	1	2	1	1	0	7
Ma (HPFS), 2018	1	1	1	2	1	1	0	7
Dow, 2019	1	1	1	2	1	1	0	7
Lee (NHS), 2019	1	1	1	2	1	1	1	8

Lee (HPFS), 2019	1	1	1	2	1	1	1	8
Scheffers, 2020	1	1	1	2	1	1	0	7
Rayner, 2020	1	1	1	2	0.5	1	0	6.5
Ahmed, 2020	1	0	1	1.5	0	0	0	3.5

**Supplemental Table 6.** Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable intake and type 2 diabetes

Fruit and v	vegetables (n=8)	Fruits (n=	19)	Vegetable	s (n=15)
g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)
0	1.00	0	1.00	24	1.00
100	0.97 (0.94-1.00)	100	0.92 (0.88-0.95)	100	0.94 (0.89-0.98)
200	0.95 (0.89-1.00)	200	0.87 (0.82-0.93)	200	0.88 (0.80-0.97)
300	0.92 (0.84-1.01)	300	0.88 (0.83-0.93)	300	0.86 (0.77-0.97)
400	0.91 (0.82-1.01)	400	0.90 (0.85-0.94)	400	0.87 (0.77-0.98)
500	0.90 (0.81-1.01)	500	0.92 (0.87-0.97)	500	0.88 (0.77-1.00)
600	0.90 (0.81-1.00)	600	0.94 (0.88-1.01)	600	0.89 (0.78-1.02)
700	0.91 (0.82-1.00)				
800	0.91 (0.82-1.01)				
pnonlinearity	0.13	pnonlinearity	<0.0001	pnonlinearity	0.004

# Supplemental Table 7. Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

Apples (n=	=2)	Apples and	d pears (n=4)	Bananas (1	n=5)	Berries (n:	=5)	Blueberrie	es (n=3)
g/d	RR (95% CI)	g/d	RR (95% CI)						
0	1.00	0	1.00	0	1.00	0	1.00	1	1.00
50	0.91 (0.83-1.01)	50	0.90 (0.83-0.97)	20	0.95 (0.91-1.00)	10	0.93 (0.83-1.03)	10	0.86 (0.81-0.91)
100	0.86 (0.75-0.99)	100	0.87 (0.80-0.95)	40	0.92 (0.85-1.00)	20	0.89 (0.76-1.04)	20	0.79 (0.72-0.86)
150	0.83 (0.74-0.95)	150	0.87 (0.78-0.96)	60	0.91 (0.83-1.01)	30	0.89 (0.78-1.03)	30	0.76 (0.69-0.83)
200	0.82 (0.73-0.92)			80	0.91 (0.81-1.03)	40	0.92 (0.84-1.01)	40	0.76 (0.68-0.84)
250	0.81 (0.71-0.93)			100	0.92 (0.80-1.06)	50	0.97 (0.89-1.07)		
				120	0.92 (0.78-1.10)	60	1.05 (0.86-1.27)		
				140	0.93 (0.77-1.13)	70	1.13 (0.82-1.55)		
	0.05		0.05						0.000
p <sub>nonlinearity</sub>	0.37	p <sub>nonlinearity</sub>	0.07	p <sub>nonlinearity</sub>	0.04	p <sub>nonlinearity</sub>	0.23	pnonlinearity	0.003

# Supplemental Table 8. Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

Cantaloup	e (n=3)	Citrus frui	ts (n=6)	Oranges (1	n=4)	Grapefruit	t (n=3)	Grapes and raisins (n=4)	
g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)
2	1.00	0	1.00	0	1.00	2	1.00	0	1.00
10	1.05 (1.01-1.09)	50	1.01 (0.97-1.06)	20	0.99 (0.95-1.03)	20	0.97 (0.92-1.02)	10	0.88 (0.83-0.94)
20	1.09 (1.02-1.16)	100	1.02 (0.96-1.09)	40	0.98 (0.93-1.04)	40	0.95 (0.87-1.03)	20	0.83 (0.77-0.90)
30	1.12 (1.03-1.21)	150	1.03 (0.96-1.11)	60	0.99 (0.93-1.05)	60	0.94 (0.86-1.02)	30	0.83 (0.76-0.90)
40	1.14 (1.04-1.24)	200	1.04 (0.94-1.15)	80	0.99 (0.94-1.05)	80	0.93 (0.85-1.02)	40	0.84 (0.74-0.97)
50	1.14 (1.05-1.25)	250	1.05 (0.92-1.21)	100	1.00 (0.95-1.06)	100	0.93 (0.84-1.03)		
60	1.14 (1.05-1.25)	300	1.06 (0.89-1.28)	120	1.01 (0.96-1.08)				
70	1.14 (1.05-1.23)	330	1.07 (0.87-1.31)	130	1.02 (0.96-1.09)				
80	1.13 (1.05-1.22)								
$p_{nonlinearity} \\$	0.04	pnonlinearity	0.94	Pnonlinearity	0.41	pnonlinearity	0.49	pnonlinearity	0.01

# Supplemental Table 9. Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

Peaches, p	Peaches, plums, apricots		Prunes (n=3)		Strawberries (n=3)		on (n=2)	Allium vegetables (n=3)	
(n=3)									
g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)
1	1.00	0	1.00	1	1.00	g/d	RR (95% CI)	0	1.00
10	1.01 (0.97-1.05)	10	0.90 (0.82-0.98)	10	1.00 (0.94-1.06)	0	1.00	5	0.81 (0.67-0.97)
20	1.01 (0.94-1.08)	20	0.85 (0.74-0.97)	20	1.01 (0.91-1.12)	50	0.94 (0.74-1.21)	10	0.72 (0.55-0.96)
30	1.00 (0.92-1.09)	30	0.84 (0.74-0.96)	30	1.03 (0.90-1.19)	100	0.92 (0.62-1.35)	15	0.71 (0.52-0.96)
40	0.98 (0.89-1.08)	40	0.86 (0.77-0.97)	40	1.06 (0.90-1.26)	150	0.92 (0.63-1.35)	20	0.72 (0.53-0.97)
50	0.96 (0.86-1.07)	50	0.91 (0.79-1.05)	50	1.10 (0.90-1.36)	200	0.96 (0.72-1.27)	23	0.72 (0.53-0.99)
60	0.93 (0.83-1.06)			60	1.15 (0.89-1.49)	220	0.97 (0.77-1.24)		
70	0.91 (0.78-1.05)								
74	0.89 (0.76-1.05)								
pnonlinearity	0.29	pnonlinearity	0.06	pnonlinearity	0.39	pnonlinearity	0.61	Pnonlinearity	0.045

# Supplemental Table 10. Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

Broccoli (	Broccoli (n=4)		Brussels sprouts (n=3)		Cabbage (n=6)		er (n=3)	Cruciferous vegetables	
								(n=8)	
g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)
0	1.00	1	1.00	0.8	1.00	1	1.00	0	1.00
20	1.01 (0.93-1.09)	2	1.02 (1.00-1.05)	20	1.15 (1.03-1.28)	2	0.98 (0.95-1.01)	20	0.97 (0.90-1.05)
40	1.03 (0.98-1.09)	4	1.05 (1.01-1.09)	40	1.20 (1.01-1.42)	4	0.96 (0.90-1.02)	40	0.96 (0.84-1.09)
60	1.07 (0.93-1.23)	6	1.07 (1.01-1.14)	60	1.23 (0.97-1.56)	6	0.96 (0.89-1.03)	60	0.96 (0.82-1.12)
80	1.11 (0.85-1.44)	8	1.10 (1.03-1.17)	80	1.26 (0.92-1.73)	8	0.98 (0.91-1.05)	80	0.97 (0.82-1.13)
100	1.14 (0.78-1.65)	10	1.12 (1.04-1.21)	100	1.29 (0.87-1.92)	10	1.01 (0.95-1.08)	100	0.99 (0.85-1.15)
		12	1.15 (1.06-1.25)	110	1.30 (0.84-2.02)	11	1.03 (0.97-1.09)	120	1.01 (0.87-1.17)
		14	1.18 (1.07-1.29)					140	1.04 (0.89-1.20)
pnonlinearity	0.81	pnonlinearity	0.98	Pnonlinearity	0.04	pnonlinearity	0.03	Pnonlinearity	0.32

# Supplemental Table 11. Relative risks (95% confidence intervals) from nonlinear analysis of fruit and vegetable subtypes and type 2 diabetes

Green leaf	Green leafy vegetables		tard and chard greens	Mushroon	ns (n=2)	Tomatoes	(n=3)	Yellow ve	getables (n=4)
(n=8)		(n=3)							
g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)
1.6	1.00	1	1.00	0.45	1.00	0	1.00	0	1.00
20	0.92 (0.82-1.04)	2	1.02 (0.99-1.05)	5	1.07 (0.97-1.17)	20	0.91 (0.68-1.23)	20	0.84 (0.66-1.07)
40	0.87 (0.70-1.07)	4	1.04 (0.99-1.10)	10	1.10 (0.96-1.27)	40	0.88 (0.57-1.37)	40	0.77 (0.55-1.08)
60	0.85 (0.66-1.09)	6	1.06 (0.98-1.13)	15	1.11 (0.95-1.28)	60	0.89 (0.56-1.40)	60	0.75 (0.53-1.05)
80	0.84 (0.65-1.10)	8	1.07 (0.99-1.16)	20	1.09 (0.95-1.25)	80	0.92 (0.61-1.38)	80	0.75 (0.56-1.01)
100	0.85 (0.66-1.10)	10	1.08 (0.99-1.18)	25	1.06 (0.93-1.21)	100	0.96 (0.68-1.34)	100	0.77 (0.59-1.00)
120	0.85 (0.66-1.11)	12	1.09 (0.99-1.20)						
140	0.86 (0.66-1.12)	13	1.10 (0.99-1.21)						
pnonlinearity	0.21	pnonlinearity	0.63	pnonlinearity	0.22	pnonlinearity	0.50	pnonlinearity	0.27

# Supplemental Table 12. Relative risks (95% confidence intervals) from nonlinear analysis of potatoes and type 2 diabetes

Potatoes, b	poiled (n=2)	Potatoes, t	total (n=8)
g/d	RR (95% CI)	g/d	RR (95% CI)
2.4	1.00	0	1.00
20	0.85 (0.58-1.25)	50	0.98 (0.89-1.08)
40	0.74 (0.35-1.58)	100	0.99 (0.84-1.16)
60	0.66 (0.21-2.08)	150	1.02 (0.85-1.23)
80	0.60 (0.12-2.91)	200	1.08 (0.89-1.31)
100	0.55 (0.07-4.39)	250	1.15 (0.95-1.40)
120	0.52 (0.04-7.06)	300	1.22 (1.00-1.50)
140	0.49 (0.02-12.02)	325	1.26 (1.02-1.55)
160	0.47 (0.01-21.39)		
pnonlinearity	0.71	Pnonlinearity	0.15

Supplemental Table 13. Relative risks (95% confidence intervals) from nonlinear analysis of fruit juice and fruit drinks and type 2 diabetes

Fruit juice	(n=9)	100% frui	t juice (n=4)	Fruit drink	as (n=6)
g/d	RR (95% CI)	g/d	RR (95% CI)	g/d	RR (95% CI)
0	1.00	0	1.00	0	1.00
200	1.02 (0.97-1.07)	200	0.99 (0.89-1.11)	100	1.07 (0.99-1.14)
400	1.03 (0.97-1.10)	400	1.06 (0.63-1.80)	200	1.14 (1.01-1.28)
600	1.05 (0.99-1.11)	600	1.14 (0.42-3.12)	300	1.21 (0.99-1.47)
800	1.06 (1.01-1.12)	800	1.22 (0.28-5.35)	400	1.28 (0.95-1.72)
1000	1.08 (1.02-1.13)			500	1.36 (0.90-2.04)
1200	1.09 (1.04-1.15)				
1400	1.11 (1.05-1.16)				
1600	1.12 (1.07-1.18)				
1800	1.14 (1.08-1.20)				
pnonlinearity	0.87	pnonlinearity	0.74	pnonlinearity	0.93

Supplemental Table 14. Subgroup analyses of fruit and vegetable intake and type 2 diabetes, high vs. low and dose-response

		Fruit	Fruit and vegetables, high vs. low						Fruit and vegetables, dose-response (200 g/day)			
	•	n	RR (95% CI)	$I^{2}(\%)$	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$	_	n	RR (95% CI)	$I^{2}(\%)$	$P_{ m h}{}^{ m a}$	$P_{ m h}^{ m b}$
All studies		10	0.93 (0.89-0.98)	0	0.47			7	0.98 (0.95-1.01)	37.8	0.14	
Duration of follow-up												
<10 years follow-up		5	0.93 (0.88-0.99)	0	0.54	0.54		3	1.01 (0.97-1.05)	0	0.75	0.14
≥10 years follow-up		5	0.91 (0.83-1.01)	27.9	0.24			4	0.95 (0.91-1.00)	46.3	0.13	
Gender			,						,			
Men		5	0.88 (0.74-1.04)	0	0.73	0.92/		1	0.89 (0.76-1.03)			0.46
Women		5	0.95 (0.81-1.11)	43.8	0.13	0.30		3	1.00 (0.97-1.04)	0	0.62	
Men and women		3	0.92 (0.87-0.97)	0	0.37			3	0.95 (0.90-1.01)	45.8	0.16	
Geographic location			,						,			
Europe		4	0.88 (0.80-0.98)	0	0.76	0.68		2	0.95 (0.91-1.00)	3.2	0.31	0.32
America		4	1.00 (0.92-1.09)	0	0.41			4	0.99 (0.94-1.04)	54.2	0.09	
Asia		2	0.91 (0.86-0.97)	0	0.62			1	1.00 (0.92-1.09)			
Australia			, , ,						` ′			
Number of cases												
Cases < 1.000		3	0.84 (0.70-1.02)	0	0.65	0.42		2	0.96 (0.85-1.08)	49.0	0.16	0.95
Cases 1.000-<2.000		3	0.95 (0.81-1.11)	14.1	0.31			3	0.98 (0.90-1.06)	69.5	0.04	
Cases ≥2.000		4	0.94 (0.89-1.01)	30.1	0.23			2	0.98 (0.95-1.01)	0	0.36	
Study quality			,						,			
0-3		1	0.91 (0.62-1.33)			0.84		0				NC
>3-6		1	0.91 (0.66-1.25)					0				
>6-8		8	0.94 (0.89-0.99)	19.1	0.28			7	0.98 (0.95-1.01)	55.4	0.03	
Adjustment for confounders			, , ,						` ′			
Age	Yes	10	0.93 (0.89-0.98)	0	0.47	NC	Yes	7	0.98 (0.95-1.01)	55.4	0.03	NC
	No	0	,				No	0	,			
Education	Yes	6	0.91 (0.86-0.95)	0	0.56	0.07	Yes	4	0.95 (0.89-1.02)	59.3	0.06	0.28
	No	4	1.01 (0.92-1.10)	0	0.93		No	3	1.00 (0.96-1.03)	0	0.95	
Ethnicity	Yes	0	,			NC	Yes	0	,			NC
•	No	10	0.93 (0.89-0.98)	0	0.47		No	7	0.98 (0.95-1.01)	55.4	0.03	
Family history	Yes	4	0.93 (0.86-1.02)	34.3	0.21	0.93	Yes	4	0.99 (0.96-1.02)	0	0.50	0.46
, ,	No	6	0.94 (0.86-1.02)	0	0.54		No	3	0.96 (0.89-1.04)	67.6	0.05	
Body mass index	Yes	9	0.94 (0.89-0.98)	7.7	0.37	0.89	Yes	7	0.98 (0.95-1.01)	55.4	0.03	NC
•	No	1	0.91 (0.62-1.33)				No	0	` ′			
Waist circumference/WHR	Yes	3	0.91 (0.81-1.03)	34.6	0.22	0.40	Yes	2	0.97 (0.83-1.13)	70	0.07	0.69
	No	7	0.96 (0.89-1.02)	0	0.59		No	5	0.98 (0.94-1.01)	32.5	0.21	
Hypertension	Yes	3	0.96 (0.83-1.11)	18.4	0.29	0.64	Yes	2	1.00 (0.96-1.05)	0	0.98	0.45
	No	7	0.93 (0.88-0.97)	0	0.43		No	5	0.97 (0.92-1.01)	52.8	0.08	
Alcohol	Yes	9	0.94 (0.89-0.98)	7.7	0.37	0.89	Yes	7	0.98 (0.95-1.01)	55.4	0.03	NC
	No	1	0.91 (0.62-1.33)				No	0	. ,			

Smoking	Yes	9	0.94 (0.89-0.98)	7.7	0.37	0.89	Yes	7	0.98 (0.95-1.01)	55.4	0.03	NC
	No	1	0.91 (0.62-1.33)				No	0				
Physical activity	Yes	9	0.94 (0.89-0.98)	7.7	0.37	0.89	Yes	7	0.98 (0.95-1.01)	55.4	0.03	NC
	No	1	0.91 (0.62-1.33)				No	0				
Meat	Yes	2	0.95 (0.86-1.05)	60.9	0.11	0.76	Yes	1	0.99 (0.95-1.04)			0.74
	No	8	0.93 (0.86-1.00)	0	0.53		No	6	0.97 (0.93-1.02)	46.5	0.10	
Soft drinks	Yes	1	1.01 (0.90-1.12)			0.16	Yes	1	0.99 (0.95-1.04)			0.74
	No	9	0.92 (0.87-0.96)	0	0.62		No	6	0.97 (0.93-1.02)	46.5	0.10	
Whole grains	Yes	2	0.96 (0.86-1.05)	60.9	0.11	0.76	Yes	1	0.99 (0.95-1.04)			0.74
-	No	8	0.93 (0.86-1.00)	0	0.53		No	6	0.97 (0.93-1.02)	46.5	0.10	
Coffee	Yes	2	1.00 (0.91-1.11)	0	0.79	0.15	Yes	2	0.99 (0.95-1.04)	0	0.81	0.56
	No	8	0.92 (0.87-0.96)	0	0.54		No	5	0.97 (0.92-1.02)	55.1	0.06	
Energy intake	Yes	6	0.96 (0.90-1.04)	14.4	0.32	0.21	Yes	6	0.99 (0.96-1.01)	3.2	0.40	0.09
	No	4	0.90 (0.85-0.96)	0	0.84		No	1	0.88 (0.80-0.98)			
Energy intake	Yes	6	0.92 (0.87-0.96) 0.96 (0.90-1.04)	14.4	0.32	0.21	Yes	-	0.99 (0.96-1.01)			0.09

n = number of studies

a P for heterogeneity within each subgroup
 b P for heterogeneity between subgroups with meta-regression analysis

NC not calculatable

Supplemental Table 15. Subgroup analyses of fruit intake and type 2 diabetes, high vs. low and dose-response

		Fruit	s, high vs. low						Fruits, dose-re	esponse (2	200 g/day)	
	-	n	RR (95% CI)	I <sup>2</sup> (%)	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$		n	RR (95% CI)	I <sup>2</sup> (%)	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$
All studies		20	0.93 (0.90-0.97)	9.3	0.34			19	0.96 (0.92-1.00)	68.7	< 0.0001	
Duration of follow-up												
<10 years follow-up		9	0.96 (0.89-1.04)	33.4	0.15	0.64		8	0.98 (0.87-1.09)	84.7	< 0.0001	0.50
≥10 years follow-up		11	0.94 (0.91-0.97)	0	0.58			11	0.97 (0.95-0.99)	4.3	0.40	
Gender												
Men		5	1.01 (0.86-1.18)	44.7	0.12	0.10/		4	0.99 (0.90-1.10)	41.5	0.16	0.47/
Women		9	0.96 (0.91-1.02)	0	0.48	0.73		9	0.98 (0.92-1.04)	61.3	0.008	0.80
Men and women		9	0.91 (0.88-0.95)	12.0	0.34			8	0.91 (0.82-1.01)	82.6	< 0.0001	
Geographic location			,						,			
Europe		5	0.94 (0.84-1.04)	0	0.60	0.52		4	0.95 (0.89-1.03)	0	0.62	0.41
America		7	0.94 (0.91-0.98)	0	0.55			7	0.98 (0.95-1.02)	21.7	0.26	
Asia		5	0.97 (0.86-1.08)	58.2	0.05			5	0.94 (0.82-1.08)	89.7	< 0.0001	
Australia		3	0.87 (0.75-1.01)	0	0.44			3	0.90 (0.81-1.01)	0	0.51	
Number of cases			, , ,						, ,			
Cases < 1.000		6	0.94 (0.83-1.07)	0	0.68	0.69		5	0.93 (0.84-1.03)	0	0.73	0.96
Cases 1.000-<2.000		4	0.98 (0.84-1.16)	0	0.69			4	1.00 (0.89-1.12)	47.6	0.13	
Cases ≥2.000		10	0.93 (0.90-0.97)	19.4	0.26			10	0.95 (0.90-1.00)	81.4	< 0.0001	
Study quality			, , ,						, ,			
0-3		0				0.18		0				0.18
>3-6		5	0.96 (0.92-1.00)	0	0.57			5	1.00 (0.95-1.06)	43.3	0.15	
>6-8		15	0.91 (0.88-0.95)	3.9	0.41			14	0.94 (0.88-0.99)	65.1	< 0.0001	
Adjustment for confounders			,						,			
Age	Yes	19	0.94 (0.91-0.97)	10.8	0.32	0.39	Yes	18	0.96 (0.92-1.00)	69.9	< 0.0001	0.40
	No	1	0.75 (0.46-1.22)				No	1	0.79 (0.53-1.19)			
Education	Yes	13	0.95 (0.90-1.00)	34.2	0.11	0.38	Yes	12	0.96 (0.91-1.02)	78.2	< 0.0001	0.54
	No	7	0.91 (0.86-0.97)	0	0.91		No	7	0.94 (0.89-1.00)	0	0.52	
Ethnicity	Yes	5	0.90 (0.84-0.97)	0	0.33	0.29	Yes	5	0.95 (0.90-1.01)	18.0	0.30	0.69
•	No	15	0.95 (0.91-1.00)	29.3	0.14		No	14	0.96 (0.91-1.02)	74.9	< 0.0001	
Family history	Yes	11	0.90 (0.86-0.94)	0	0.94	0.03	Yes	11	0.91 (0.85-0.98)	56.0	0.01	0.04
<i>y y</i>	No	9	0.98 (0.92-1.04)	26.7	0.21		No	8	1.00 (0.96-1.04)	41.6	0.10	
Body mass index	Yes	18	0.93 (0.90-0.97)	13.8	0.29	0.96	Yes	18	0.96 (0.92-1.00)	71.6	< 0.0001	0.57
Ž	No	2	0.93 (0.69-1.26)	17.7	0.27		No	2	0.89 (0.71-1.12)	0	0.49	
Waist circumference/WHR	Yes	5	1.04 (0.94-1.16)	0	0.70	0.04	Yes	6	1.03 (0.96-1.10)	12.7	0.33	0.16
	No	15	0.92 (0.90-0.95)	0	0.51		No	13	0.94 (0.89-0.98)	74.9	< 0.0001	
Hypertension	Yes	4	1.01 (0.91-1.11)	0	0.91	0.14	Yes	5	1.03 (0.98-1.09)	0	0.50	0.18
* *	No	16	0.93 (0.89-0.96)	15.3	0.28		No	14	0.94 (0.89-0.99)	74.1	< 0.0001	
Alcohol	Yes	12	0.96 (0.91-1.01)	31.5	0.14	0.13	Yes	11	0.97 (0.92-1.03)	78.6	< 0.0001	0.24
	No	8	0.89 (0.84-0.95)	0	0.91		No	8	0.93 (0.87-0.99)	19.4	0.28	

Smoking	Yes	17	0.94 (0.91-0.97)	11.3	0.32	0.12	Yes	16	0.96 (0.92-1.01)	71.7	<0.0001	0.23
TO 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	No	3	0.82 (0.70-0.96)	0	0.92	0.25	No	3	0.88 (0.79-0.99)	0	0.46	0.22
Physical activity	Yes	18	0.94 (0.91-0.97)	12.6	0.30	0.25	Yes	17	0.96 (0.92-1.00)	71.0	< 0.0001	0.23
	No	2	0.80 (0.62-1.03)	0	0.76		No	2	0.80 (0.62-1.04)	0	0.94	
Meat	Yes	3	0.91 (0.81-1.03)	61.4	0.08	0.06	Yes	3	0.88 (0.70-1.12)	94.3	< 0.0001	0.21
	No	17	0.95 (0.92-0.98)	0	0.76		No	16	0.98 (0.97-1.00)	0	0.66	
Soft drinks	Yes	1	1.08 (0.91-1.28)			0.12	Yes	1	0.98 (0.90-1.06)			0.79
	No	19	0.93 (0.90-0.95)	0	0.46		No	18	0.95 (0.91-1.00)	70.4	< 0.0001	
Whole grains	Yes	1	0.82 (0.68-0.99)			0.20	Yes	1	0.81 (0.65-1.00)			0.21
	No	19	0.94 (0.91-0.97)	5.8	0.39		No	18	0.96 (0.92-1.00)	68.7	< 0.0001	
Coffee	Yes	2	1.04 (0.91-1.19)	0	0.49	0.14	Yes	2	0.99 (0.93-1.06)	0	0.57	0.51
	No	18	0.93 (0.90-0.96)	3.9	0.41		No	17	0.95 (0.90-1.00)	72.0	< 0.0001	
Energy intake	Yes	17	0.95 (0.92-0.98)	0	0.58	0.05	Yes	17	0.98 (0.96-1.01)	17.1	0.25	< 0.0001
	No	3	0.89 (0.82-0.97)	7.0	0.34		No	2	0.79 (0.73-0.84)	0	0.97	

n = number of studies

a P for heterogeneity within each subgroup
 b P for heterogeneity between subgroups with meta-regression analysis

NC not calculatable

Supplemental Table 16. Subgroup analyses of vegetable intake and type 2 diabetes, high vs. low and dose-response

		Vegetables, high vs. low							Vegetables, dose-	response (2	200 g/day)	
	<del>-</del>	n	RR (95% CI)	I <sup>2</sup> (%)	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$		n	RR (95% CI)	I <sup>2</sup> (%)	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$
All studies		17	0.95 (0.88-1.02)	60.4	0.001			15	0.97 (0.94-1.01)	39.2	0.06	
Duration of follow-up												
<10 years follow-up		8	0.92 (0.80-1.05)	65.3	0.005	0.59		6	0.94 (0.85-1.04)	62.3	0.02	0.48
≥10 years follow-up		9	0.97 (0.89-1.05)	59.8	0.01			9	1.00 (0.98-1.02)	0	0.51	
Gender												
Men		3	0.78 (0.64-0.94)	0	0.61	0.35/		2	0.85 (0.71-1.01)	0	0.76	0.52/
Women		8	0.97 (0.87-1.09)	63.2	0.008	0.11		6	0.98 (0.90-1.05)	66.1	0.01	0.26
Men and women		8	0.95 (0.87-1.05)	55.8	0.03			8	1.00 (0.97-1.02)	0	0.63	
Geographic location			,						,			
Europe		5	0.87 (0.73-1.03)	48.3	0.10	0.55		4	0.95 (0.88-1.02)	0	0.12	0.32
America		5	1.02 (0.93-1.11)	61.3	0.04			4	1.01 (0.99-1.03)	0	0.76	
Asia		4	0.89 (0.70-1.13)	83.6	< 0.0001			4	0.91 (0.81-1.02)	48.9	0.12	
Australia		3	0.94 (0.79-1.12)	0	0.46			3	0.91 (0.78-1.05)	0	0.59	
Number of cases			,						,			
Cases < 1.000		7	0.87 (0.74-1.03)	48.8	0.07	0.27		7	0.88 (0.80-0.98)	0	0.93	0.05
Cases 1.000-<2.000		4	1.00 (0.85-1.19)	35.7	0.20			4	0.96 (0.87-1.06)	74.7	0.008	
Cases ≥2.000		6	0.96 (0.87-1.05)	78.8	< 0.0001			4	1.00 (0.98-1.03)	0	0.63	
Study quality			,						,			
0-3		0				0.05		0				0.46
>3-6		5	0.85 (0.71-1.02)	69.5	0.01			4	0.93 (0.83-1.05)	77.8	0.004	
>6-8		12	1.00 (0.95-1.06)	25.2	0.20			11	1.00 (0.96-1.03)	0	0.49	
Adjustment for confounders			,						,			
Age	Yes	16	0.95 (0.88-1.02)	62.8	< 0.0001	0.82	Yes	14	0.97 (0.94-1.01)	43.2	0.04	0.77
	No	1	0.89 (0.57-1.39)				No	1	0.89 (0.53-1.51)			
Education	Yes	12	0.94 (0.86-1.03)	67.6	< 0.0001	0.89	Yes	10	0.96 (0.91-1.01)	50.8	0.03	0.51
	No	5	0.98 (0.88-1.08)	23.6	0.26		No	5	1.01 (0.96-1.06)	3.8	0.39	
Ethnicity	Yes	1	0.88 (0.60-1.29)			0.76	Yes	1	0.59 (0.19-1.68)			0.38
•	No	16	0.95 (0.88-1.02)	62.7	< 0.0001		No	14	0.97 (0.94-1.01)	41.3	0.05	
Family history	Yes	9	0.98 (0.89-1.07)	28.6	0.19	0.80	Yes	8	0.98 (0.92-1.04)	20.5	0.27	0.85
, ,	No	8	0.94 (0.85-1.04)	73.6	< 0.0001		No	7	0.97 (0.92-1.03)	57.8	0.03	
Body mass index	Yes	15	0.95 (0.89-1.02)	64.0	< 0.0001	0.63	Yes	13	0.98 (0.94-1.02)	43.8	0.05	0.35
•	No	2	0.78 (0.39-1.58)	14.7	0.28		No	2	0.88 (0.72-1.06)	0	0.94	
Waist circumference/WHR	Yes	6	0.90 (0.74-1.10)	73.7	0.002	0.57	Yes	5	0.90 (0.78-1.02)	61.0	0.04	0.04
	No	11	0.97 (0.90-1.04)	52.3	0.02		No	10	1.00 (0.98-1.02)	0	0.80	
Hypertension	Yes	5	0.91 (0.74-1.11)	80.0	0.001	0.74	Yes	5	0.93 (0.85-1.02)	65.0	0.02	0.20
	No	12	0.96 (0.89-1.03)	45.0	0.05		No	10	1.00 (0.98-1.02)	0	0.62	
Alcohol	Yes	12	0.94 (0.87-1.02)	66.4	0.001	0.85	Yes	11	0.98 (0.94-1.02)	49.6	0.03	0.29

Smoking	Yes	14	0.95 (0.88-1.02)	67.6	< 0.0001	0.89	Yes	12	0.97 (0.93-1.01)	49.8	0.03	0.75
	No	3	0.94 (0.80-1.11)	0	0.88		No	3	0.94 (0.77-1.15)	0	0.66	
Physical activity	Yes	15	0.96 (0.89-1.03)	63.3	< 0.0001	0.32	Yes	13	0.97 (0.94-1.01)	44.1	0.04	0.33
	No	2	0.80 (0.63-1.03)	0	0.60		No	2	0.81 (0.58-1.13)	0	0.66	
Meat	Yes	4	0.95 (0.81-1.12)	83.9	< 0.0001	0.80	Yes	4	0.96 (0.85-1.08)	77.5	0.004	0.87
	No	13	0.94 (0.88-1.01)	35.9	0.10		No	11	1.00 (0.97-1.02)	0	0.51	
Soft drinks	Yes	2	1.07 (1.00-1.14)	0	0.69	0.11	Yes	2	1.03 (0.97-1.09)	0	0.87	0.19
	No	15	0.92 (0.85-0.99)	50.3	0.01		No	13	0.96 (0.91-1.00)	43.2	0.05	
Whole grains	Yes	3	1.06 (0.99-1.13)	0	0.64	0.12	Yes	3	1.03 (0.97-1.09)	0	0.85	0.22
-	No	14	0.91 (0.84-0.99)	53.5	0.009		No	12	0.95 (0.91-1.00)	47.8	0.03	
Coffee	Yes	3	1.05 (0.97-1.13)	13.4	0.32	0.22	Yes	3	1.01 (0.95-1.08)	13.5	0.32	0.40
	No	14	0.92 (0.85-1.00)	53.6	0.009		No	12	0.96 (0.91-1.01)	44.8	0.05	
Energy intake	Yes	15	0.96 (0.89-1.03)	62.8	0.001	0.26	Yes	14	0.97 (0.94-1.01)	43.2	0.04	0.77
	No	2	0.79 (0.62-1.01)	0	0.53		No	1	0.89 (0.53-1.51)	0	0	

n = number of studies

a P for heterogeneity within each subgroup
 b P for heterogeneity between subgroups with meta-regression analysis

NC not calculatable

Supplemental Table 17. Subgroup analyses of cruciferous vegetable intake and type 2 diabetes, dose-response

		Cruci	ferous vegetables, 100	g/day		
		n	RR (95% CI)	$I^{2}(\%)$	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$
All studies		8	0.96 (0.84-1.09)	80.9	< 0.0001	
Duration of follow-up						
<10 years follow-up		3	0.75 (0.51-1.11)	82.8	0.003	0.20
≥10 years follow-up		5	1.07 (0.97-1.18)	67.5	0.02	
Gender						
Men		2	0.85 (0.42-1.73)	79.6	0.03	0.99
Women		4	0.94 (0.76-1.16)	87.4	0	
Men and women		2	0.91 (0.81-1.03)	0	0.79	
Geographic location			,			
Europe		1	0.55 (0.29-1.04)			0.53
America		4	1.13 (1.07-1.19)	0	0.53	
Asia		3	0.75 (0.54-1.05)	83.4	0.002	
Australia		3	0.75 (0.51 1.05)	03.1	0.002	
Number of cases						
Cases <1.000		2	0.77 (0.50-1.19)	47.1	0.17	0.14
Cases 1.000-<2.000		2	0.68 (0.33-1.39)	90.8	0.17	0.14
Cases 1.000-\2.000 Cases ≥2.000		4	1.09 (1.00-1.19)	90.8 61.1	0.001	
		4	1.09 (1.00-1.19)	01.1	0.03	
Study quality		0				0.02
0-3		0	0.47 (0.22.0 (7)			0.02
>3-6		1	0.47 (0.33-0.67)	(0.4	0.01	
>6-8		7	1.04 (0.95-1.14)	62.4	0.01	
Adjustment for confounders			0.04 (0.04.4.00)	00.0		
Age	Yes	8	0.96 (0.84-1.09)	80.9	< 0.0001	NC
	No	0				
Education	Yes	3	0.64 (0.38-1.08)	85.2	0.001	0.05
	No	5	1.10 (1.03-1.18)	29.5	0.23	
Ethnicity	Yes	3	1.13 (1.07-1.20)	0	0.75	0.03
	No	5	0.78 (0.62-0.99)	73.1	0.005	
Family history	Yes	6	1.08 (0.99-1.17)	51.3	0.07	0.15
	No	2	0.67 (0.34-1.30)	91.6	0.001	
Body mass index	Yes	8	0.96 (0.84-1.09)	80.9	< 0.0001	NC
•	No	0				
Waist circumference/WHR	Yes	2	0.48 (0.35-0.66)	0	0.68	0.005
	No	6	1.06 (0.98-1.15)	57.1	0.04	
Hypertension	Yes	7	0.98 (0.86-1.11)	81.6	< 0.0001	0.38
> F	No	1	0.55 (0.29-1.04)			3.20
Alcohol	Yes	8	0.96 (0.84-1.09)	80.9	< 0.0001	NC
	No	0	(-//			
Smoking	Yes	8	0.96 (0.84-1.09)	80.9	< 0.0001	NC
	No	0	0.50 (0.01 1.05)	20.7	0.0001	1,0
Physical activity	Yes	8	0.96 (0.84-1.09)	80.9	< 0.0001	NC
iny sical activity	No	0	0.70 (0.04-1.07)	00.7	10.0001	110
Meat consumption	Yes	2	0.67 (0.34-1.30)	91.6	0.001	0.15
Meat consumption	No	6	1.08 (0.99-1.17)		0.001	0.13
Soft drink	Yes			51.3	0.07	0.96
Soft drink		1	0.92 (0.80-1.06)	01.3	ZO 0001	0.90
W/h ala ous :	No	7	0.96 (0.83-1.11)	81.2	< 0.0001	0.00
Whole grain	Yes	1	0.92 (0.80-1.06)	01.2	¿O 0001	0.96
G CC	No	7	0.96 (0.83-1.11)	81.2	<0.0001	6.05
Coffee	Yes	2	0.91 (0.81-1.03)	0	0.79	0.99
	No	6	0.97 (0.84-1.14)	82.8	< 0.0001	
Energy intake	Yes	8	0.96 (0.84-1.09)	80.9	< 0.0001	NC
	No	0				

n = number of studies

<sup>&</sup>lt;sup>a</sup> P for heterogeneity within each subgroup <sup>b</sup> P for heterogeneity between subgroups with meta-regression analysis

NC not calculatable

Supplemental Table 18. Subgroup analyses of green leafy vegetable intake and type 2 diabetes, dose-response

		Green	leafy vegetables, 100	g/day		
		n	RR (95% CI)	$I^{2}(\%)$	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$
All studies		8	0.96 (0.91-1.01)	75.0	< 0.0001	
Duration of follow-up						
<10 years follow-up		3	0.86 (0.76-0.96)	19.0	0.29	0.18
≥10 years follow-up		5	0.98 (0.93-1.03)	78.7	0.001	
Gender						
Men		0				
Women		3	0.87 (0.81-0.94)	0	0.41	0.06
Men and women		5	1.00 (0.94-1.05)	76.2	0.002	
Geographic location						
Europe		2	0.87 (0.57-1.32)	73.6	0.05	0.66
America		3	0.95 (0.88-1.01)	48.5	0.14	
Asia		3	0.90 (0.70-1.15)	78.2	0.01	
Australia		0				
Number of cases						
Cases <1.000		1	0.70 (0.44-1.12)			0.57
Cases 1.000-<2.000		3	0.93 (0.80-1.08)	83.2	0.003	
Cases ≥2.000		4	0.95 (0.86-1.05)	66.3	0.03	
Study quality			,			
0-3		0				0.74
>3-6		3	0.97 (0.92-1.03)	88.2	< 0.0001	
>6-8		5	0.91 (0.80-1.05)	55.9	0.06	
Adjustment for confounders			,			
Age	Yes	8	0.96 (0.91-1.01)	75.0	< 0.0001	NC
8-	No	0	**** (*** - *** - *)			
Education	Yes	5	0.98 (0.92-1.03)	81.9	< 0.0001	0.44
	No	3	0.89 (0.82-0.97)	0	0.47	
Ethnicity	Yes	8	0.96 (0.91-1.01)	75.0	< 0.0001	NC
Zumenej	No	0	0.50 (0.51 1.01)	70.0	0.0001	1.0
Family history	Yes	3	0.89 (0.82-0.97)	0	0.47	0.44
runniy motory	No	5	0.98 (0.92-1.03)	81.9	< 0.0001	0.11
Body mass index	Yes	8	0.96 (0.91-1.01)	75.0	< 0.0001	NC
Body mass mack	No	0	0.50 (0.51 1.01)	75.0	10.0001	110
Waist circumference/WHR	Yes	1	0.82 (0.72-0.93)			0.18
,, and one dimerence/ WIII	No	7	0.98 (0.93-1.02)	71.2	0.002	0.10
Hypertension	Yes	4	0.98 (0.93-1.02)	67.8	0.002	0.81
11ypertension	No	4	0.92 (0.78-1.08)	81.9	0.03	0.01
Alcohol	Yes	8	0.97 (0.92-1.02)	75.0	< 0.001	NC
Alcohol	No	0	0.30 (0.31-1.01)	13.0	NO.0001	INC
Smoking	Yes	8	0.96 (0.91-1.01)	75.0	<0.0001	NC
Smoking			0.90 (0.91-1.01)	13.0	< 0.0001	INC
Dhysical activity	No Vac	0	0.06 (0.01.1.01)	75.0	<0.0001	NC
Physical activity	Yes	8	0.96 (0.91-1.01)	75.0	< 0.0001	NC
Most consumerting	No	0	0.02 (0.70.1.07)	76.0	0.02	0.60
Meat consumption	Yes	3	0.92 (0.79-1.07)	76.0	0.02	0.68
0.0.1.1	No	5	0.98 (0.94-1.03)	73.1	0.005	0.63
Soft drink	Yes	2	0.98 (0.78-1.22)	81.1	0.02	0.63
****	No	6	0.96 (0.91-1.01)	77.4	0.001	0.55
Whole grain	Yes	2	0.98 (0.78-1.22)	81.1	0.02	0.63
	No	6	0.96 (0.91-1.01)	77.4	0.001	
Coffee	Yes	3	0.86 (0.76-1.14)	70.4	0.03	0.93
	No	5	0.96 (0.91-1.02)	80.2	< 0.0001	
Energy intake	Yes	8	0.96 (0.91-1.01)	75.0	< 0.0001	NC
	No	0				

n = number of studies

 $<sup>^</sup>a\,P$  for heterogeneity within each subgroup

 $<sup>{}^{\</sup>mathrm{b}}P$  for heterogeneity between subgroups with meta-regression analysis

Supplemental Table 19. Subgroup analyses of potato (total) intake and type 2 diabetes, dose-response

		Potato	oes (total), 100 g/day			
		n	RR (95% CI)	$I^{2}(\%)$	$P_{ m h}{}^{ m a}$	$P_{ m h}{}^{ m b}$
All studies		8	1.08 (1.02-1.15)	55.4	0.03	
Duration of follow-up						
<10 years follow-up		3	0.95 (0.78-1.16)	60.1	0.08	0.08
≥10 years follow-up		5	1.11 (1.08-1.15)	0	0.43	
Gender						
Men		1	1.12 (1.04-1.20)			0.64
Women		3	1.09 (1.02-1.15)	57.5	0.01	
Men and women		4	0.94 (0.71-1.24)	71.3	0.02	
Geographic location						
Europe		1	1.17 (1.02-1.35)			0.20
America		4	1.10 (1.05-1.14)	39.5	0.18	
Asia		2	0.46 (0.19-1.13)	43.1	0.19	
Australia		1	0.97 (0.81-1.15)			
Number of cases						
Cases < 1.000		3	0.99 (0.74-1.33)	76.6	0.01	0.45
Cases 1.000-<2.000		1	1.00 (0.91-1.10)			
Cases ≥2.000		4	1.11 (1.07-1.15)	6.7	0.36	
Study quality						
0-3		0				0.38
>3-6		1	0.97 (0.81-1.15)			
>6-8		7	1.09 (1.03-1.16)	56.1	0.03	
Adjustment for confounders						
Age	Yes	8	1.08 (1.02-1.15)	55.4	0.03	NC
	No	0				
Education	Yes	2	0.92 (0.72-1.18)	12.0	0.29	0.28
	No	6	1.10 (1.04-1.16)	56.7	0.04	
Ethnicity	Yes	4	1.10 (1.06-1.15)	10.7	0.34	0.42
	No	4	0.99 (0.78-1.24)	71.7	0.01	
Family history	Yes	7	1.09 (1.03-1.15)	55.9	0.03	0.36
	No	1	0.65 (0.32-1.32)			
Body mass index	Yes	8	1.08 (1.02-1.15)	55.4	0.03	NC
	No	0				
Waist circumference/WHR	Yes	1	0.97 (0.81-1.15)			0.38
	No	7	1.09 (1.03-1.16)	56.1	0.03	
Hypertension	Yes	2	0.93 (0.69-1.27)	28.2	0.24	0.17
	No	6	1.10 (1.05-1.17)	49.2	0.08	
Alcohol	Yes	6	1.08 (1.03-1.14)	44.5	0.11	0.65
	No	2	0.61 (0.14-2.73)	83.7	0.01	
Smoking	Yes	7	1.09 (1.03-1.16)	56.1	0.03	0.38
	No	1	0.97 (0.81-1.15)			
Physical activity	Yes	7	1.07 (1.00-1.14)	59.1	0.02	0.51
	No	1	1.17 (1.02-1.35)			
Meat consumption	Yes	1	0.65 (0.32-1.32)			0.36
	No	7	1.09 (1.03-1.15)	55.9	0.03	
Soft drink	Yes	1	0.65 (0.32-1.32)			0.36
	No	7	1.09 (1.03-1.15)	55.9	0.03	
Whole grain	Yes	2	0.46 (0.19-1.13)	43.1	0.19	0.09
-	No	6	1.09 (1.05-1.14)	36.9	0.16	
Coffee	Yes	1	0.65 (0.32-1.32)			0.36
	No	7	1.09 (1.03-1.15)	55.9	0.03	
Energy intake	Yes	8	1.08 (1.02-1.15)	55.4	0.03	NC
	No	0				

n = number of studies

 $<sup>^{</sup>a}$  P for heterogeneity within each subgroup

 $<sup>{}^{\</sup>mathrm{b}}P$  for heterogeneity between subgroups with meta-regression analysis

NC not calculatable

#### Supplemental Table 20. World Cancer Research Fund grading criteria

Grading	Criteria
Convincing	A convincing relationship should be robust enough to be highly unlikely
	to be modified in the foreseeable future as new evidence accumulates. All
	of the following are generally required:
	- Evidence from more than one study type
	- Evidence from at least two independent cohort studies
	- No substantial unexplained heterogeneity within or between study types
	or in different populations relating to the presence or absence of an
	association, or direction of effect
	- Good quality studies to exclude with confidence the possibility that the
	observed association results from random or systematic error, including
	confounding, measurement error, and selection bias
	- Presence of a plausible biological gradient in the association. Such a
	gradient need not be linear or even in the same direction across different
	levels of exposure, so long as this can be explained plausibly
	- Strong and plausible experimental evidence, either from human studies
	or relevant animal models, that typical human exposures can lead to
	relevant outcomes
Probable	All of the following are generally required:
	- Evidence from at least two independent cohort studies, or at least five
	case-control studies
	- No substantial unexplained heterogeneity within or between study types
	or in different populations relating to the presence or absence of an
	association, or direction of effect
	- Good quality studies to exclude with confidence the possibility that the
	observed association results from random or systematic error, including
	confounding, measurement error, and selection bias
	- Evidence for biological plausibility
Limited - suggestive	All of the following are generally required:
	- Evidence from at least two independent cohort studies, or at least five
	case-control studies
	- The direction of effect is generally consistent though some unexplained
	heterogeneity may be present
	- Evidence for biological plausibility

Limited - no	Evidence is so limited that no firm conclusion can be made, but this does
conclusion	not mean that there is evidence of no relationship. The evidence might be
	graded "limited - no conclusion" for several reasons:
	- limited number of studies
	- inconsistency of direction of effect
	- poor quality of studies (e.g. lack of adjustment for known confounders)
	- or any combination of these factors
Substantial effect on	All of the following are generally required:
risk unlikely	- Evidence from more than one study type
	- Evidence from at least two independent cohort studies
	- Summary estimate of effect close to 1.0 for comparison of high versus
	low exposure categories
	- No substantial unexplained heterogeneity within or between study types
	or in different populations
	- Good quality studies to exclude with confidence the possibility that the
	absence of association results from random or systematic error, including
	inadequate power, imprecision or error in exposure measurement,
	inadequate range of exposure, confounding, and selection bias
	- Absence of a demonstrable biological gradient (dose response)
	- Absence of strong and plausible experimental evidence, either from
	human studies or relevant animal models, that typical human exposures
	lead to relevant outcomes
1	

#### Specific upgrading factors:

- 1) Presence of a plausible biological gradient (dose response) in the association. Such a gradient need not be linear or even in the same direction across the different levels of exposure, so long as this can be explained plausibly.
- 2) A particularly large summary effect size (an odds ratio or relative risk of 2.0 or more, depending on the unit of exposure) after appropriate control for confounders.
- 3) Evidence from randomised trials in humans.
- 4) Evidence from appropriately controlled experiments demonstrating one or more plausible and specific mechanisms actually operating in humans.
- 5) Robust and reproducible evidence from experimental studies in appropriate animal models showing that typical human exposures can lead to relevant health outcomes.

# Supplemental Table 21. Justification for evidence grading for fruit and vegetables and type 2 diabetes

Requirements for	Fruit and vegetables	Fruits	Vegetables
grading of convincing			
Statistically significant	Statistically significant weak inverse	Statistically significant weak inverse	No significant association in the
and robust association	association for high vs. low analysis,	association for high vs. low and	high vs. low or linear dose-response
	but this is not robust in influence	nonlinear analysis, borderline	analysis, but there is evidence of
	analyses. The linear and nonlinear	significant in linear dose-response,	nonlinearity with a significant
	dose-response analyses show a non-	but there is strong evidence of	reduction at an intake of 100-400
	significant inverse association. Three	nonlinearity. High vs. low analysis is	g/d. The lack of association in high
	studies only reported dichotomous	robust in influence analyses.	vs. low and linear dose-response
	results and could not be included in		analyses are not driven by any
	the dose-response analyses.		single studies.
Evidence from at least	10 studies (high vs. low)	20 studies (high vs. low)	17 studies (high vs. low)
two independent cohort	7 studies (dose-response)	19 studies (dose-response)	15 studies (dose-response)
studies			
No substantial	There is no heterogeneity in the high	Low heterogeneity in high vs. low	Moderate to high heterogeneity in
unexplained	vs. low analysis and low	analysis and moderate to high	the high vs. low and dose-response
heterogeneity within or	heterogeneity in the dose-response	heterogeneity in the linear dose-	analyses.
between study types or	analysis. The inverse association in	response analysis.	Eleven of 17 studies reported risk
in different populations	high vs. low analyses persists in	Most studies show risk estimates in	estimates in the direction of reduced
relating to the presence	several, but not all subgroup	the direction of reduced risk for the	risk, but only two of these are
or absence of an	analyses.	high vs. low comparison, although	statistically significant. No studies
association, or direction		only four studies show a statistically	reported a significant increase in
of effect		significant reduction in risk, but	risk, although some studies also
		confidence intervals are somewhat	report relative risks non-
		wide and overlapping for several	significantly above 1.0.
		studies. No studies show a	
		significant increase in risk.	
Good quality studies to	No indication of publication bias	No indication of publication bias.	Egger's test was significant for the
exclude with confidence	B 1	<b>D</b> 10	dose-response analysis, but not for
the possibility that the	Results persisted in several, although	Results are in general consistent in	the high vs. low analysis.
observed association	not all subgroup analyses. However,	subgroup analyses, although for	
results from random or	there was no indication of between	some subgroups there is low power	Subgroup analyses based on high
systematic error,		due to few studies. There is little	vs. low and dose-response analyses

including confounding,	subgroup heterogeneity with meta-	indication of significant between	show consistently no significant
measurement error, and	regression analyses.	subgroup heterogeneity. Exceptions	association.
selection bias		are subgroup with adjustment for	
	No studies corrected for measurement	family history of diabetes, which	No studies corrected for
	error, but one study (EPIC-InterAct)	shows a significant inverse	measurement error, but one study
	using biomarkers of fruit and	association and the subgroup of	(EPIC-InterAct) using biomarkers
	vegetable intakes reported	studies with adjustment for waist	of fruit and vegetable intakes
	substantially stronger associations	measures of adiposity, which shows	reported substantially stronger
	than FFQ-based fruit and vegetable	no association. However, both	associations than FFQ-based fruit
	intakes.	general and abdominal adiposity	and vegetable intakes.
		could potentially be mediators.	
	All studies excluded prevalent type 2		All studies excluded prevalent type
	diabetes cases at baseline. Exposed	No studies corrected for	2 diabetes cases at baseline.
	and non-exposed participants were	measurement error, but one study	Exposed and non-exposed
	selected from the same populations.	(EPIC-InterAct) using biomarkers of	participants were selected from the
		fruit and vegetable intakes reported	same populations.
		substantially stronger associations	
		than FFQ-based fruit and vegetable	
		intakes.	
		All studies excluded prevalent type 2	
		diabetes cases at baseline. Exposed	
		and non-exposed participants were	
D C 1 711		selected from the same populations.	
Presence of a plausible	Some indication of a weak dose-	There is strong evidence of	There is evidence of nonlinearity
biological gradient in	response relationship up to 300-500	nonlinearity with a reverse J-shaped	(p=0.004) and a slight reverse J-
the association. Such a	g/d and the test for nonlinearity is not	or U-shaped association. Several	shaped or U-shaped association
gradient need not be	significant (p=0.13), although there is	subtypes of fruit are inversely	with a significant reduction in risk
linear or even in the	no further reductions in risk up to 800	associated with type 2 diabetes,	at intakes of 100-400 g/d, but the
same direction across	g/d.	while a few fruit subtypes	association is non-significant at
different levels of		(cantaloupe, watermelon) are slightly	higher intakes.
exposure, so long as this		positively associated with type 2	
can be explained		diabetes. Although it is not clear	
plausibly		whether some of these are due to	
		selective reporting or if there is a real increase in risk, different directions	
		The state of the s	
		of risk between fruit subtypes could potentially explain the observed U-	
		shaped dose-response relationship.	
		shaped dose-response relationship.	

Strong and plausible experimental evidence, either from human studies or relevant animal models, that typical human exposures can lead to relevant outcomes

Fruits and vegetables are important sources of dietary fiber, for which there is convincing evidence of a protective effect on adiposity and weight gain, which are major risk factors for type 2 diabetes.

There is also considerable evidence from observational studies that a high fruit and vegetable intake reduces weight gain and prevents the development of overweight and obesity. Results from randomized trials show weaker associations between fruit and vegetable intake and weight gain, but are of short duration and there may be issues with compliance.

Fruits and vegetables have a high content of various antioxidants. flavonoids and phytochemicals that may contribute towards reduced type 2 diabetes risk. Flavonoids have for example in animal and in vitro studies been shown to regulate carbohydrate digestion, insulin secretion, insulin sensitivity, insulin signaling, and glucose uptake in insulin-sensitive issues through various intracellular signaling pathways. Flavonoids may also protect insulin-producing beta-cells from inflammatory cytokine-induced cytotoxicity, promote beta-cell function and viability, and protect beta-cells against apoptosis.

Fruits are an important source of dietary fiber, for which there is convincing evidence of a protective effect on adiposity and weight gain, which are major risk factors for type 2 diabetes.

There is also considerable evidence from observational studies that a high fruit intake reduces weight gain and prevents the development of overweight and obesity. Results from randomized trials show weaker associations between fruit intake and weight gain, but are of short duration and there may be issues with compliance.

Fruits have a high content of various antioxidants, flavonoids and phytochemicals that may contribute towards reduced type 2 diabetes risk. Flavonoids have for example in animal and in vitro studies been shown to regulate carbohydrate digestion, insulin secretion, insulin sensitivity, insulin signaling, and glucose uptake in insulin-sensitive issues through various intracellular signaling pathways. Flavonoids may also protect insulin-producing betacells from inflammatory cytokineinduced cytotoxicity, promote betacell function and viability, and protect beta-cells against apoptosis.

Vegetables are important sources of dietary fiber, for which there is convincing evidence of a protective effect on adiposity and weight gain, which are major risk factors for type 2 diabetes.

There is also considerable evidence from observational studies that a high vegetable intake reduces weight gain and prevents the development of overweight and obesity. Results from randomized trials show weaker associations between vegetable intake and weight gain, but are of short duration and there may be issues with compliance.

Vegetables have a high content of various antioxidants, flavonoids and phytochemicals that may contribute towards reduced type 2 diabetes risk. Flavonoids have for example in animal and in vitro studies been shown to regulate carbohydrate digestion, insulin secretion, insulin sensitivity, insulin signaling, and glucose uptake in insulin-sensitive issues through various intracellular signaling pathways. Flavonoids may also protect insulin-producing beta-cells from inflammatory cytokine-induced cytotoxicity, promote beta-cell function and viability, and protect beta-cells against apoptosis.

Final grading and justification for overall assessment.

Limited-suggestive evidence for reduced risk with higher fruit and vegetable intake.

Justification: Primarily based on significant high vs. low analysis and marginally significant nonlinear doseresponse analysis. Results are in general consistent across several, but not all subgroups. Low heterogeneity, no publication bias, no indication of selection bias. Biologically plausible mechanisms exist, but a more precise and robust summary estimate and more details on mechanisms could have led to higher grading.

Probable evidence for reduced type 2 diabetes risk with higher fruit intake.

Justification: Significant high vs. low and nonlinear dose-response analysis with evidence of nonlinearity (therefore less emphasis on linear dose-response analysis). Low heterogeneity, robust results in many subgroup analyses as well as in influence analyses (high vs. low comparison). No publication, no indication of selection bias. The overall data for fruits are also consistent with the results for several subtypes of fruits, which show inverse associations (although the number of studies is limited). Biologically plausible mechanisms exist, but more details on mechanisms could have led to higher grading.

Limited-no conclusion evidence for reduced risk of type 2 diabetes with higher vegetable intake.

Justification: This is largely based on the lack of association in both high vs. low and linear doseresponse analysis. Although there is indication of nonlinearity in the nonlinear analysis, and a weak association cannot be excluded. there is insufficient evidence at present for a higher grading. The null results are robust in subgroup and influence analyses. There is some heterogeneity and indication of publication bias in the doseresponse analysis, but in sensitivity analyses this is not substantially affecting the results. No indication of selection bias. None of the vegetable subtypes showed significant inverse associations, although power may be low because of a limited number of studies. Biologically plausible mechanisms by which vegetables could reduced type 2 diabetes risk exist.

#### Supplemental Table 22. Evidence grading for fruit and vegetables and subtypes and type 2 diabetes

	Reduced risk	Increased risk	
Convincing	-	-	
Probable	Fruits	-	
Limited-suggestive	Fruits and vegetables combined, blueberries, prunes, grapes and raisins, apples/pears, apples, grapefruit	Fruit juice, fruit drinks, total potatoes, brussels sprouts, cauliflower, cantaloupe	
Limited - no conclusion	Vegetables, peaches/plums/apricots, bananas, berries, oranges, citrus fruits, watermelon, strawberries, 100% fruit juice, boiled potatoes, allium vegetables, yellow vegetables, cruciferous vegetables, green leafy vegetables, mushrooms, kale/mustard/chard greens, broccoli, cabbage, tomatoes		

For fruit and vegetable subtypes these judgments were largely based on the limited number of studies published. A larger number of studies were published on potatoes and fruit juice and fruit drinks, however, results were not robust in influence analyses and across all subgroup analyses, thus further studies are needed before an upgrade of the evidence grading can be made. There is supporting evidence of biological plausibility for several fruit and vegetable subtypes (e.g. blueberries, apples, grapes/raisins, grapefruit, fruit juice, fruit drinks).