

# The case for simple weight loss interventions

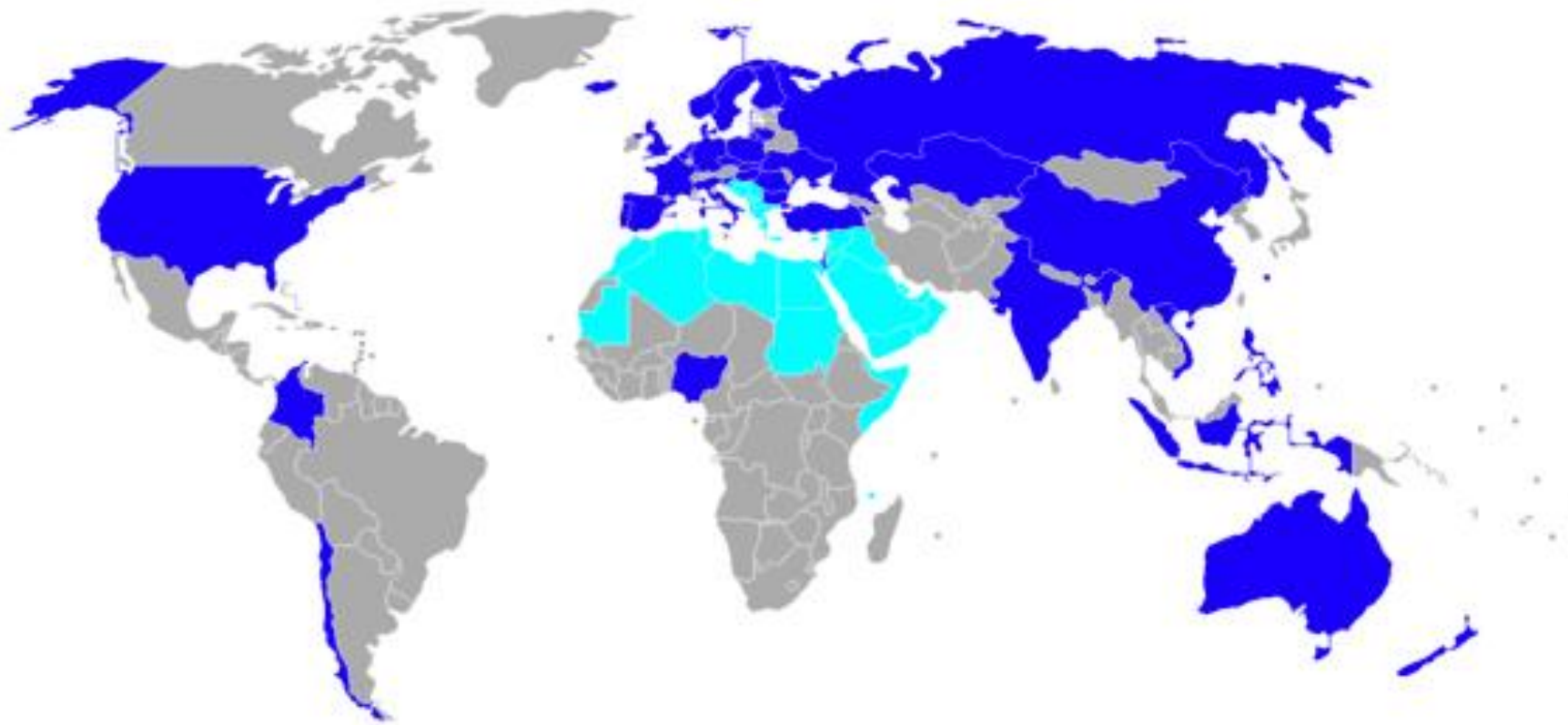
Paul Aveyard

Professor of behavioural medicine

# Conflicts of interest

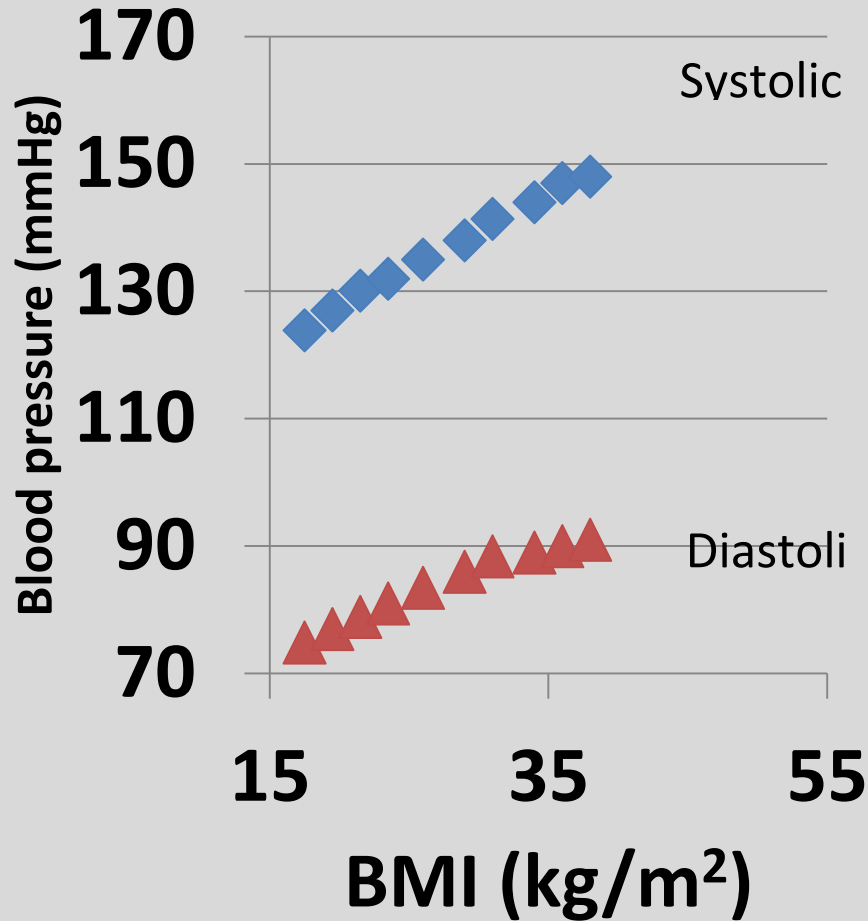
- In this research and in other similar research, commercial weight loss companies and pharmaceutical companies have donated their products free of charge to the NHS to allow the trial to proceed.



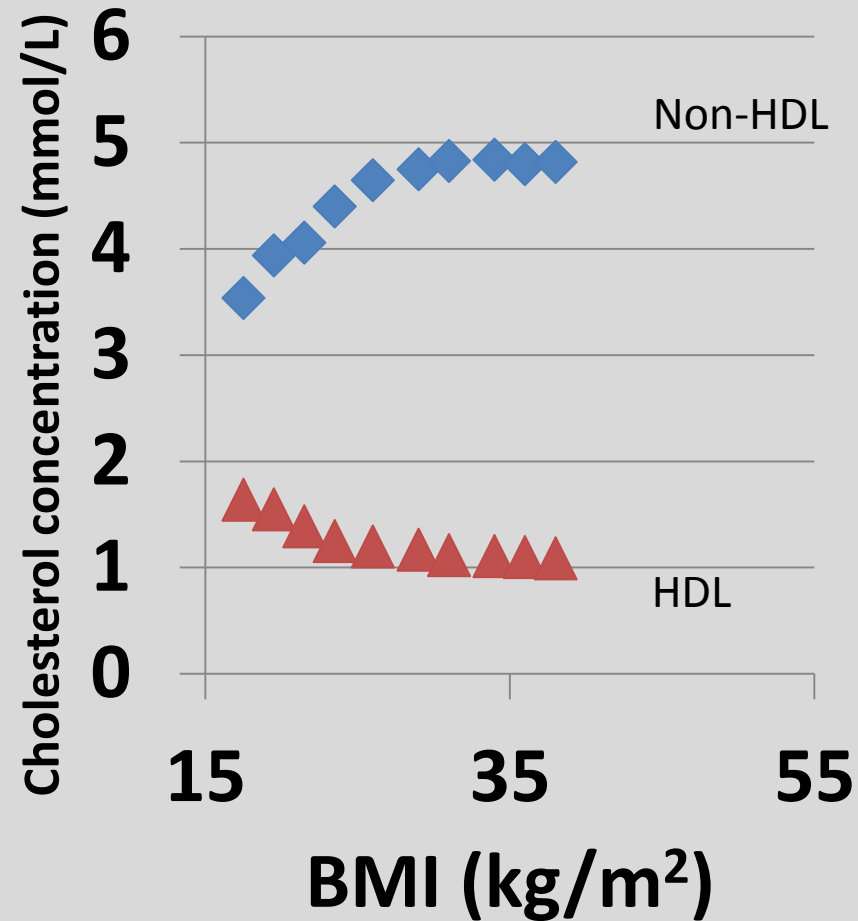


# WEIGHT REGAIN

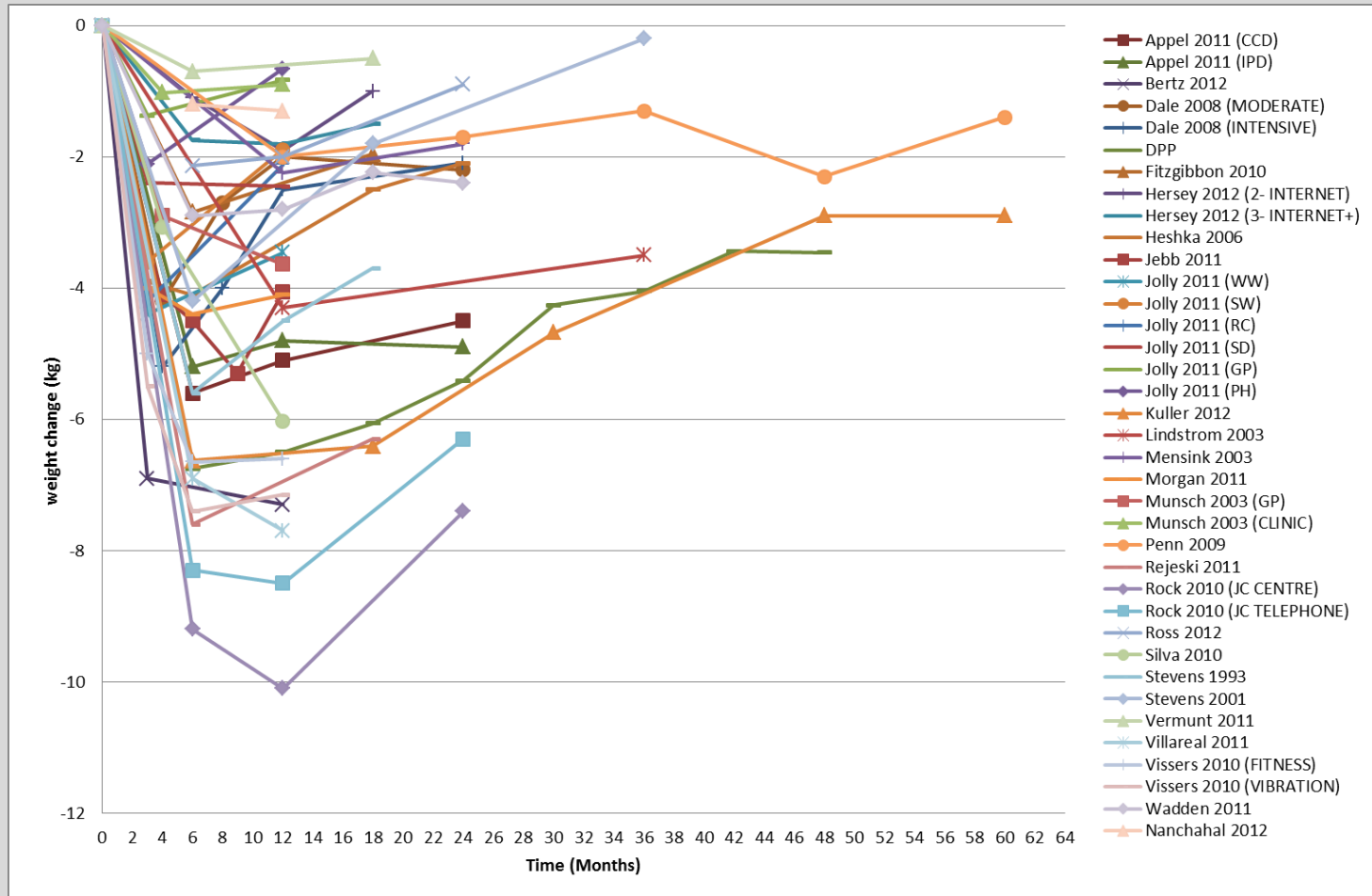
# BMI and blood pressure (males)



# BMI and blood lipids (males)

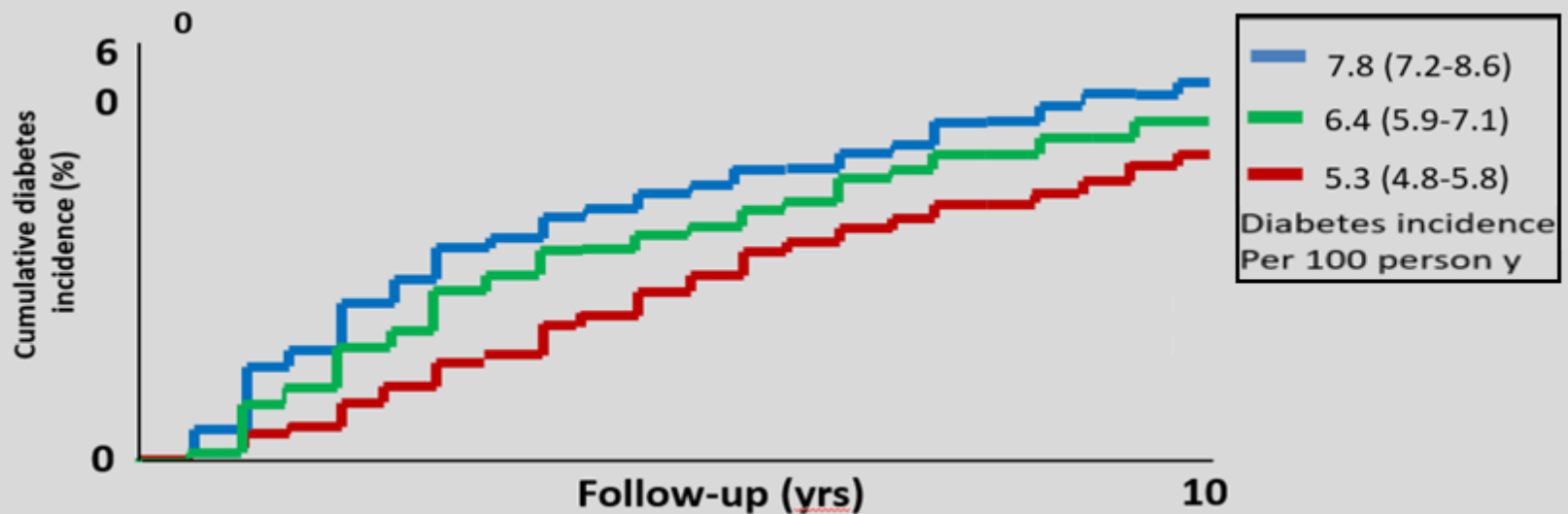
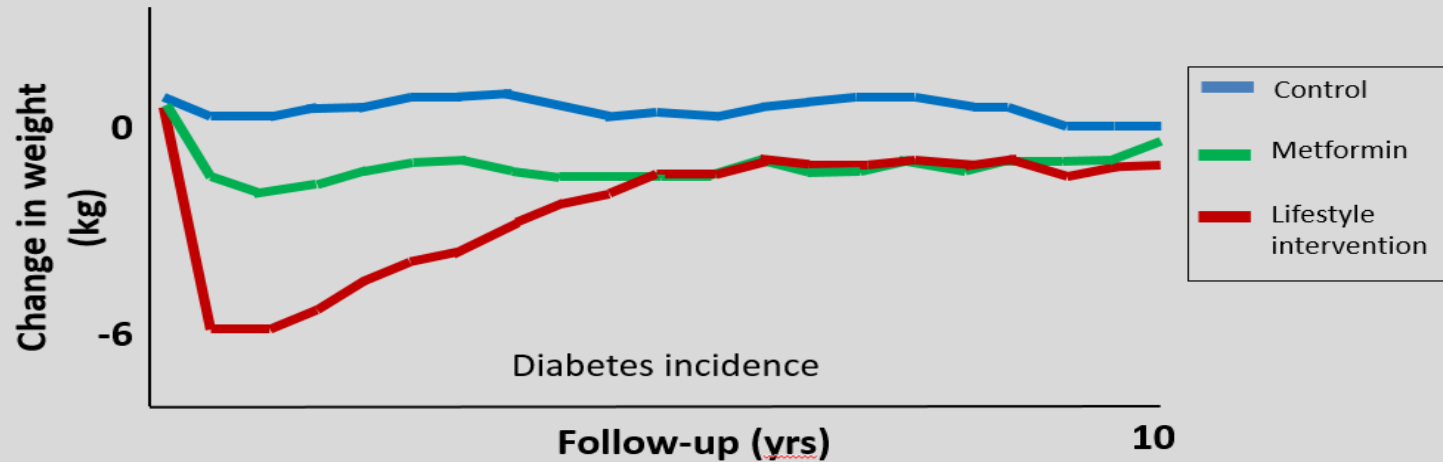


# Weight regain in BWMP over extended follow-up (BOCF analysis)

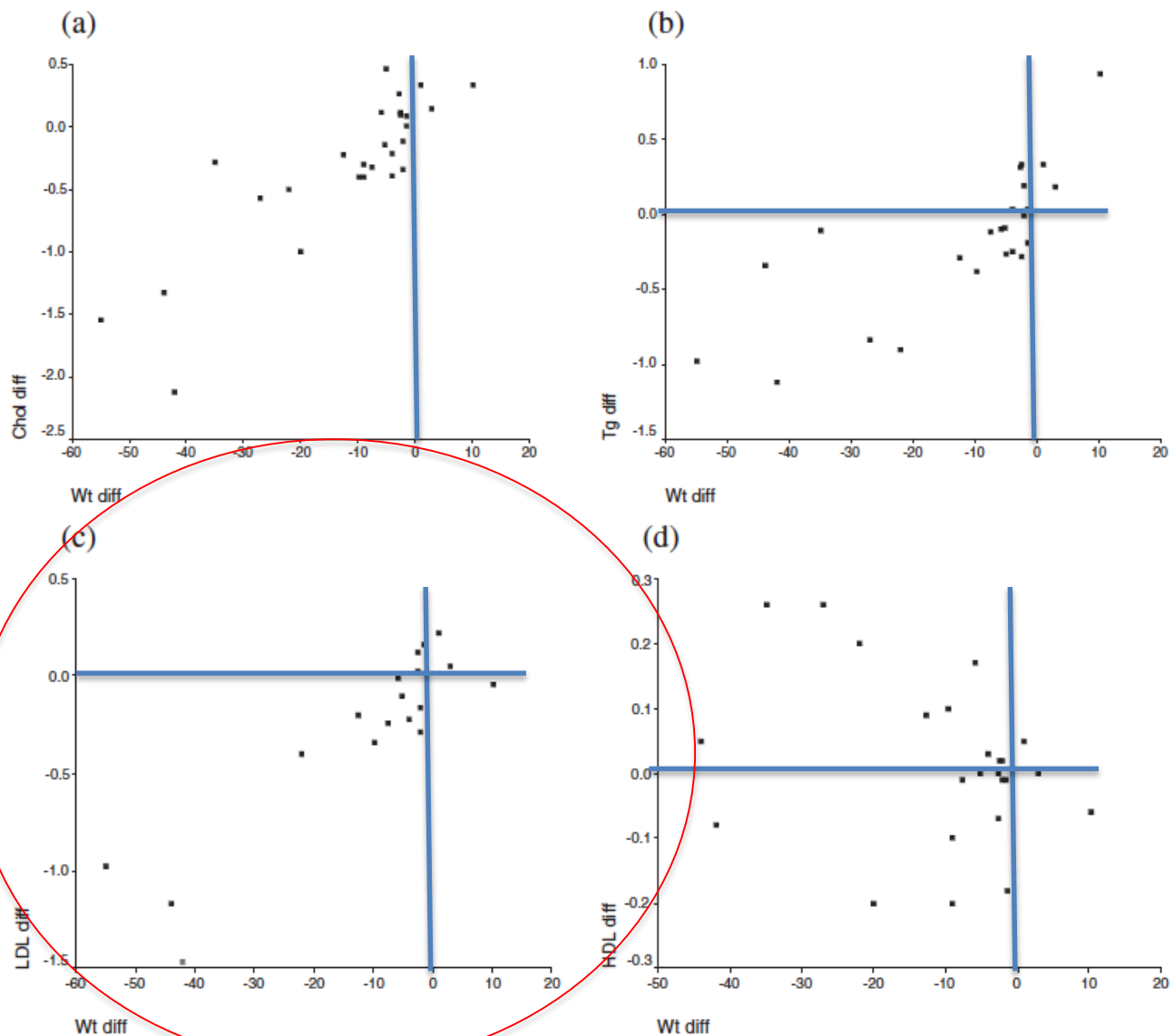


# Diabetes Prevention Program:

Sustained reductions in diabetes incidence - despite weight regain

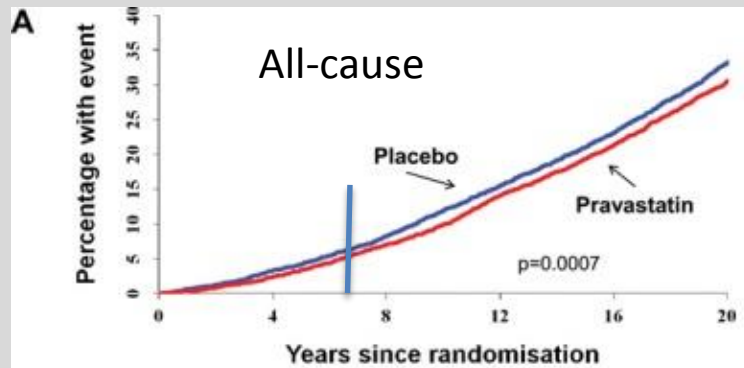






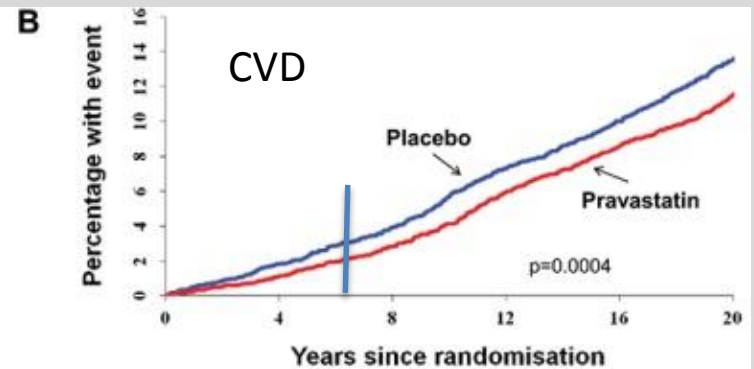
**Figure 1** Mean differences (diff) of weight vs. (a) cholesterol (Chol), (b) triglyceride (Tg), (c) low-density lipoprotein (LDL) and (d) high-density lipoprotein (HDL).

# Mortality by trial arm in the WOSCOPS trial



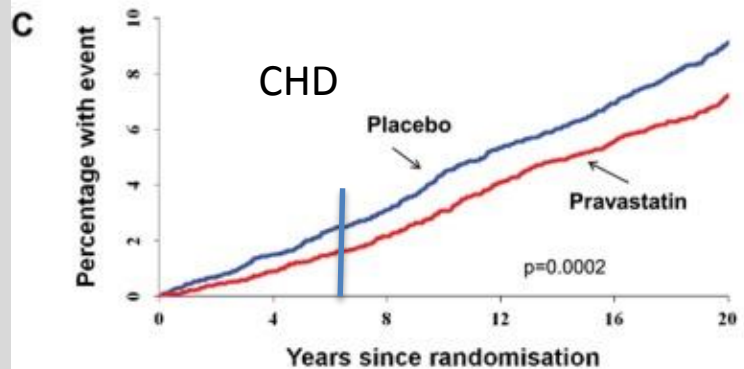
Numbers at risk:

Placebo	3293	3185	3021	2785	2501	2203
Pravastatin	3302	3223	3069	2838	2598	2295



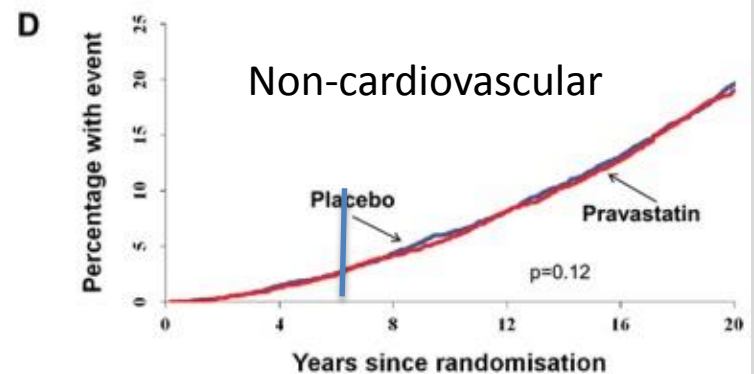
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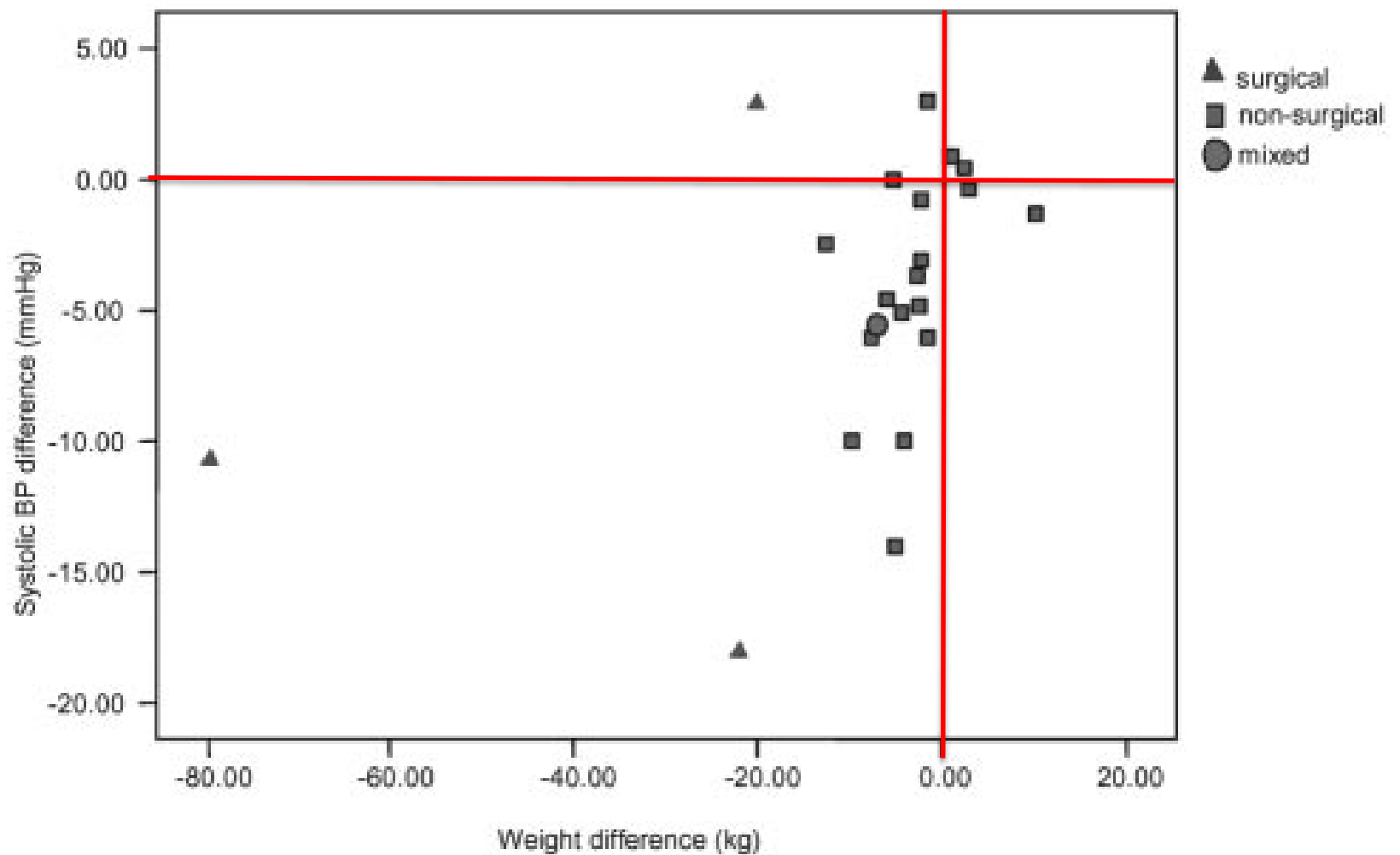
Numbers at risk:

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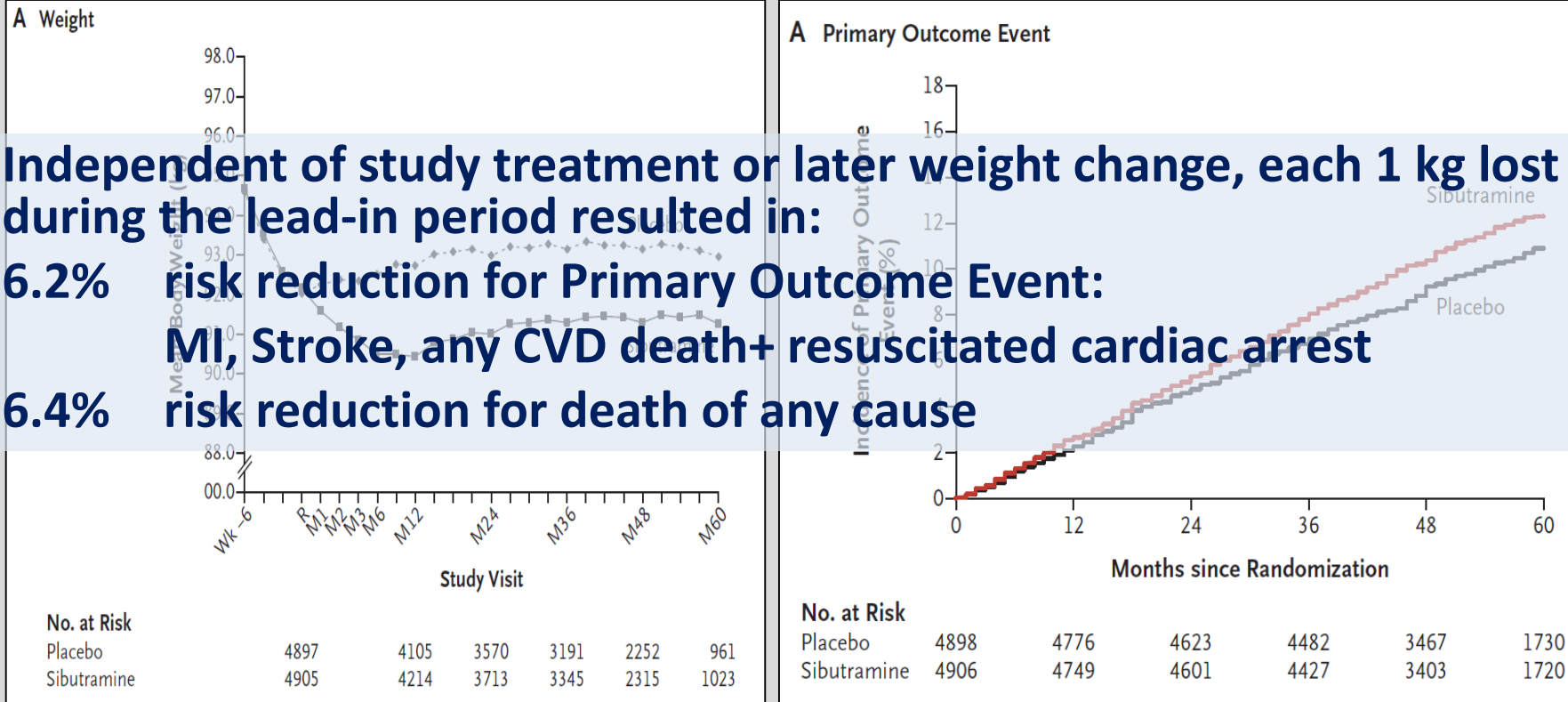


Numbers at risk:

Placebo	3293	3185	3021	2785	2501	2203
Pravastatin	3302	3223	3069	2838	2598	2295



# Weight loss and CVD outcomes: SCOUT trial

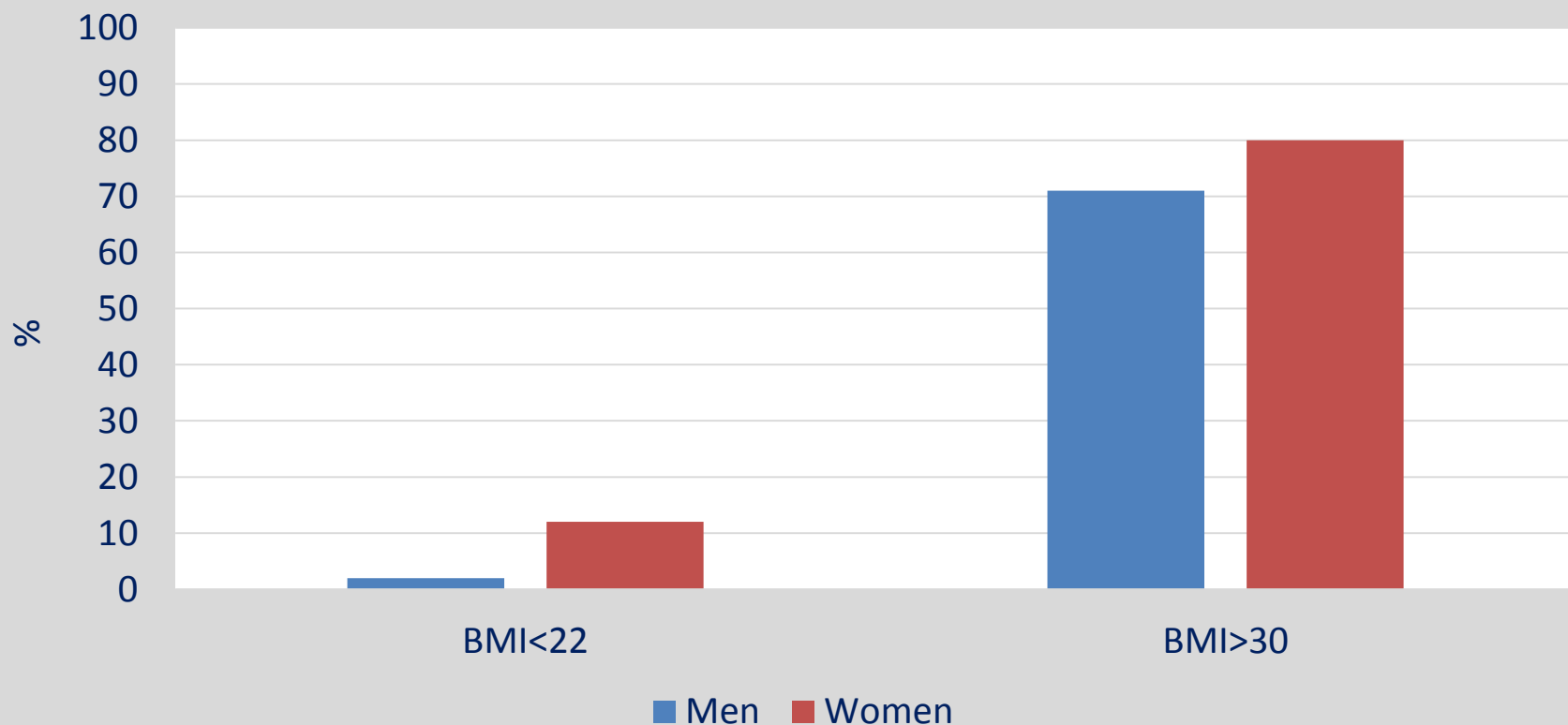


# **EFFECTIVE AND SCALABLE INTERVENTIONS**

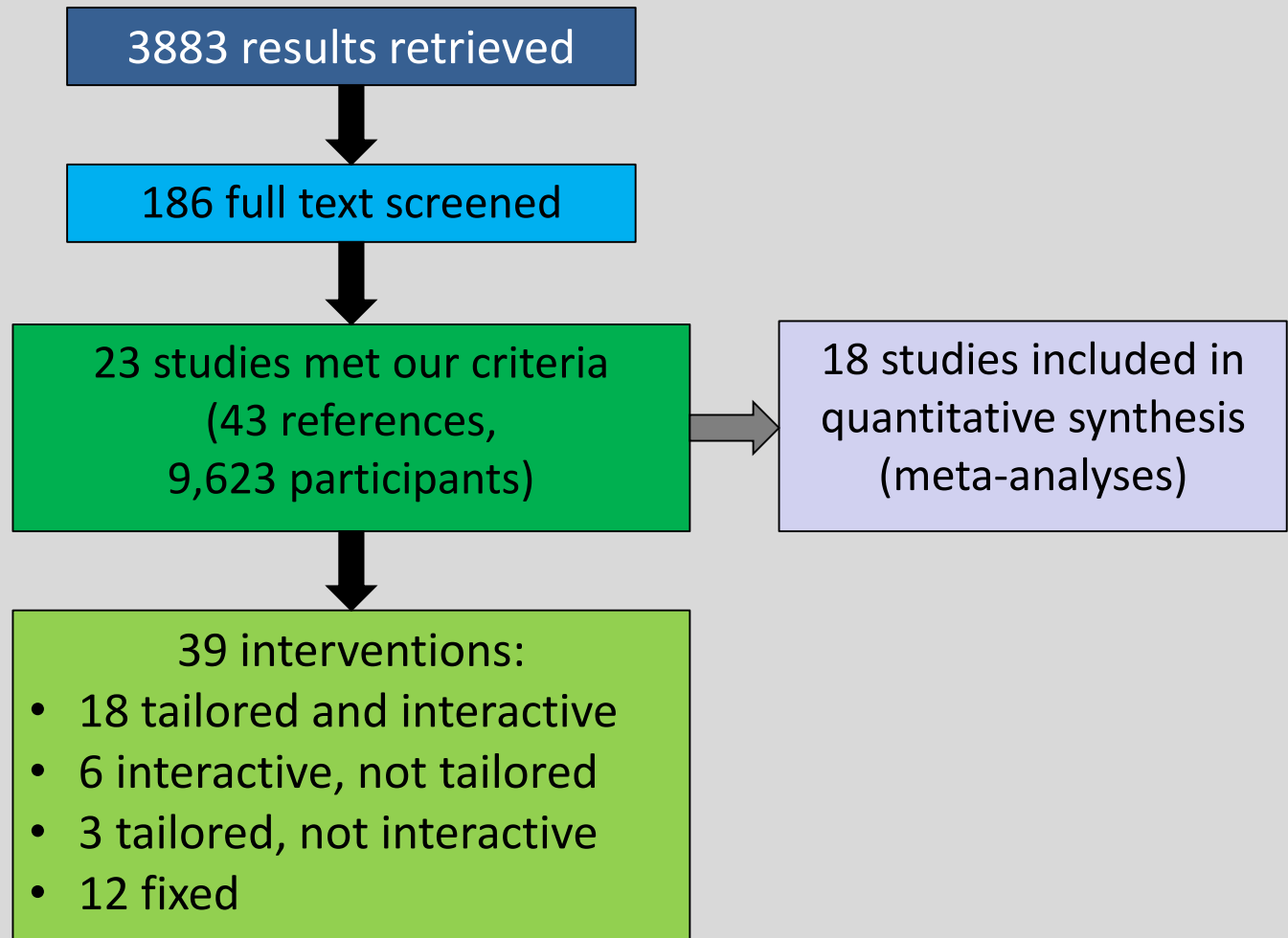
# SELF-HELP INTERVENTIONS

# What do we know about self-directed weight loss?

Percentage of men and women attempting to lose weight currently Health Survey for England 2012-13

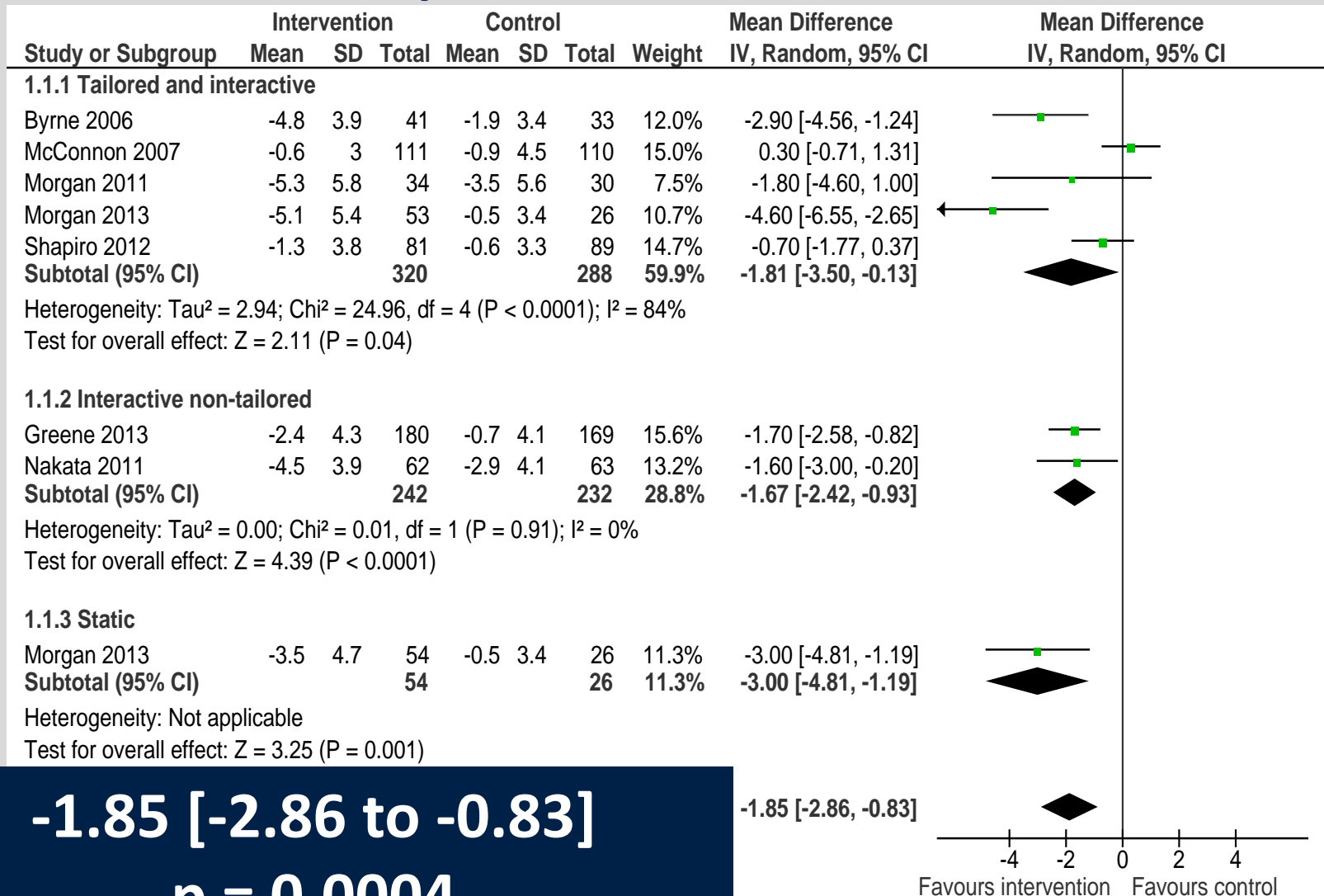


# Systematic review of self-help interventions

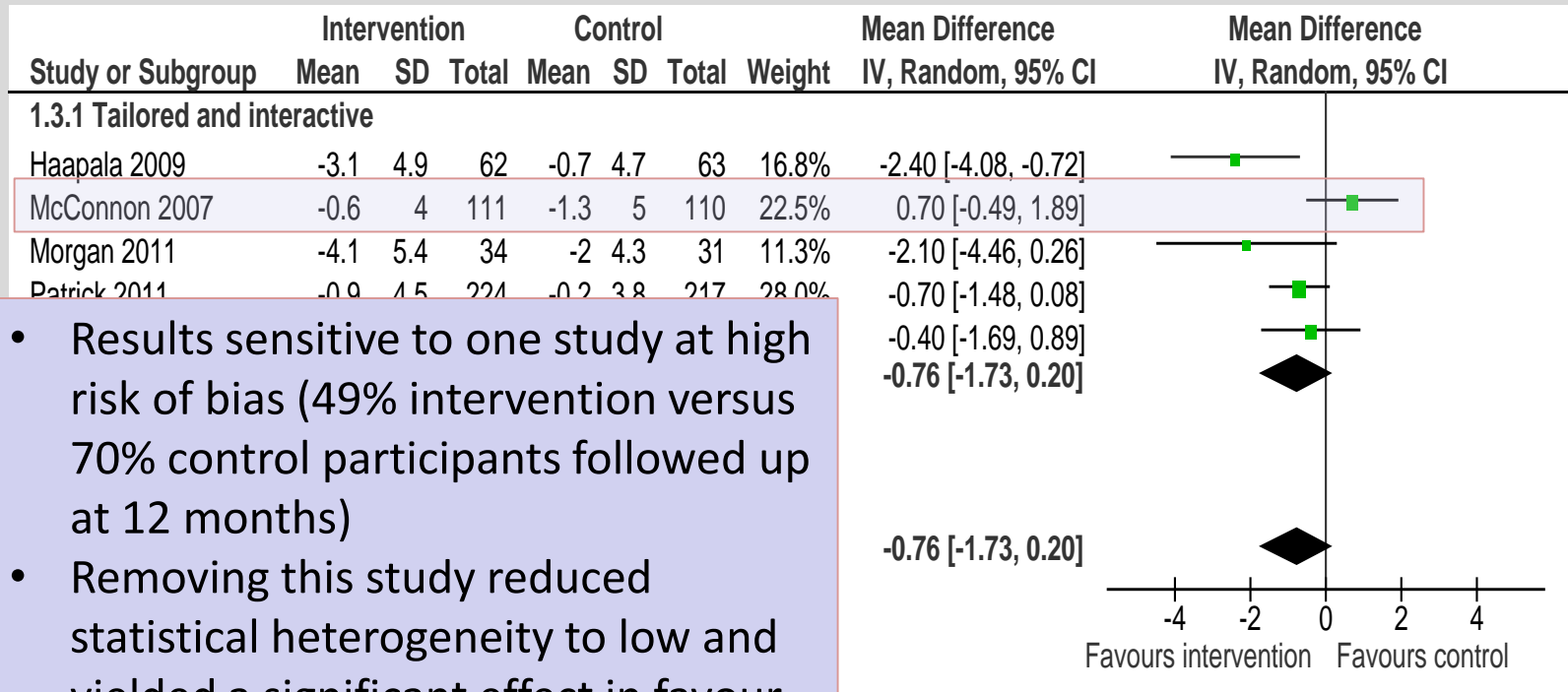




# Self-help interventions versus minimal controls (BOCF; 6 months)



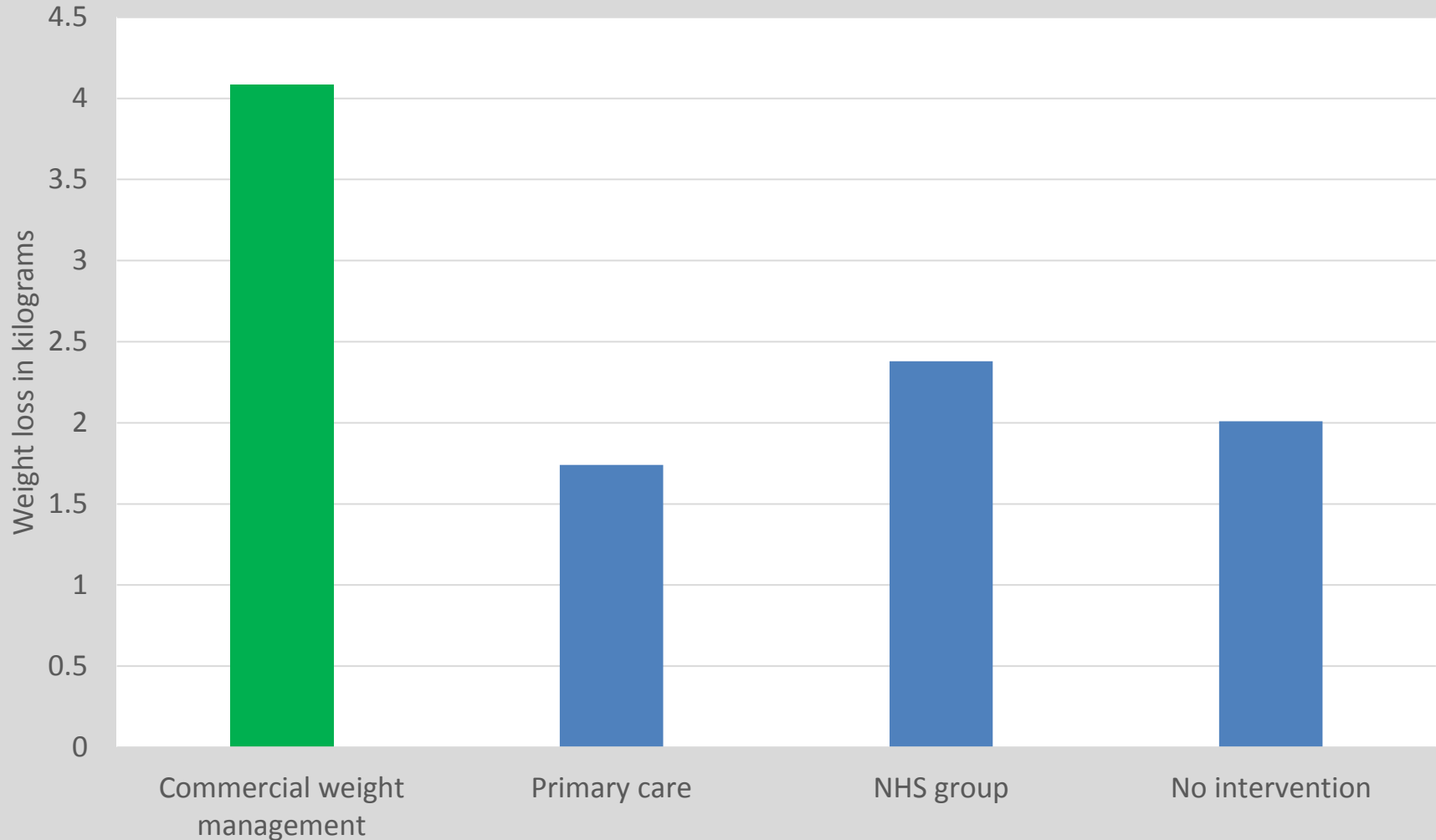
# Self-help interventions versus minimal controls (BOCF; 12 months)



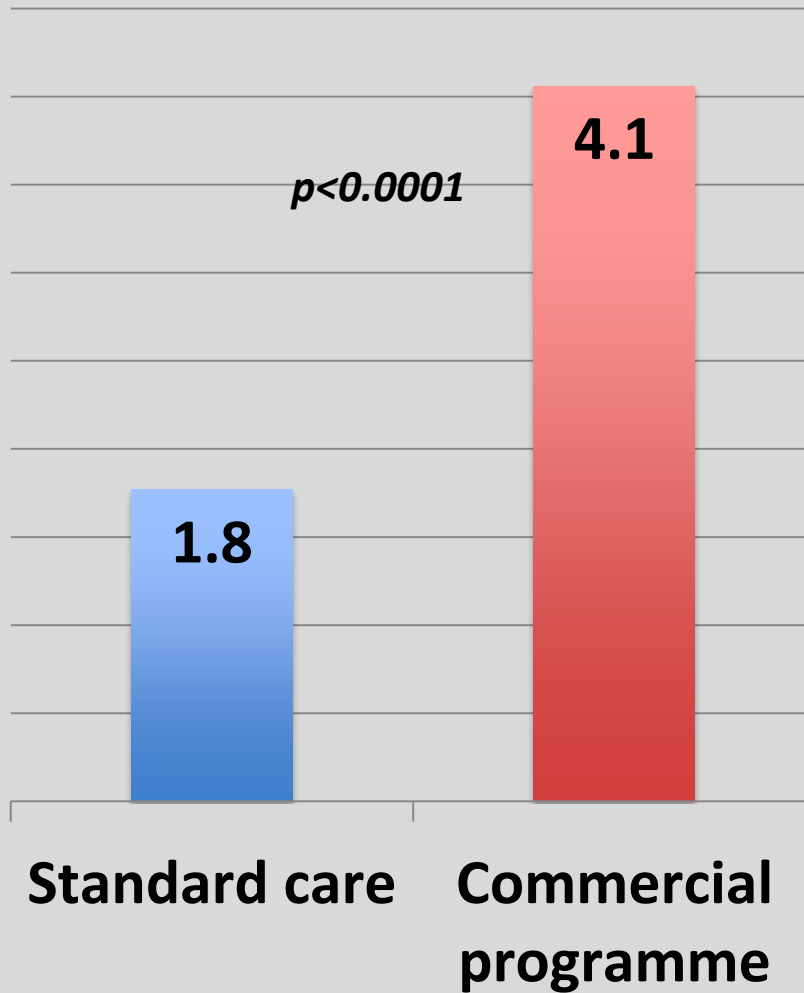
# IN-PERSON DELIVERED INTERVENTION

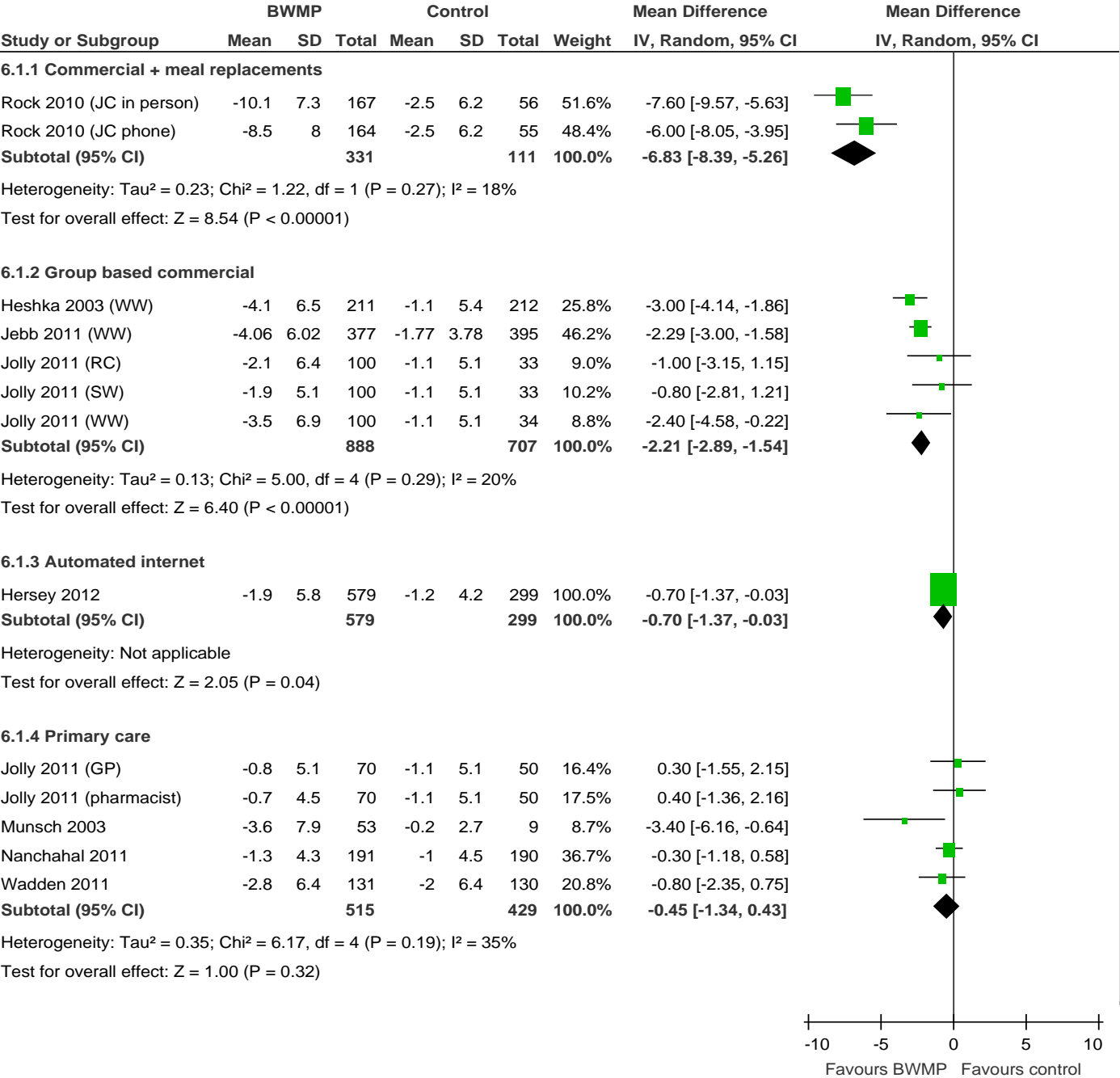
# Commercial weight loss programmes

Weight losses at programme end



## Weight loss at one year



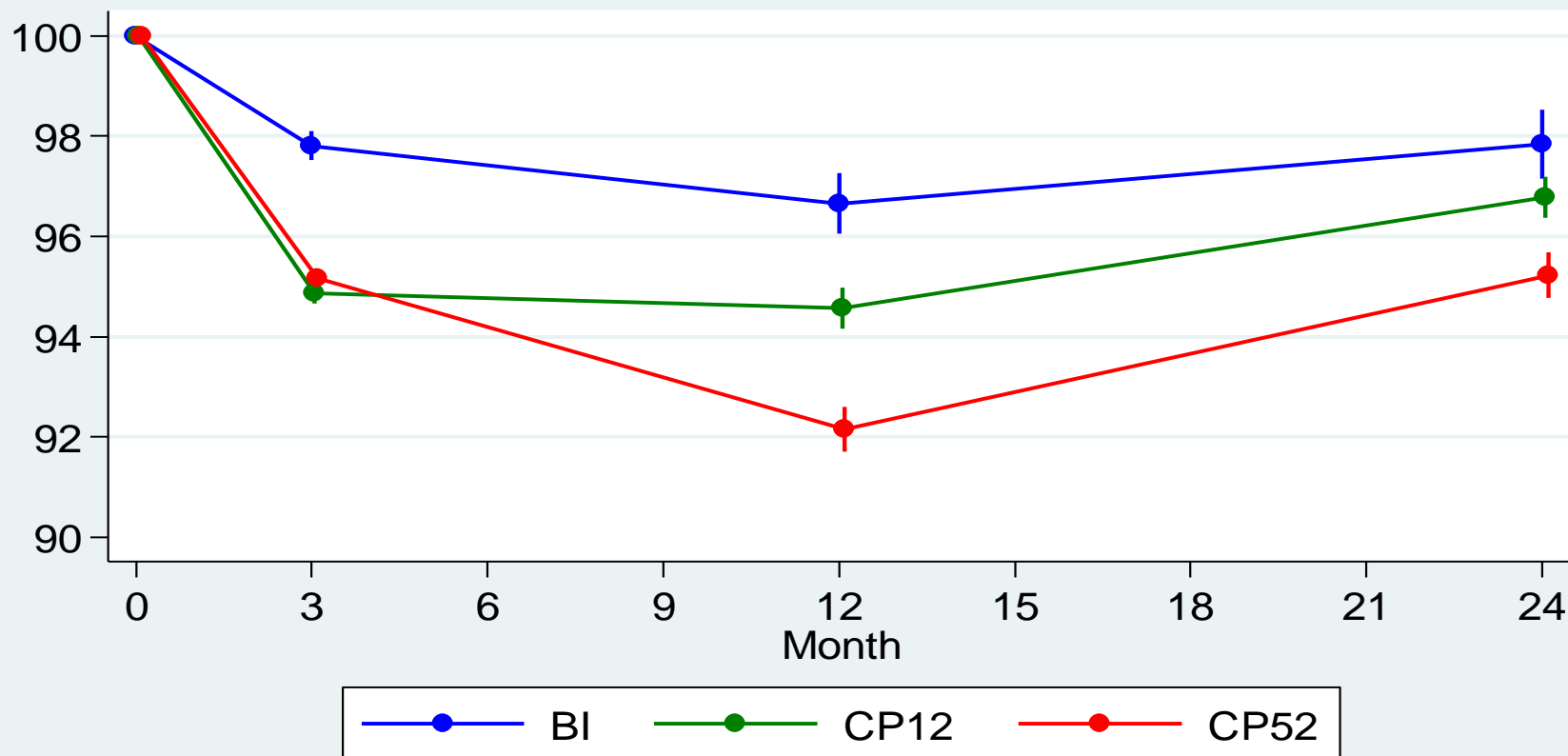


# Weight change over 2 years



## No. Participants

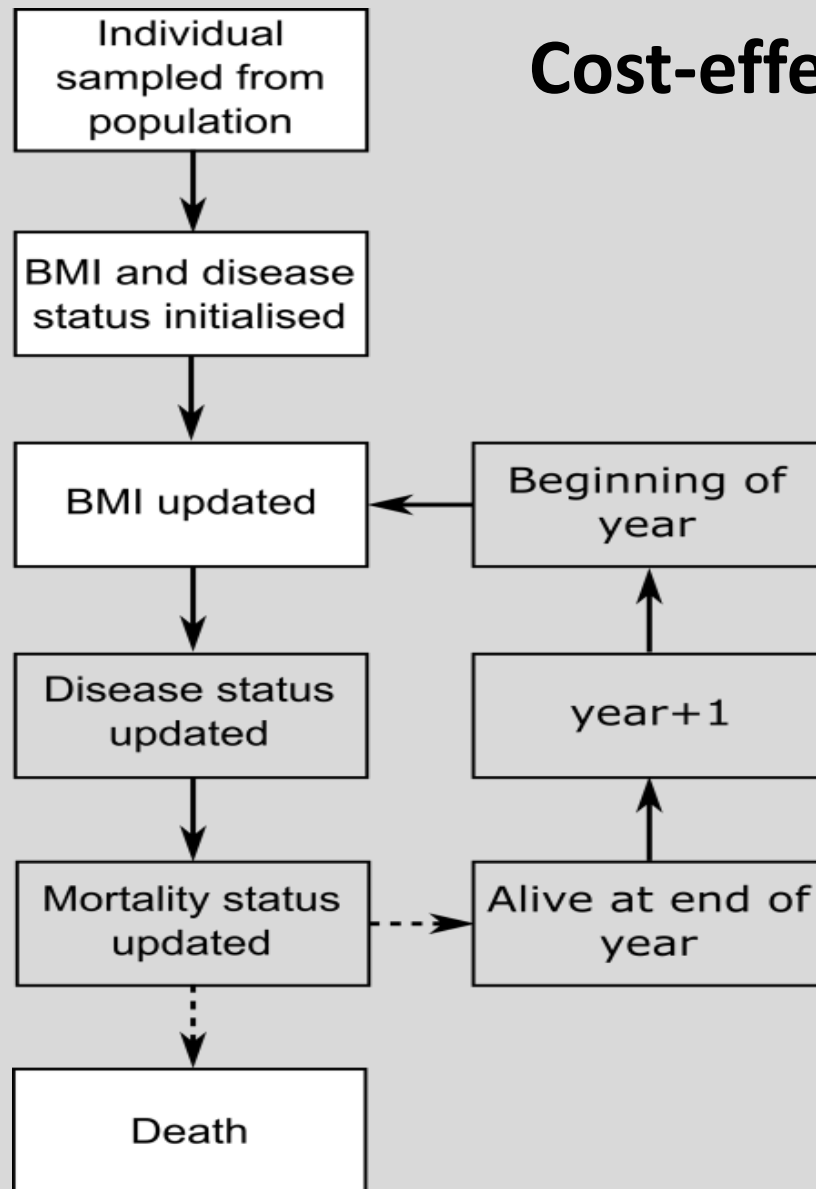
BI	211	144	124	133
CP12	528	405	339	355
CP52	528	455	360	368



Standard error bars shown around mean estimates

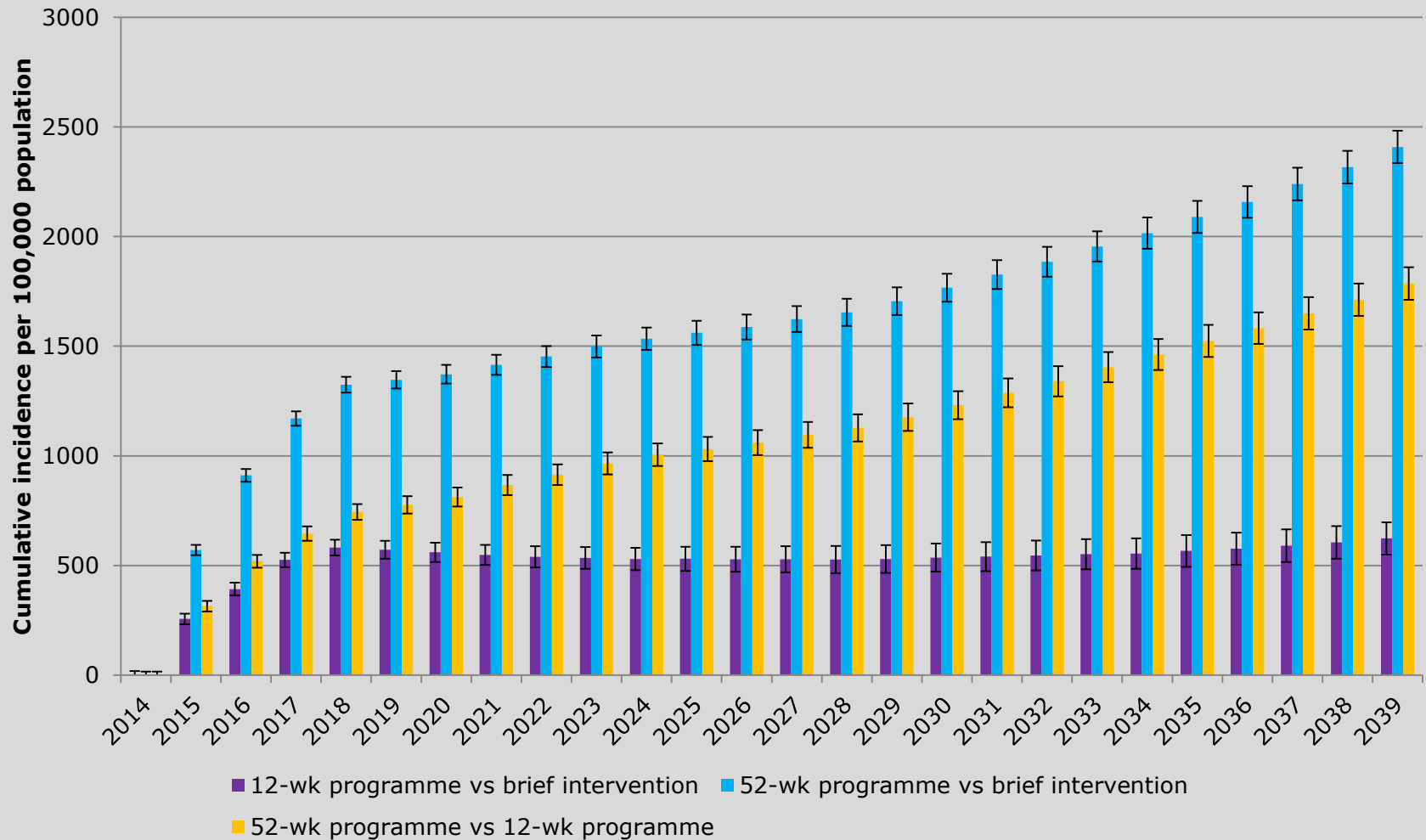
Ahern et al Lancet in press

# Cost-effectiveness





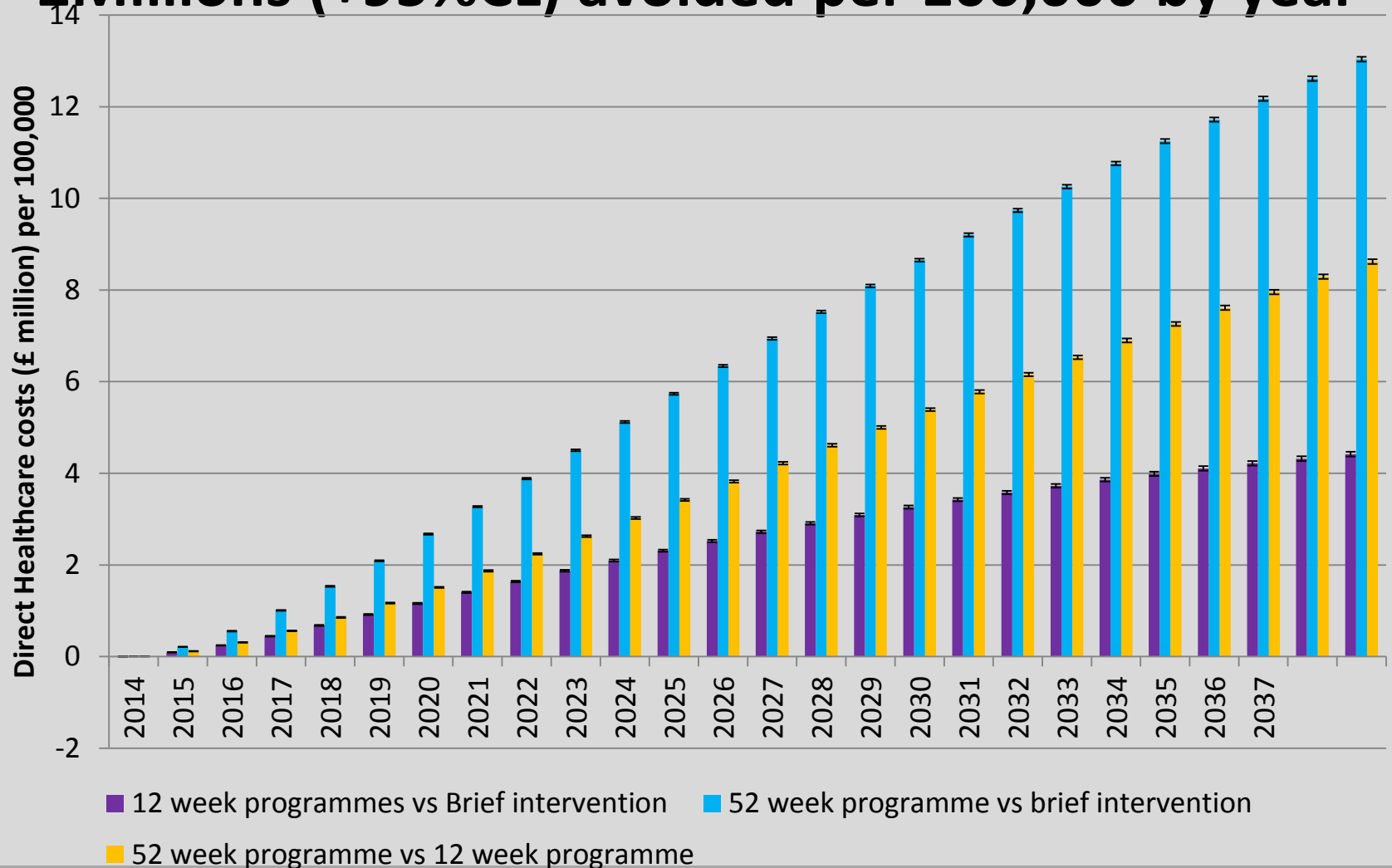
# Cumulative incidence of obesity-related disease



■ 12-wk programme vs brief intervention ■ 52-wk programme vs brief intervention

■ 52-wk programme vs 12-wk programme

# Cumulative total direct healthcare costs in £Millions (+95%CL) avoided per 100,000 by year



# Cost-effectiveness

- Taking intervention costs into account, the ICER for the 12-week programme was **dominant** in comparison to the brief intervention for the period 2015-2039, resulting in 643 additional QALYs per 100,000 individuals, at a cost-saving of £68,000 per 100,000 individuals.
- Taking into account intervention costs, the 52-week programme resulted in 1925 additional QALYs gained per 100,000 individuals at a cost of £4.8million per 100,000 individuals. The ICER (£2498/QALY) indicated that the 52-week programme was **cost-effective** compared to the brief intervention for the 2015 to 2039 period.

# EFFECTIVE DELIVERY MECHANISMS

# THE BWeL TRIAL

# The brief intervention

- Offer help
- Book them in
- Create accountability
- To create momentary motivation
- To capitalise on the moment
- To create lasting motivation

## Brief opportunistic smoking cessation interventions: a systematic review and meta-analysis to compare advice to quit and offer of assistance

Paul Aveyard<sup>1</sup>, Rachna Begh<sup>1</sup>, Amanda Parsons<sup>1</sup> & Robert West<sup>2</sup>

UK Centre for Tobacco Control Studies, Primary Care Clinical Sciences, University of Birmingham, Birmingham, UK<sup>1</sup> and Health Behaviour Research Centre, Department of Epidemiology and Public Health, UCL, London, UK<sup>2</sup>

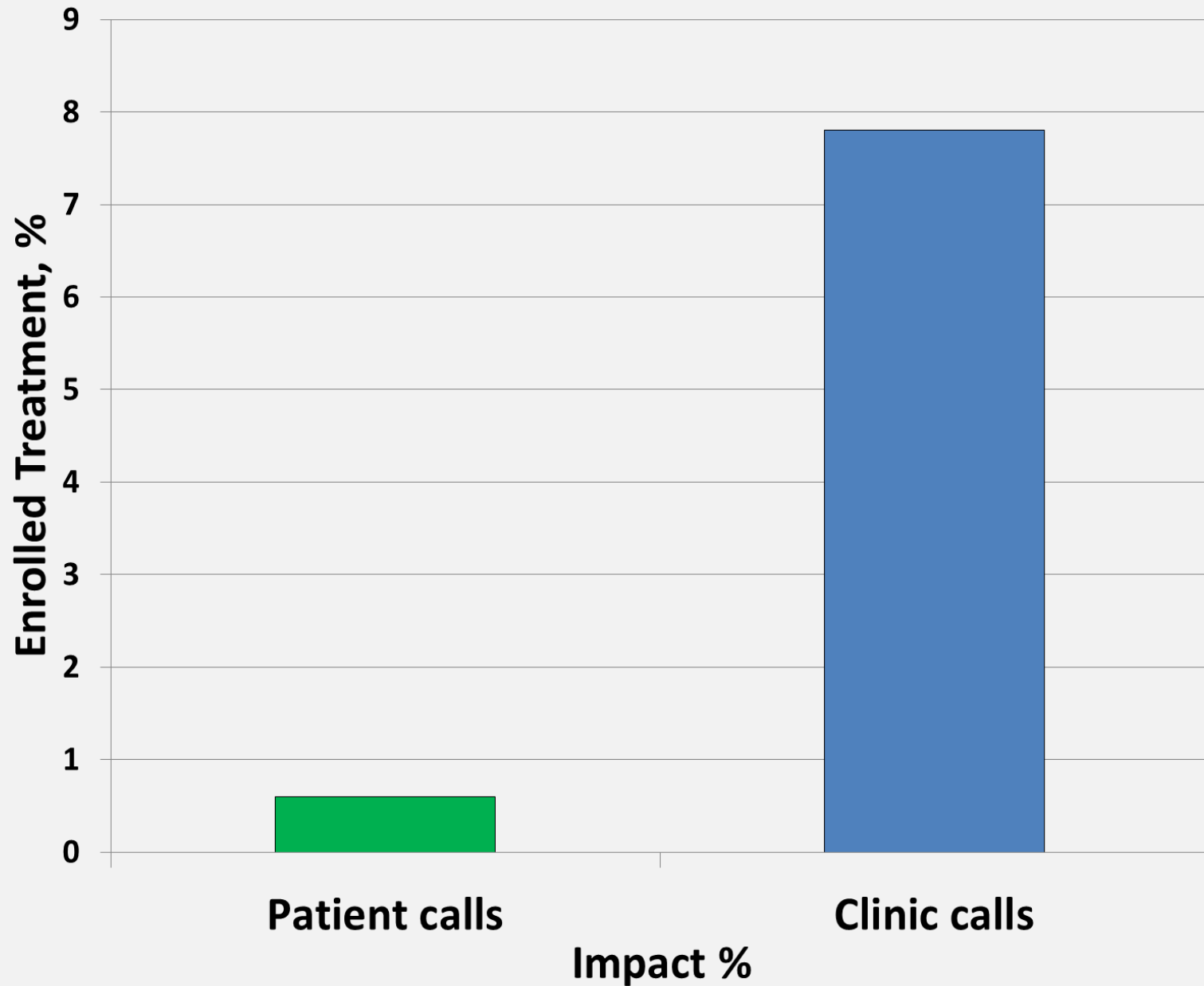
- Advice increases quit attempts by 24%
- Offering support on how to quit increases them by 68% to 117%
- Direct comparison offer help vs offer advice increases quit attempts by 39% to 69%

assistance generated more quit attempts than giving advice to quit on medical grounds (RR 1.69, 95% CI: 1.24–2.31 for behavioural support and 1.39, 95% CI: 1.25–1.54 for offering medication). There was evidence that medical advice increased the success of quit attempts and inconclusive evidence that offering assistance increased their success. **Conclusions** Physicians may be more effective in promoting attempts to stop smoking by offering assistance to all smokers than by advising smokers to quit and offering assistance only to those who express an interest in doing so.

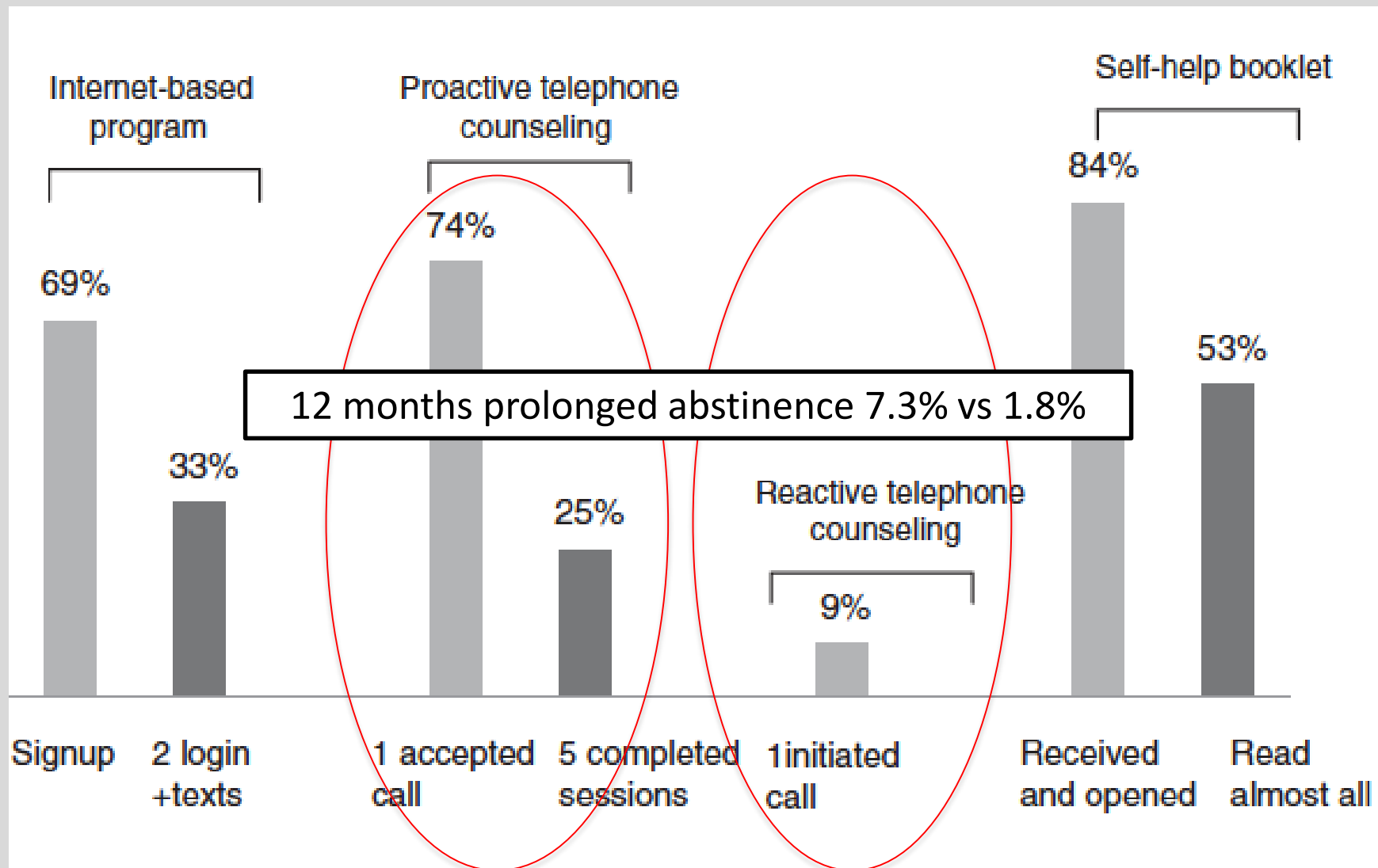
**Keywords** Medical care, opportunistic intervention, smoking cessation.

*Correspondence to:* Paul Aveyard, UK Centre for Tobacco Control Studies, Primary Care Clinical Sciences, University of Birmingham, Birmingham B15 2TT, UK. E-mail: p.n.aveyard@bham.ac.uk

Submitted 3 June 2011; initial review completed 3 August 2011; final version accepted 12 December 2011



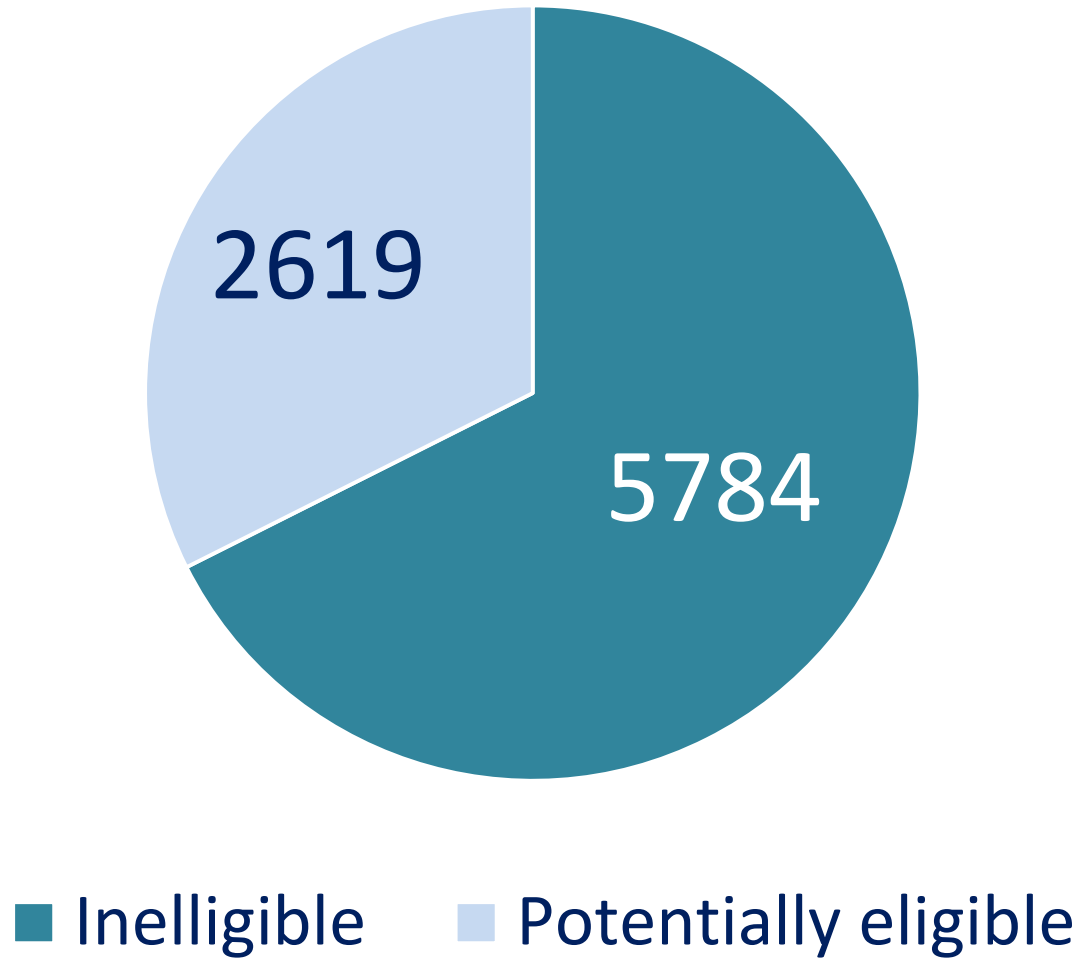




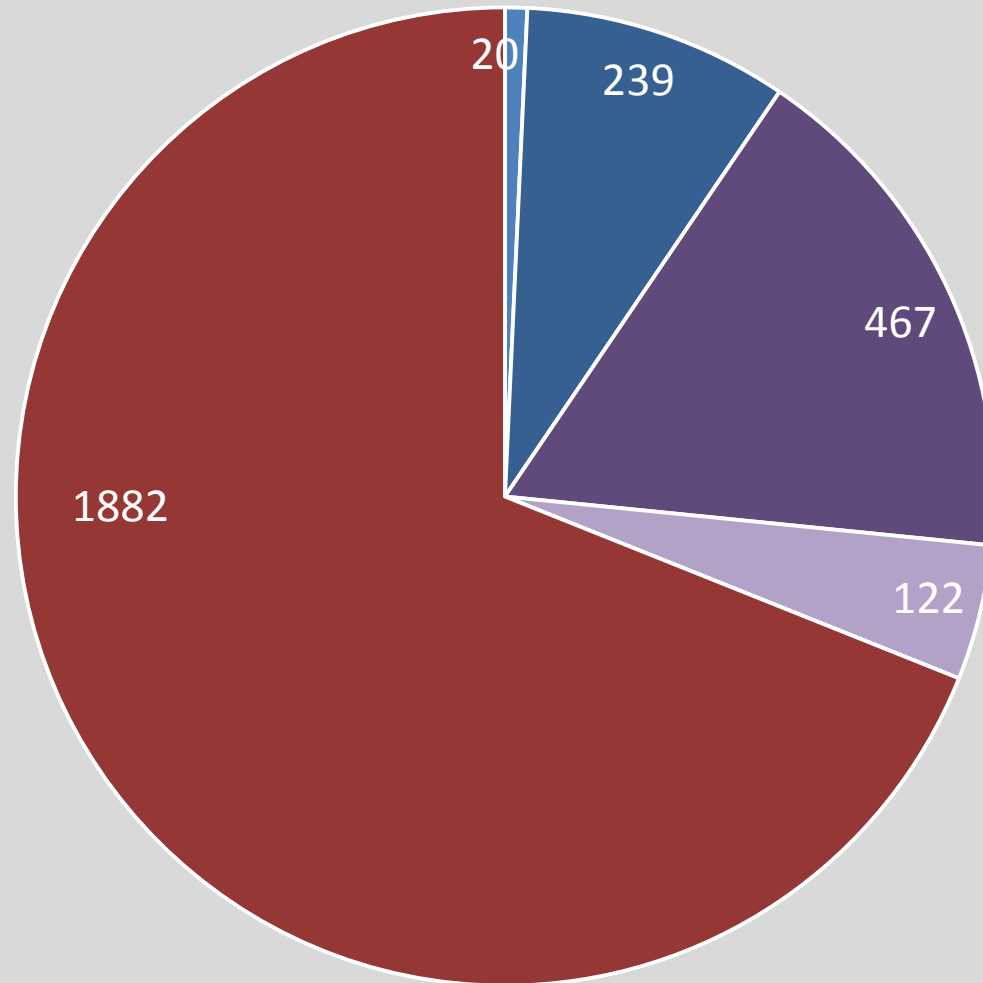
# THE CONSORT FLOW DIAGRAM



# Screened and potentially eligible

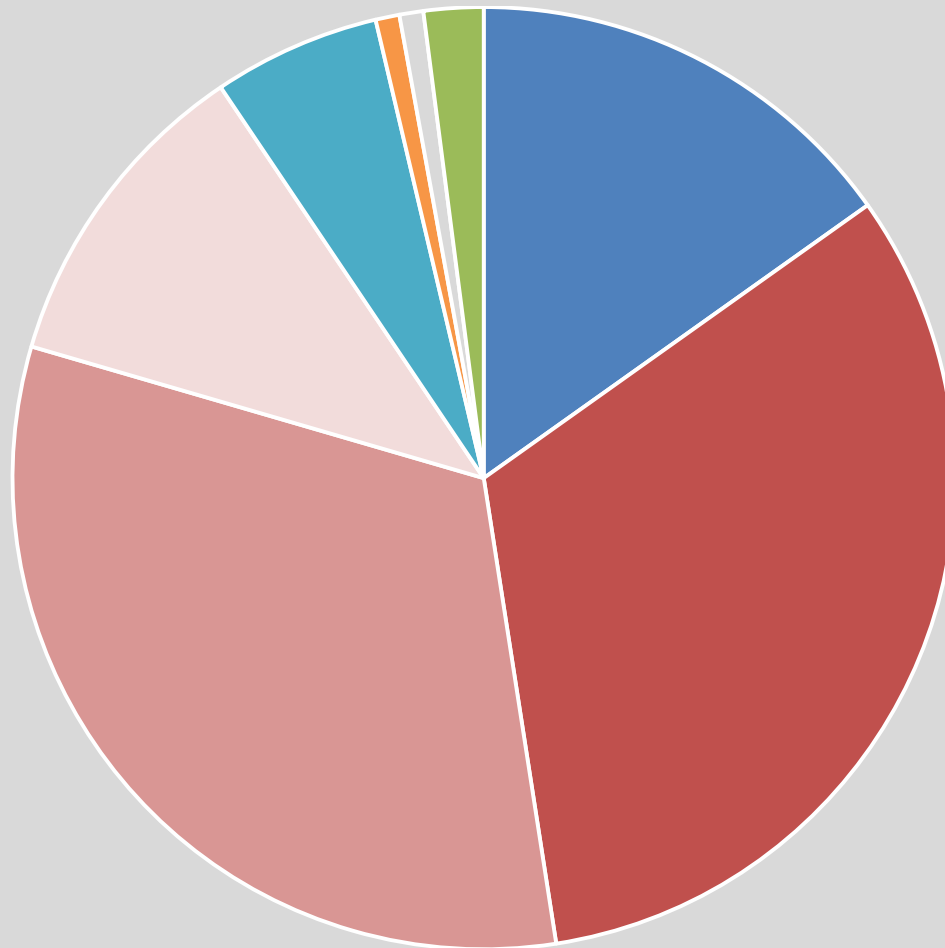


# What happened to the potentially eligible



■ Not willing - No anon data ■ Not willing + Anon data ■ Not Eligible ■ GP WD ■ Eligible & Enrolled

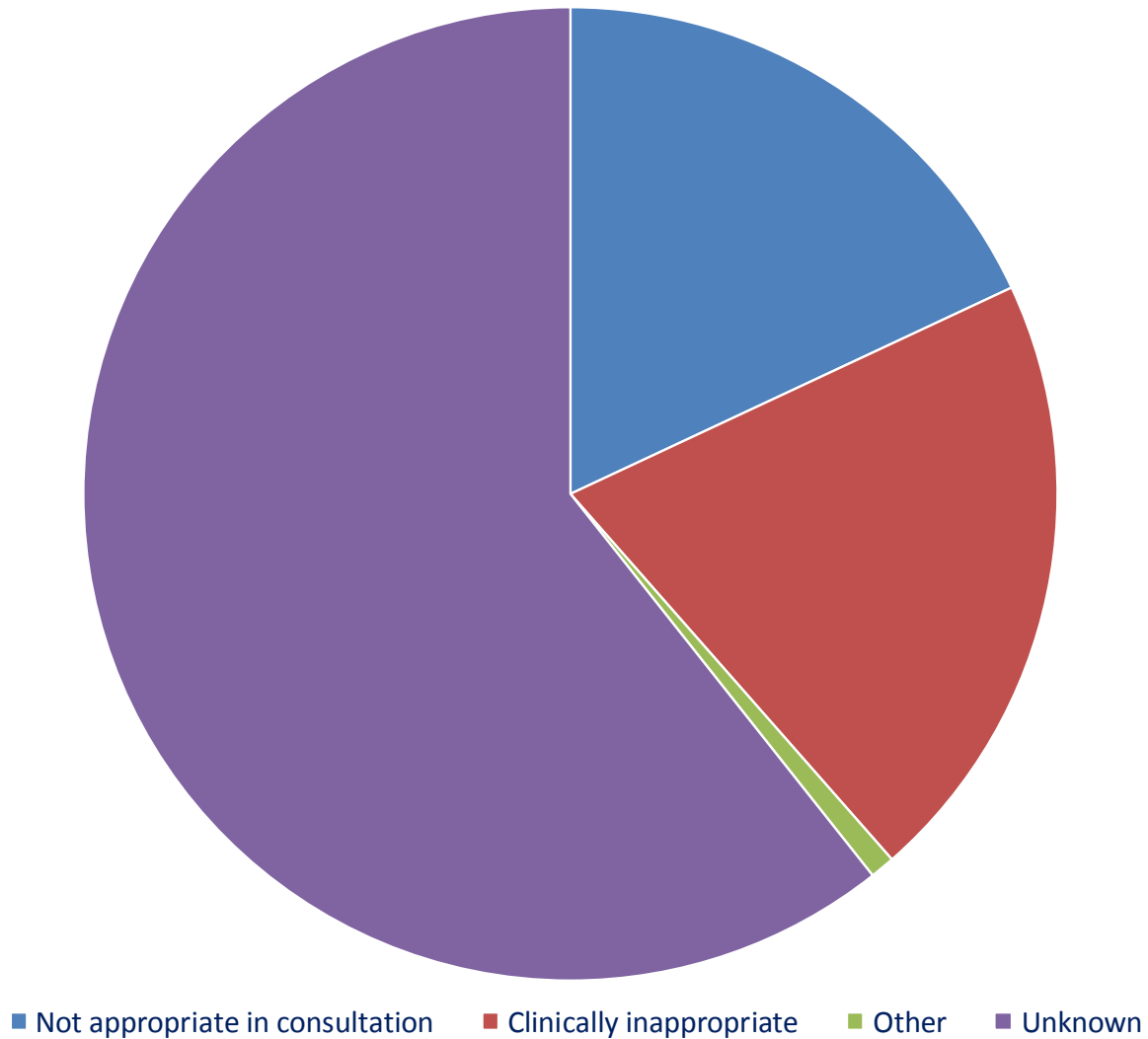
# Reasons for non-eligibility



- Pregnant
- Weight loss programme within 3 months
- Poor English

- Current weight loss programme
- GP visit for weight
- BMI<30

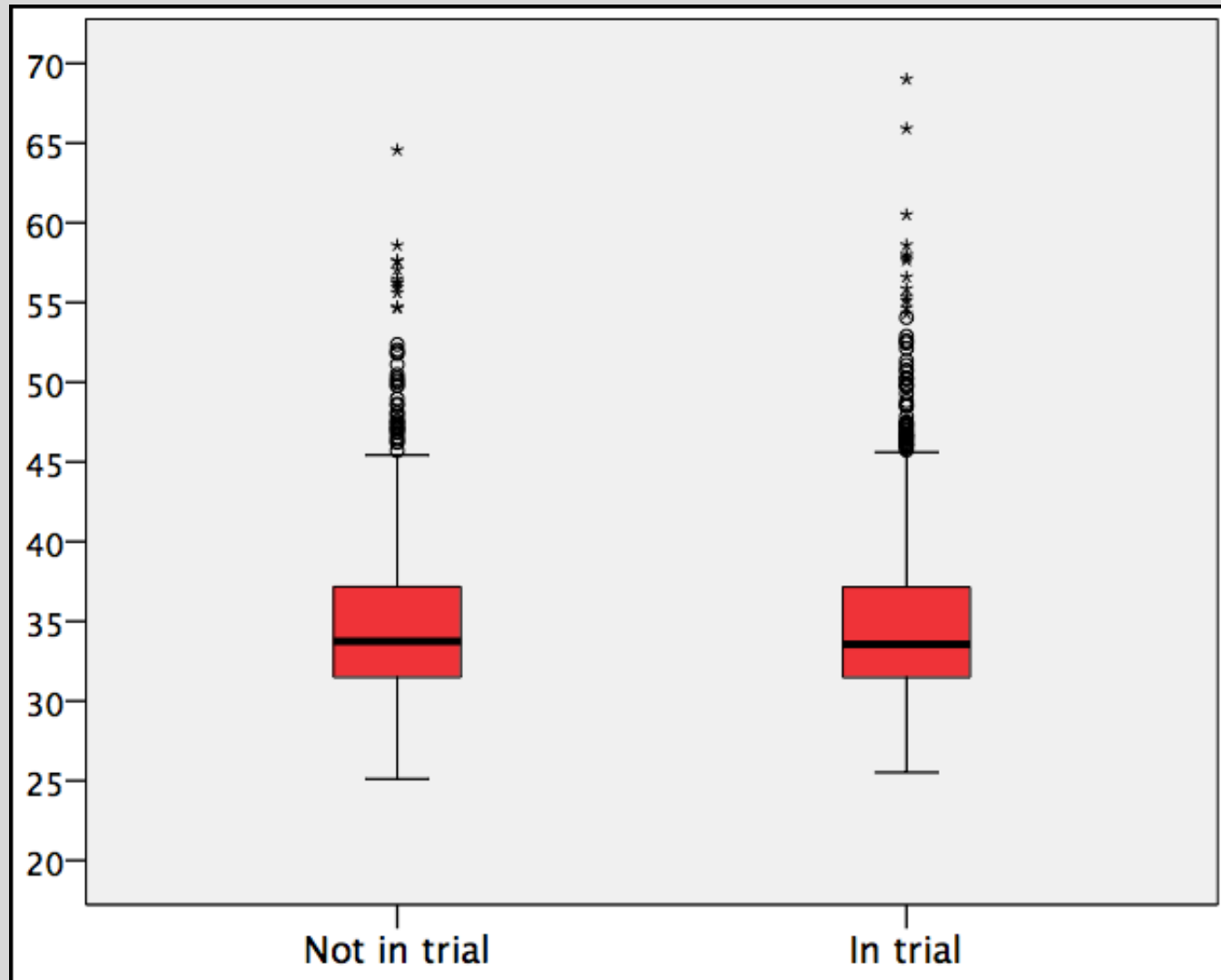
# Reasons for GP exclusion



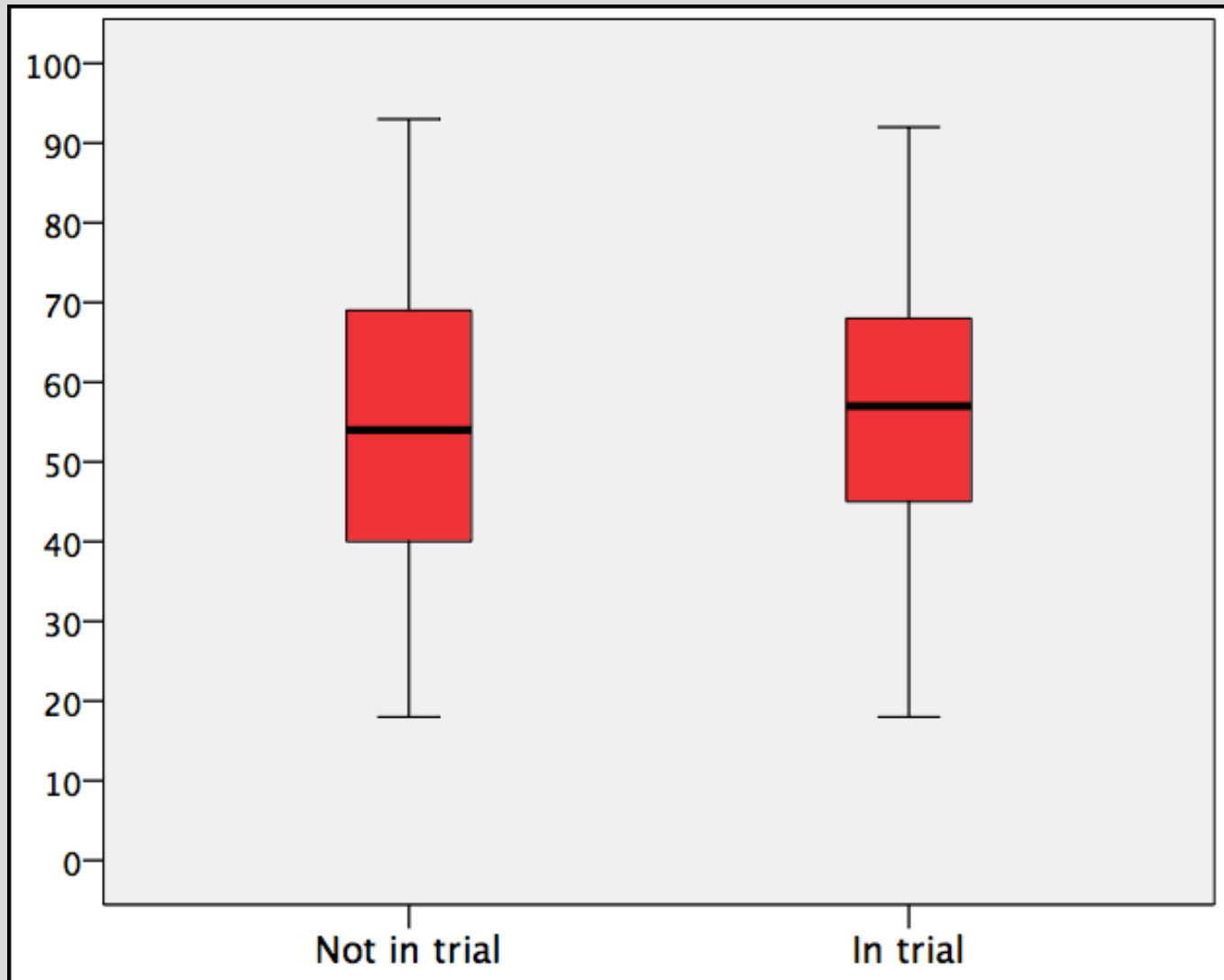
# **BASELINE CHARACTERISTICS**



# BMI of participants

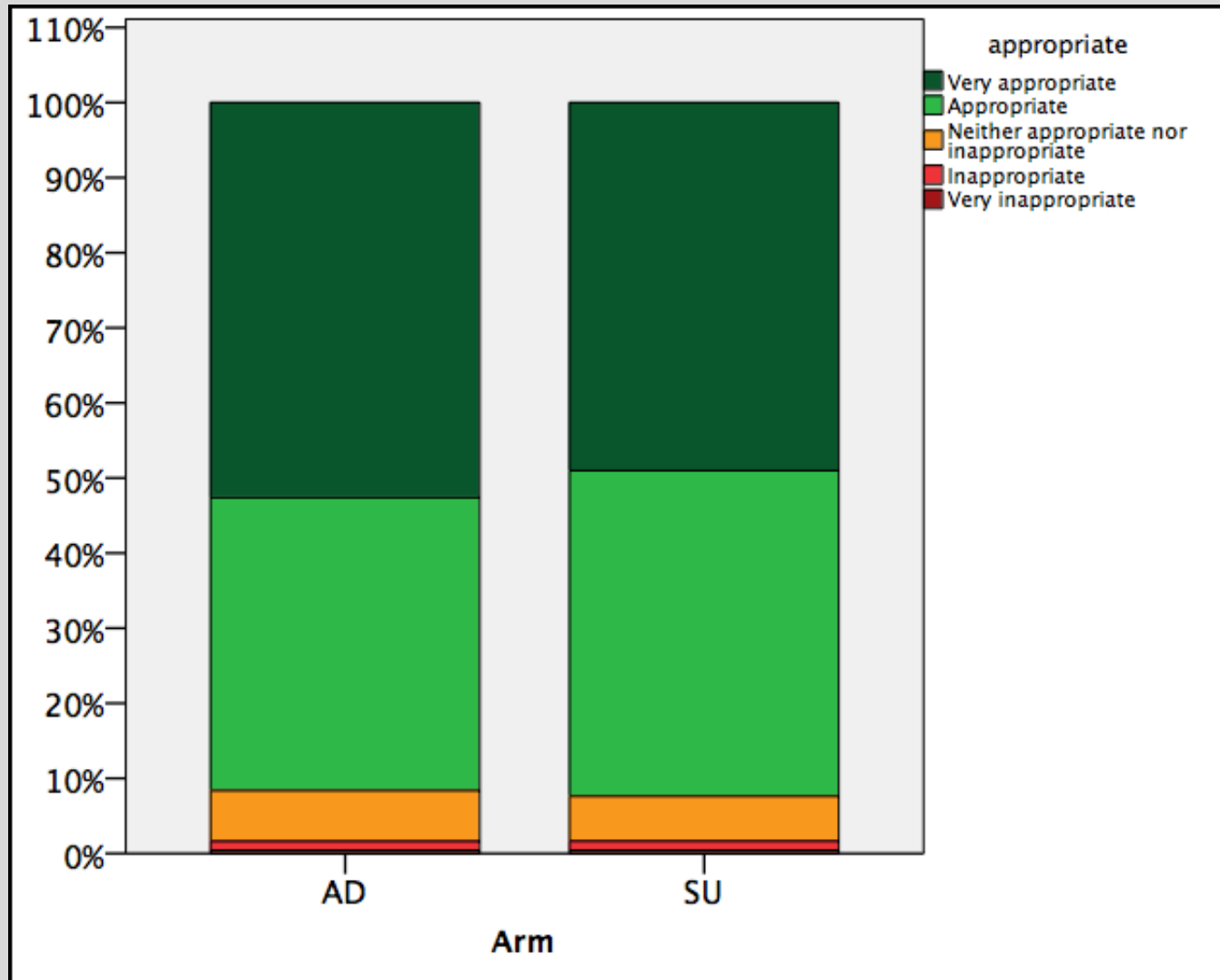


# Age of participants

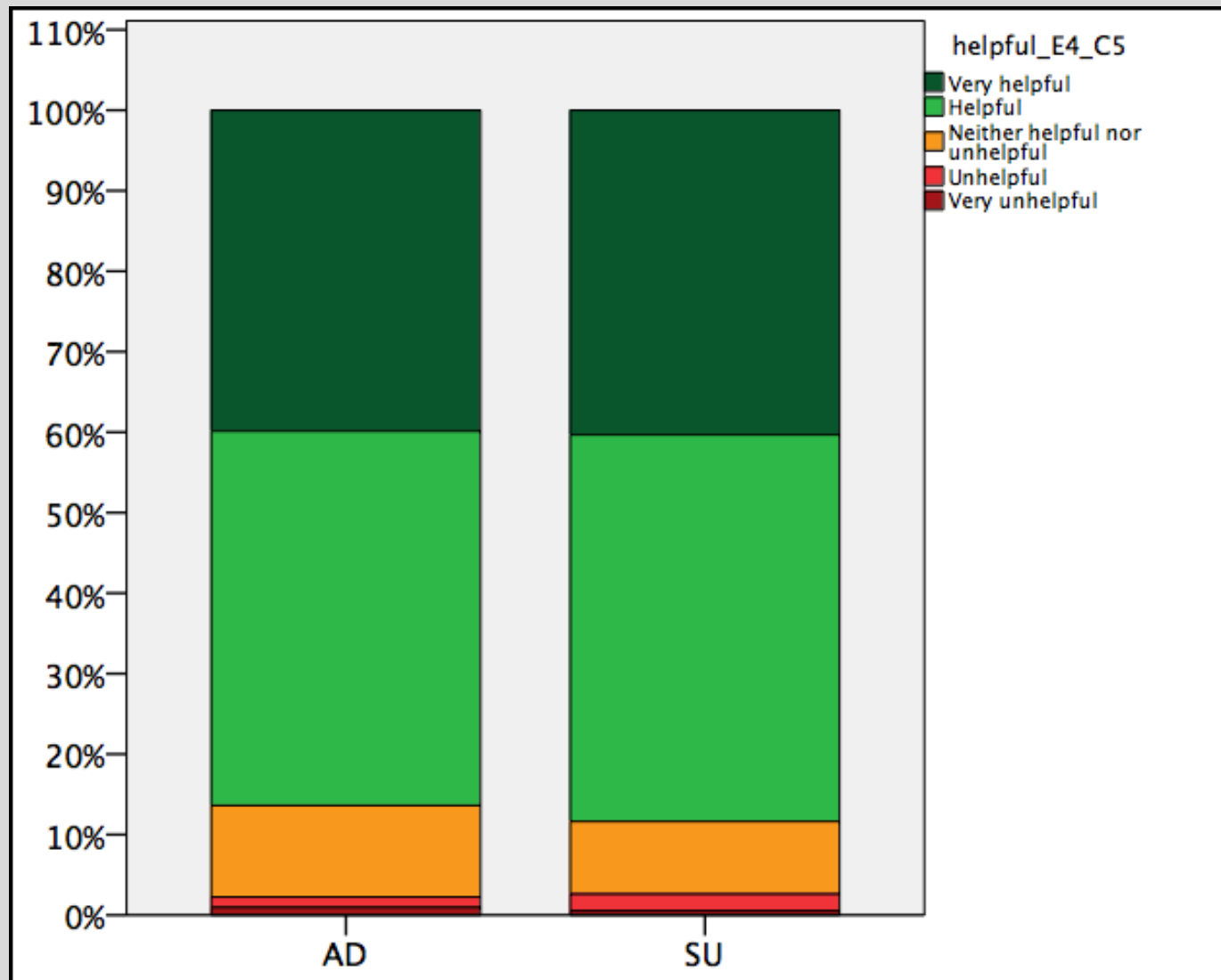


# HOW PEOPLE FELT

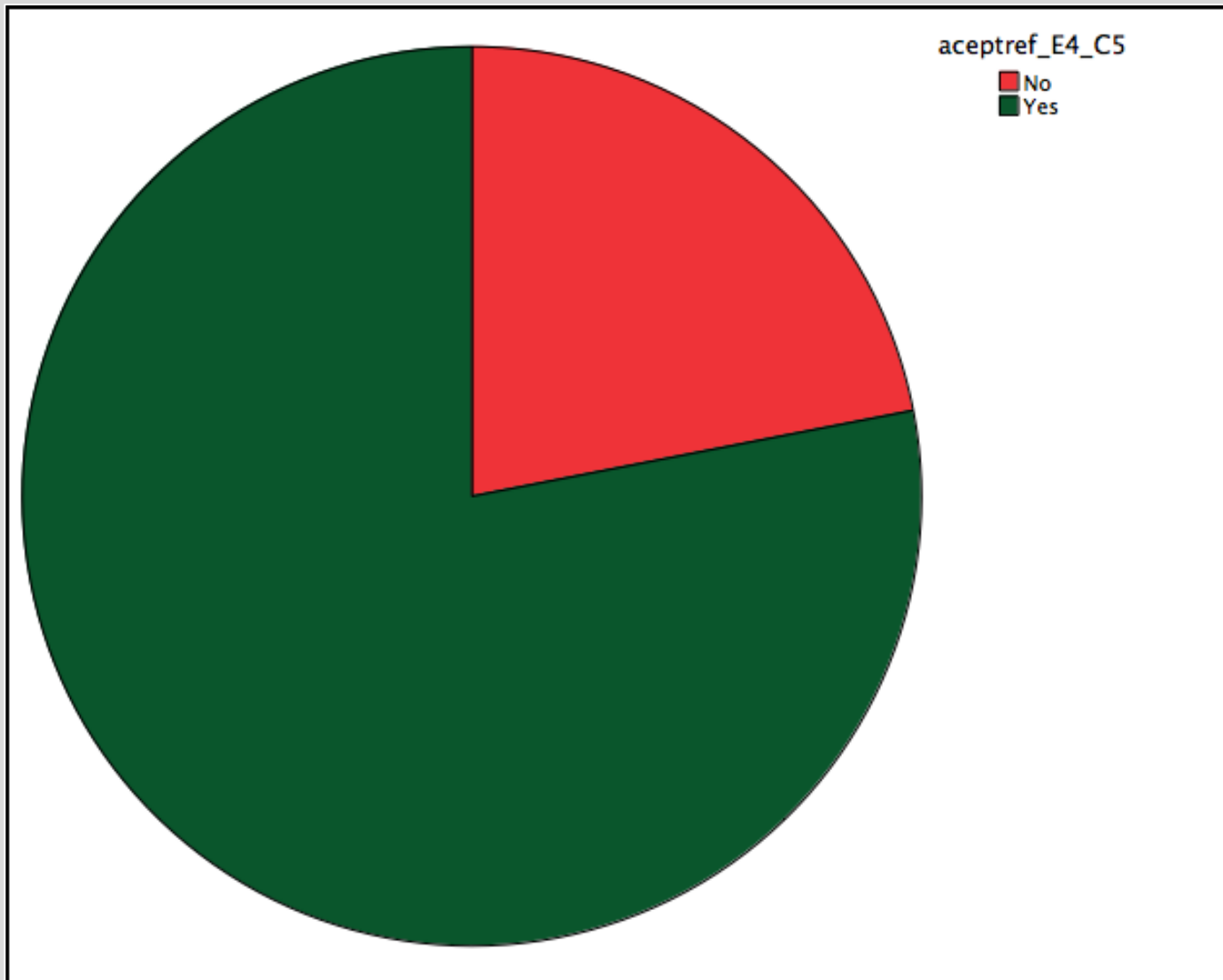
# Ratings of appropriateness by trial arm



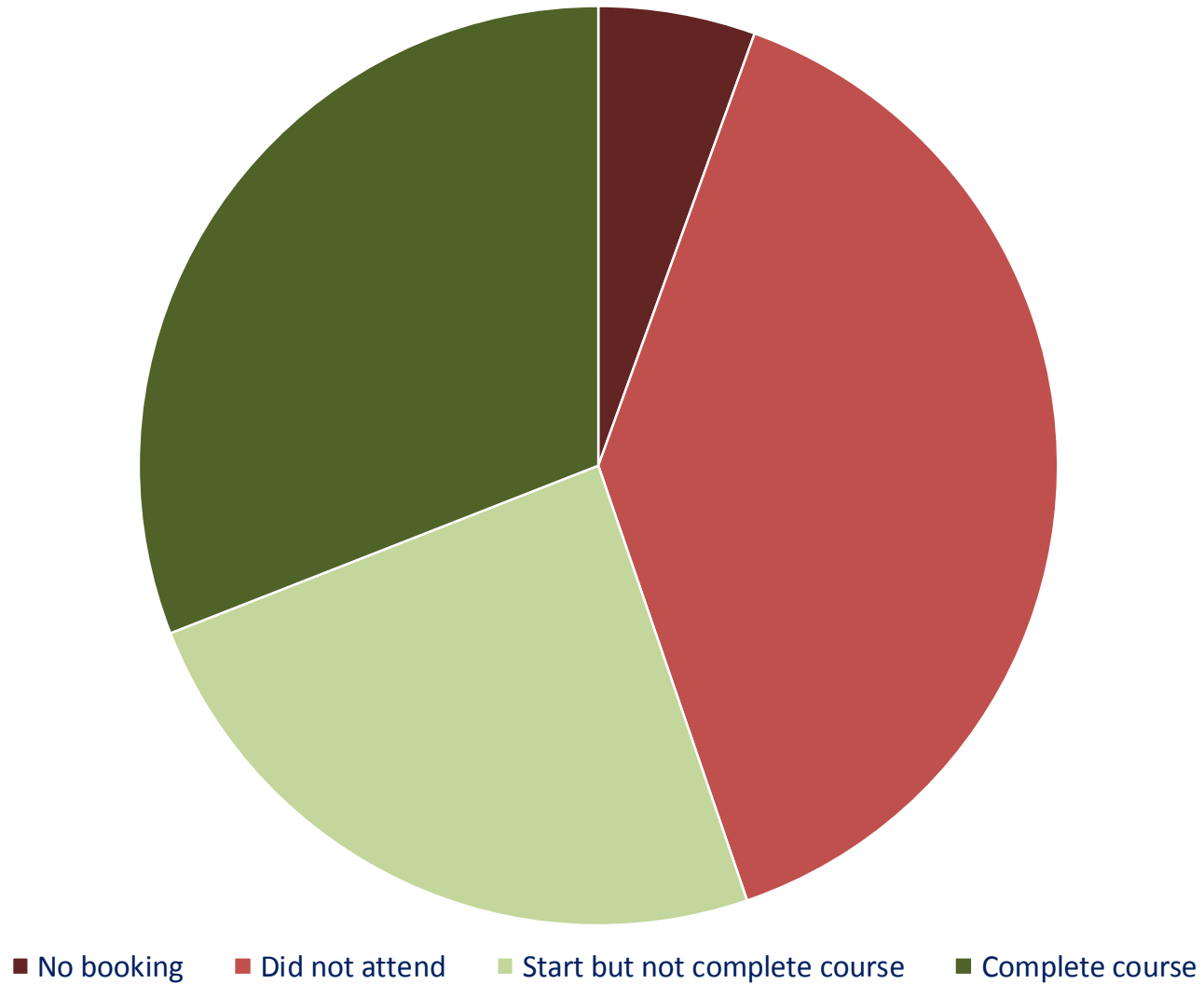
# Ratings of helpfulness by trial arm



# **ACCEPTING HELP TO LOSE WEIGHT AND THE IMPACT ON WEIGHT AT 1 YEAR**

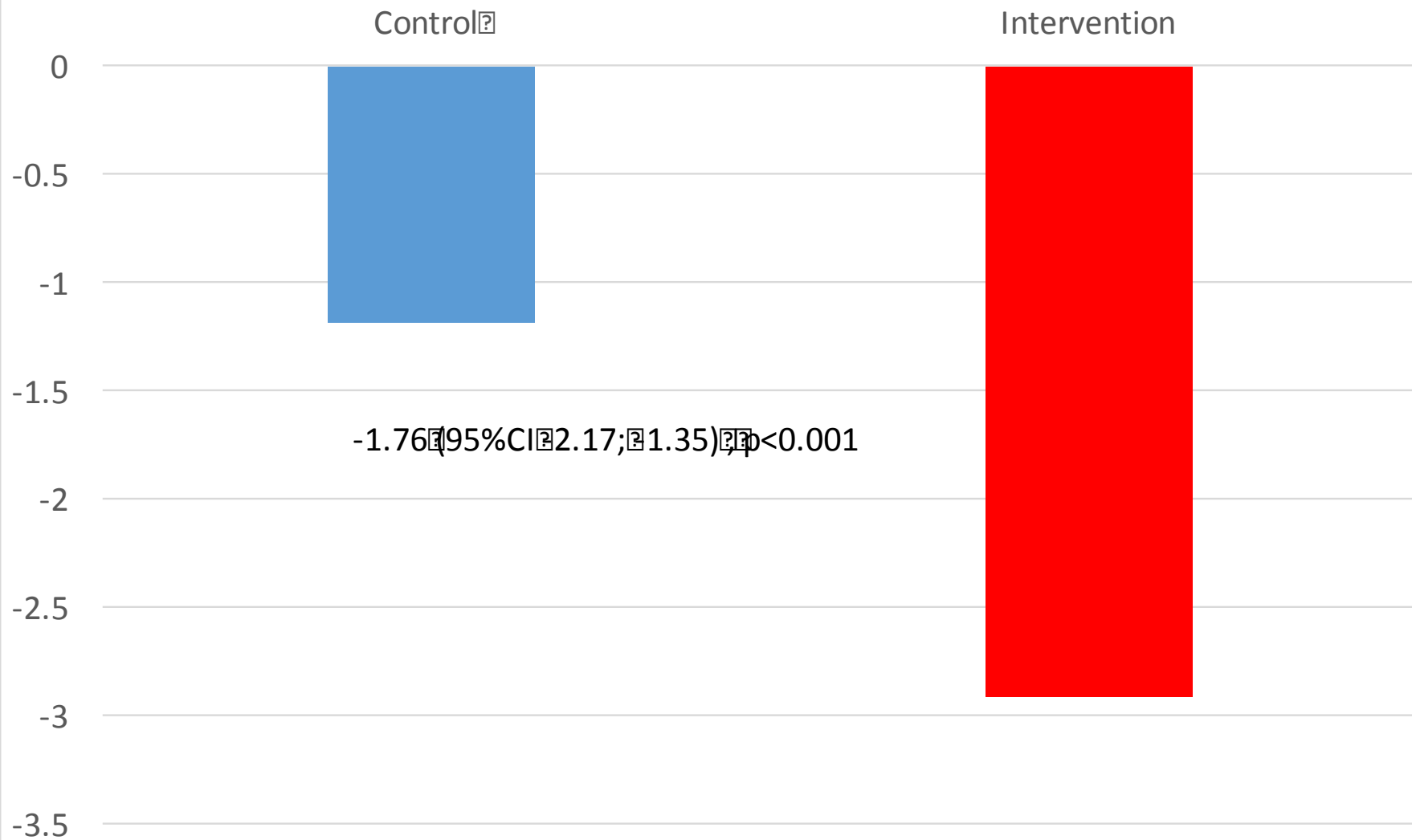


# Of those who accepted referral...





# Weight change at 31 months



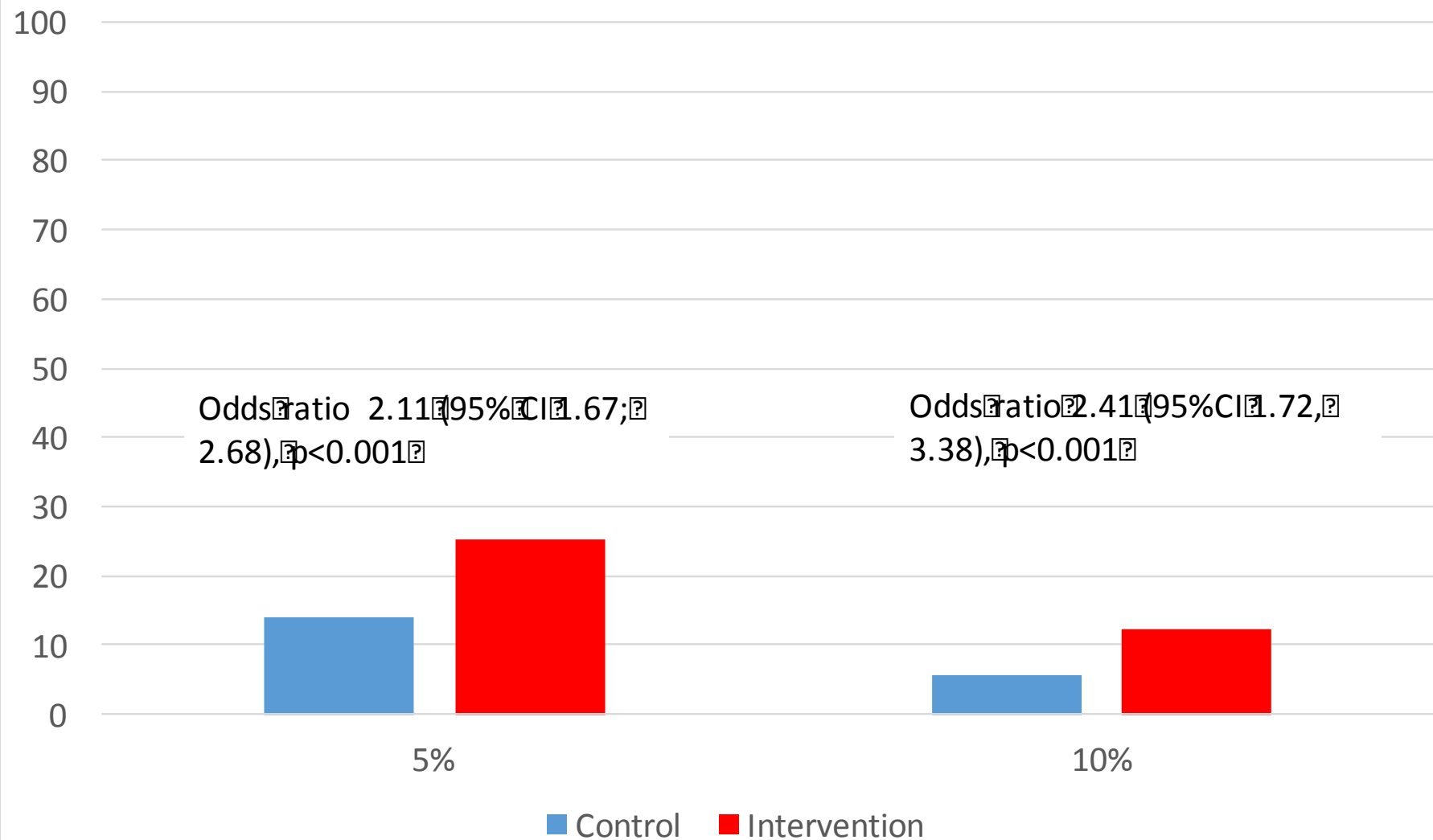
# Weight change at 12 months

Control

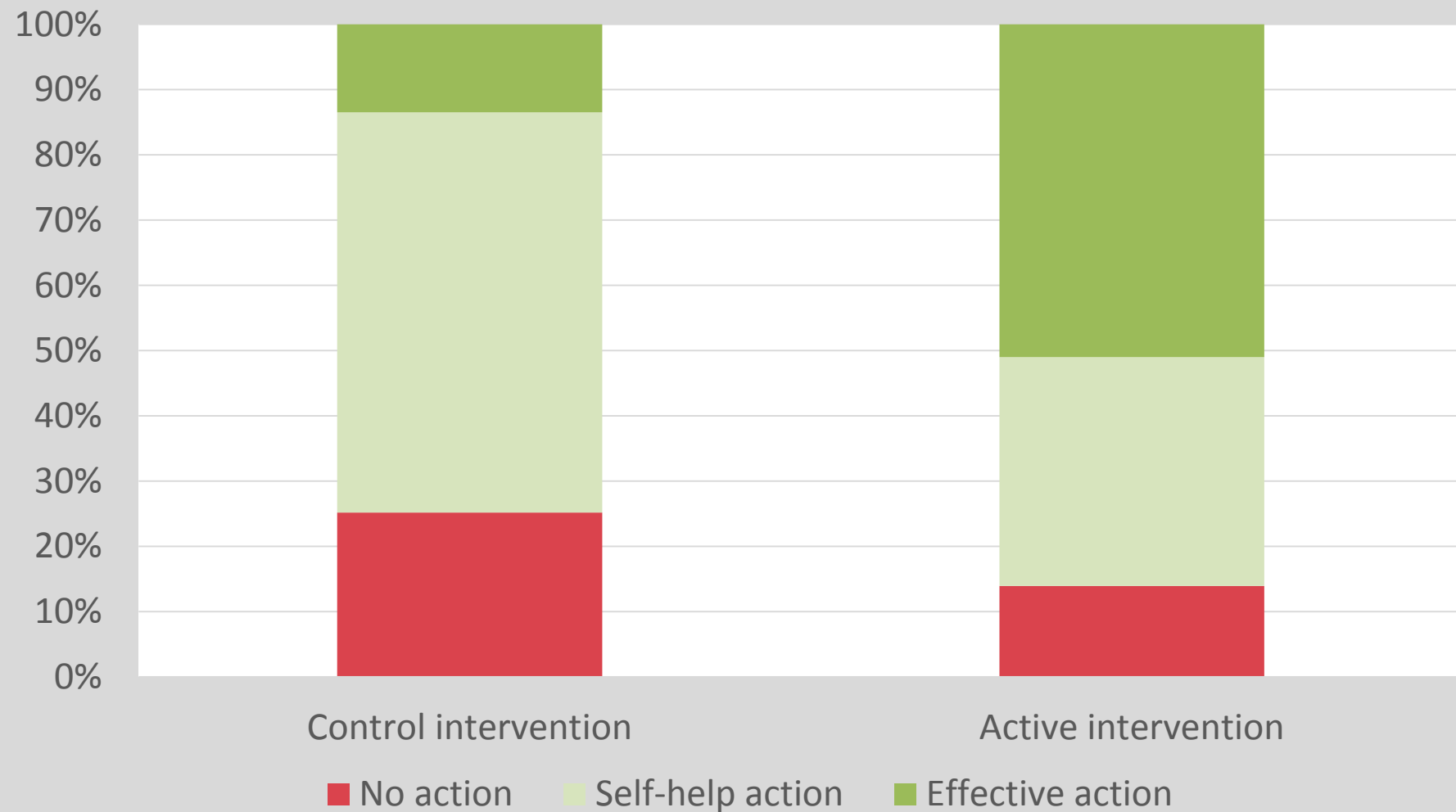
Intervention

-1.43 (95% CI -1.97; -0.89)  $p < 0.001$

# Percentage losing 5% and 10% of baseline weight at 12 months



## Percentage of people taking action and type of action taken by 12 months in the two arms of the trial



# **PUTTING IT ALL TOGETHER: THE INTERVENTIONS + THE DELIVERY MECHANISM**

t=2015

UK pop data

BMI,1

BMI,1

BMI,1

t=2016+n

BMI,2,0  
(same percent  
ile as  
BMI,1,0)

BMI,2,0  
(same percent  
ile as  
BMI,1,0)

BMI,2,0  
(same percent  
ile as  
BMI,1,0)

GP +scale Costs  
induced at t-1

GP

No GP

GP

No GP

Baseline  
Group

Referral

Advice

Receptionist Cost  
at t-1

Intervention  
referral

Control  
referral

Course cost  
induced at t-1

77%

Accept

Do not accept

100%

Accept

Attend

52%

Do not Attend

BMI,DR  
OP:  
0.2801  
drop

BMI,2,1

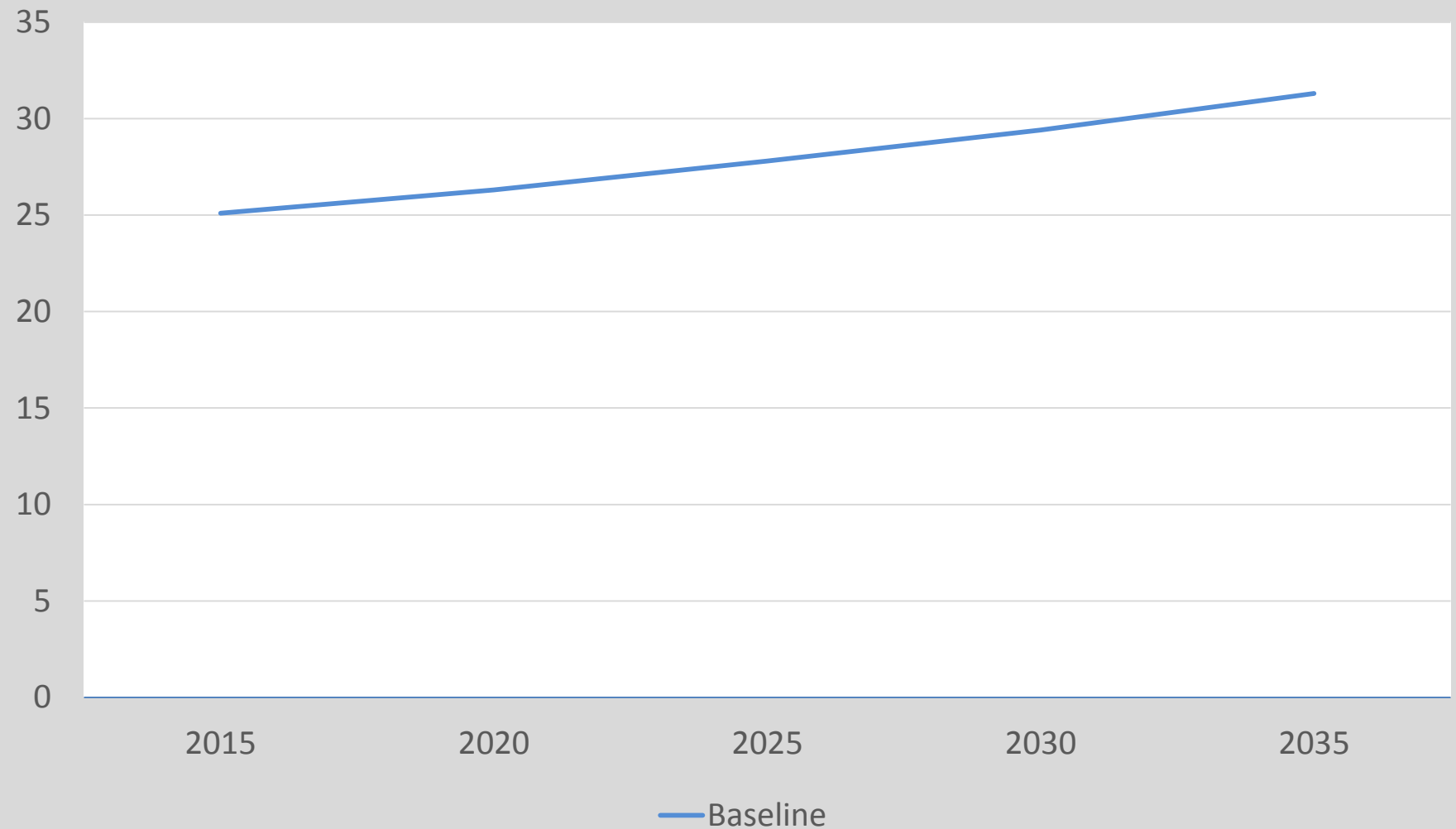
BMI,2,1

BMI,2,1

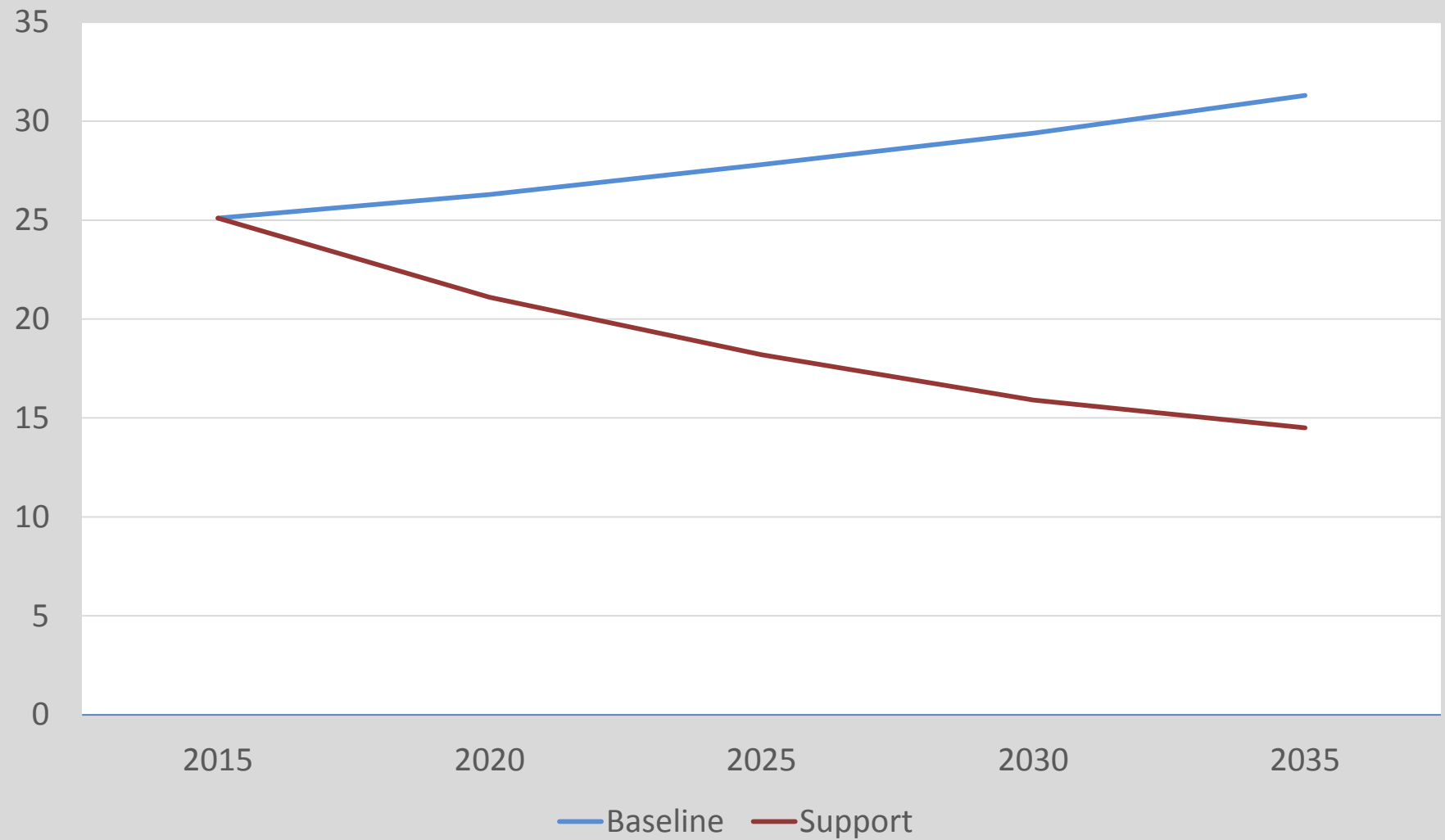
BMI,2,1



## Modelled change in proportion with BMI>30 to 2035



# Modelled change in proportion with BMI>30 to 2035 if brief interventions were given once per year



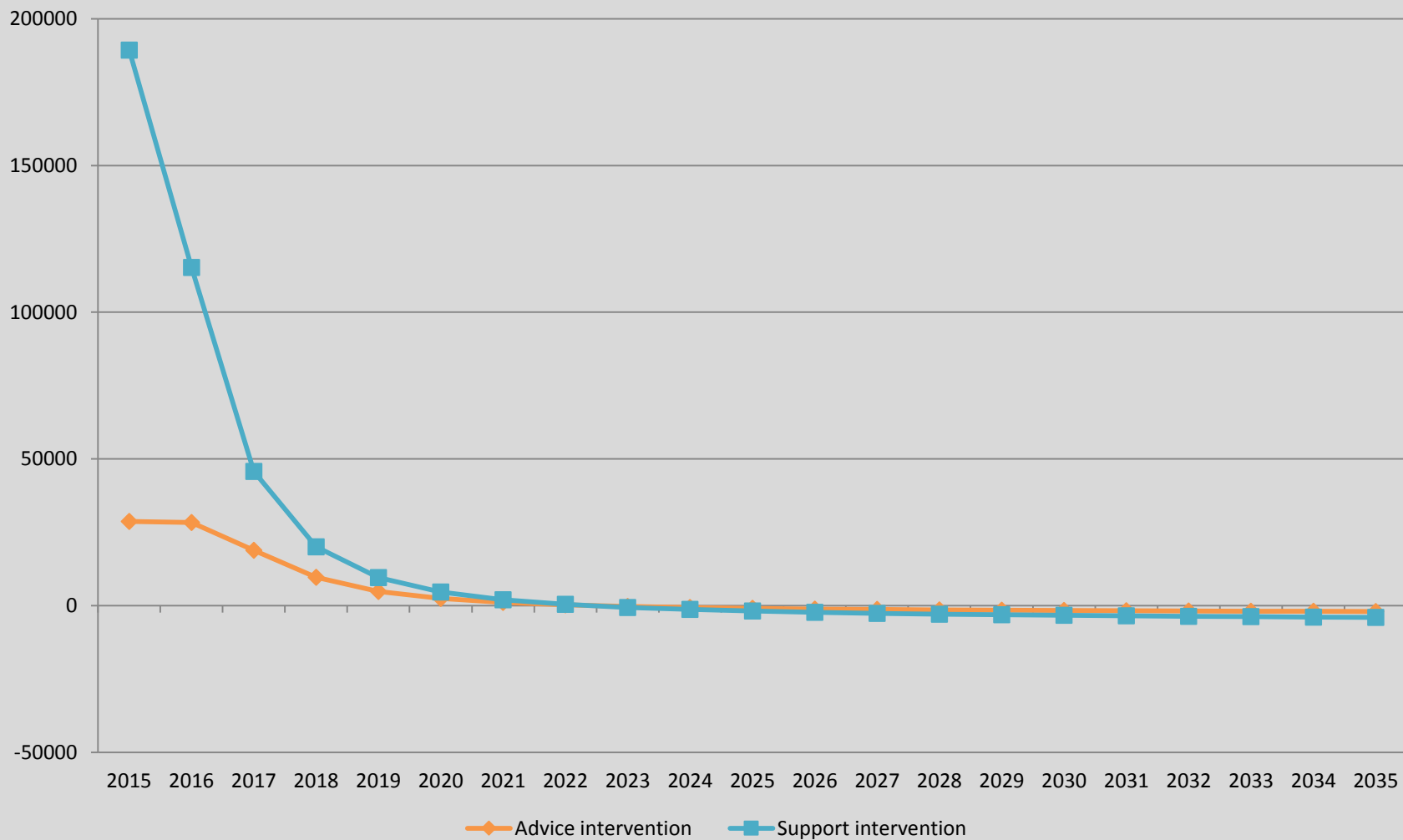


# The benefits

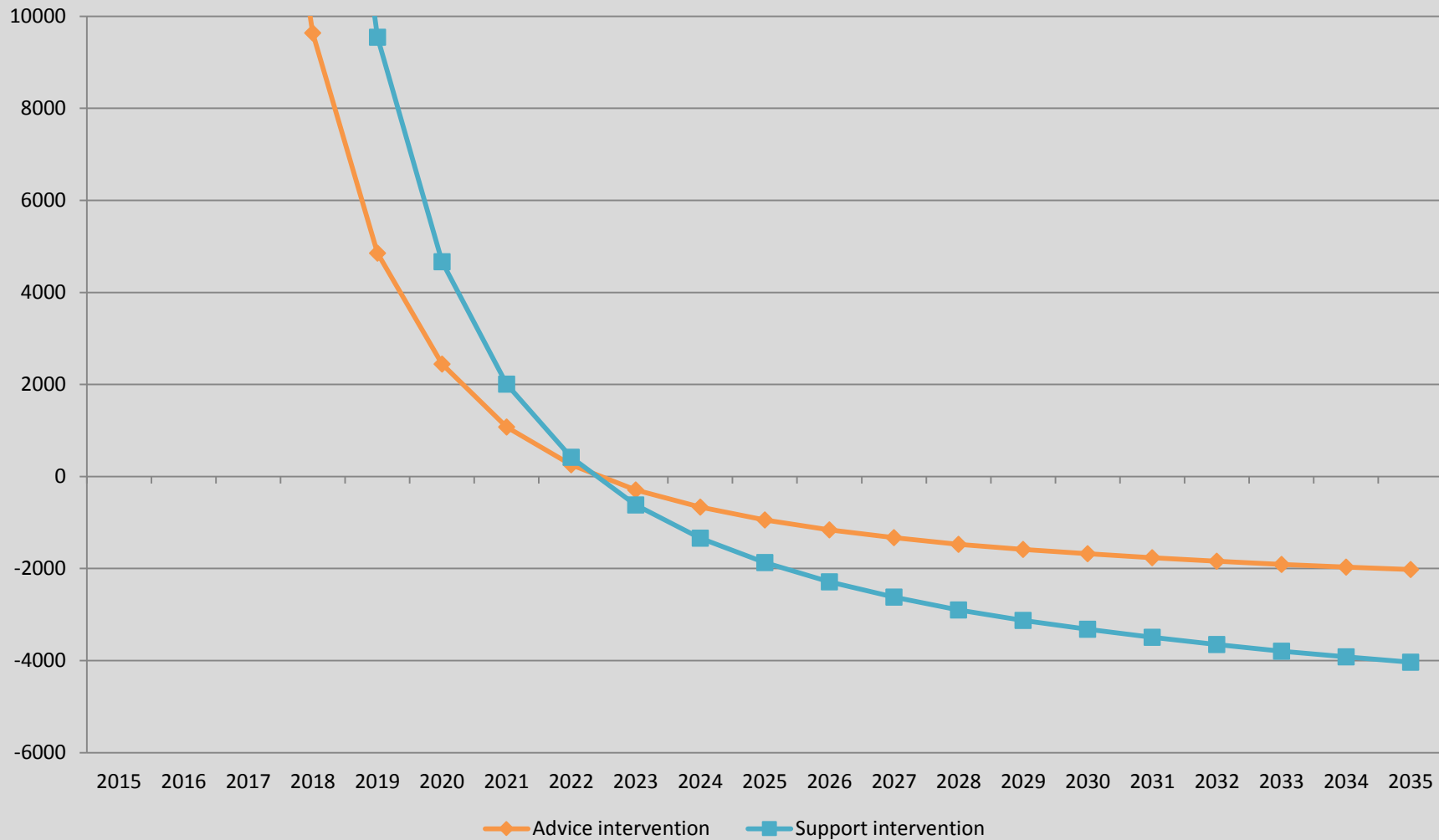
## Over 20 years

- Estimated 7007 fewer cases of cumulative incident obesity-related disease per 100,000 individuals in the population
  - Reduces the incidence by about 20% hypertension, diabetes, and knee osteoarthritis that would occur
- £21 million avoided in direct healthcare costs per 100,000 individuals.
- 8306 additional QALYs gained per 100,000 individuals.
- The negative ICER (£-2011/QALY) indicated that the support intervention was **dominant**

# Incremental Cost Effectiveness Ratio when compared to baseline (Cumulative Cost of intervention -cumulative direct costs avoided)/cumulative QALY gained)



# Incremental Cost Effectiveness Ratio when compared to baseline (Cumulative Cost of intervention - cumulative direct costs avoided)/cumulative QALY gained)



“as the nation’s waistline keeps piling on the pounds, we’re piling on billions of pounds in future taxes just to pay for preventable illnesses”

“the sustainability of the NHS, and the economic prosperity of Britain all depend on a radical upgrade in prevention and public health”

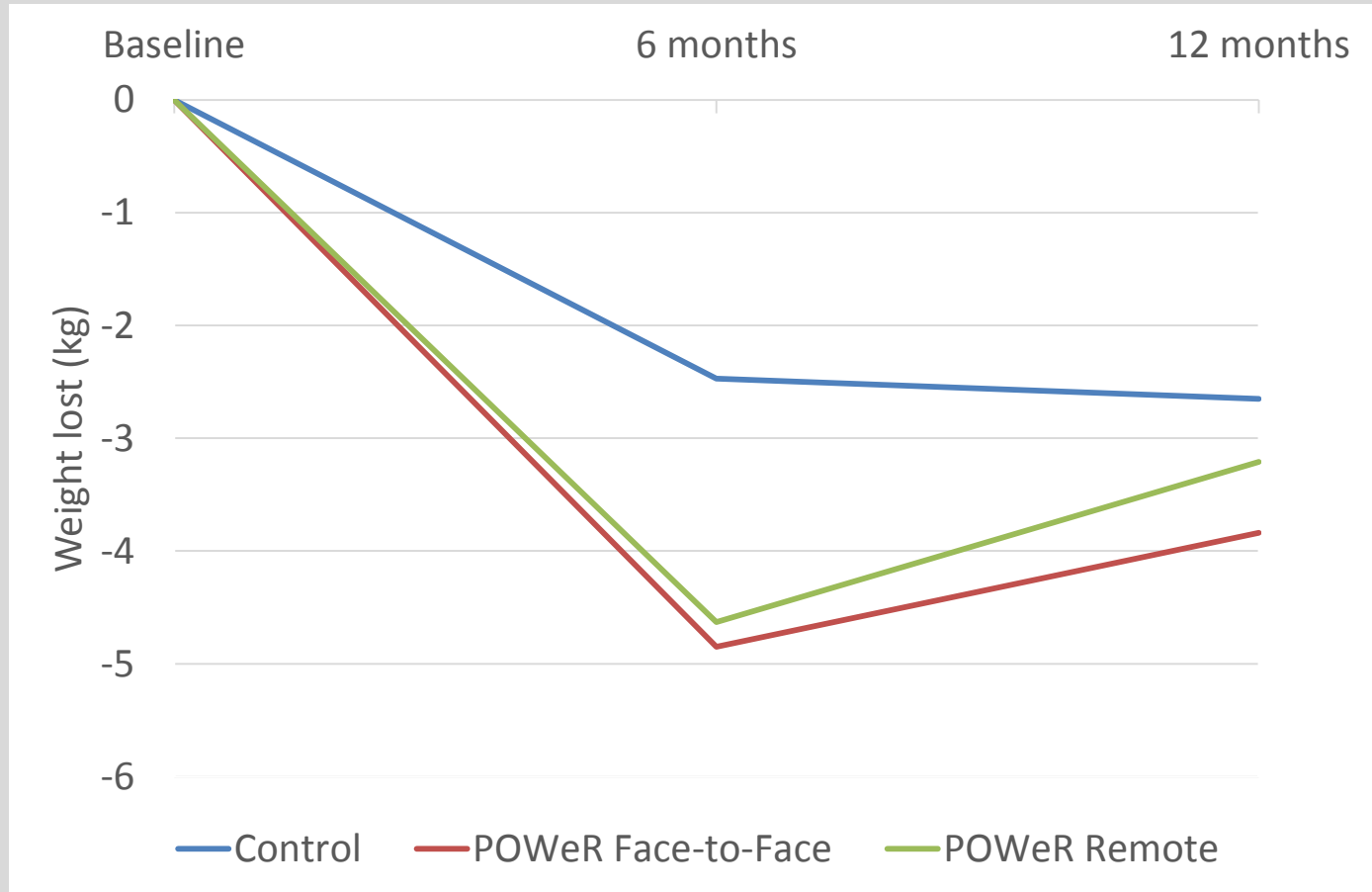
“hard-hitting national action on obesity, smoking, alcohol and other major health risks”



# Thank you

- For questions or a copy of the slides [paul.aveyard@phc.ox.ac.uk](mailto:paul.aveyard@phc.ox.ac.uk)

# POWeR: Online weight loss programme supported by practice nurses



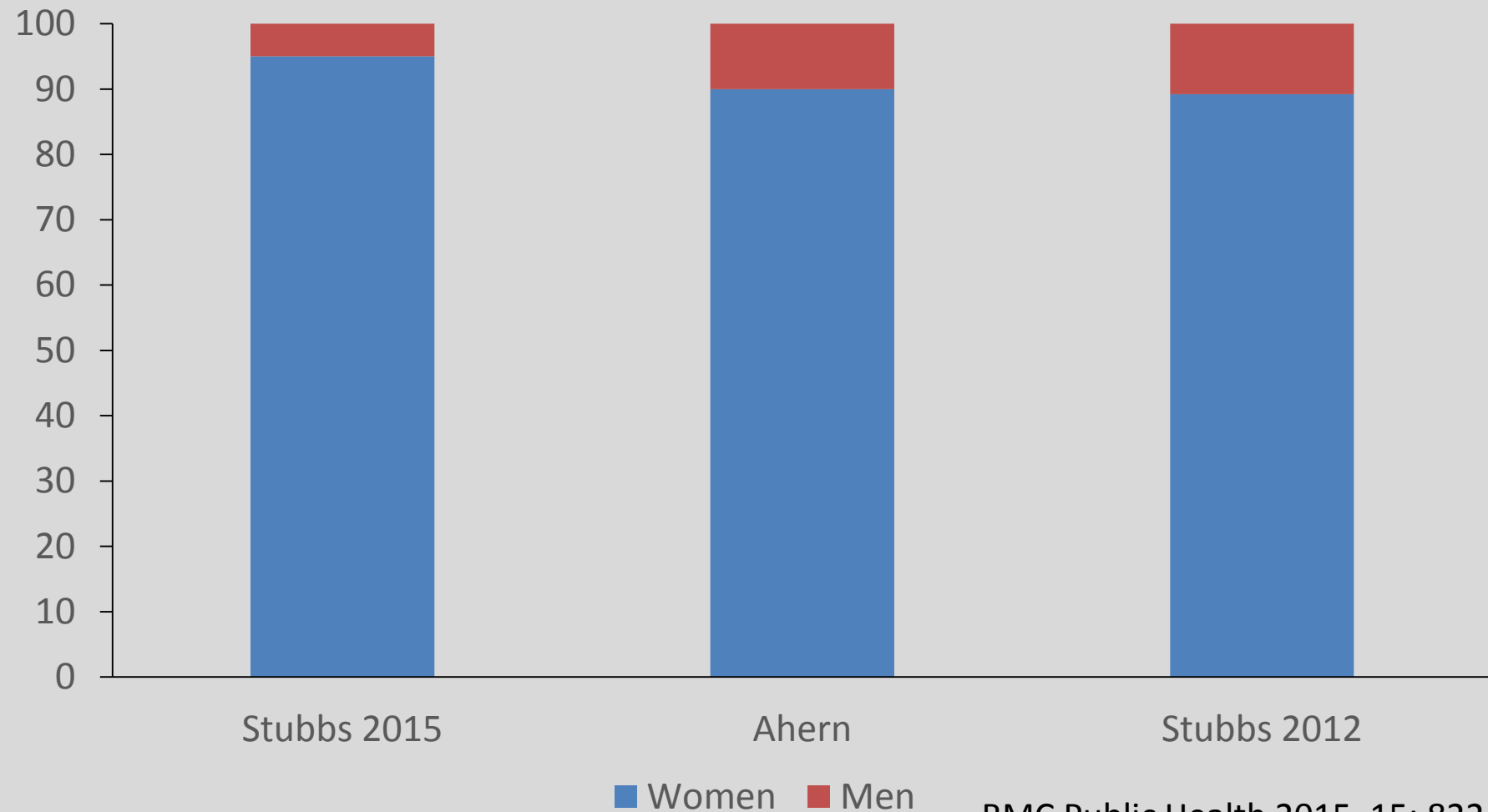
# POWeR: Online weight loss programme supported by practice nurses

	Difference in weight loss compared to the control group (95% CI)		
Type of support	6 months	12 months	Over study period (repeated measures)
Face-to-face	-2.54 (-3.66, -1.42; p<0.001)	-0.37 (-1.66, 0.92; p=0.566)	-1.49 (-2.41, -0.58; p=0.001)
Remote	-1.97 (-3.18, -0.76; p=0.002)	-0.58 (-1.88, 0.72; p=0.375)	-1.27 (-2.19, -0.34; p=0.007)

# GENDER AND PREFERENCE



## Percentage of women and men attending (commercial) weight management services



BMC Public Health 2015, 15; 822  
BMC Public Health 2011 **11**:434  
Clinical Obesity 2012; 2: 6-14.



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or smartphone

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Lose weight  
feel great!

with Rosemary Conley Online

Join Us

← Read Angie's story



Angie before



Angie after





# Find out more about Weight Watchers and how it works:



Healthy Living With Weight Watchers



How it works - SmartPoints



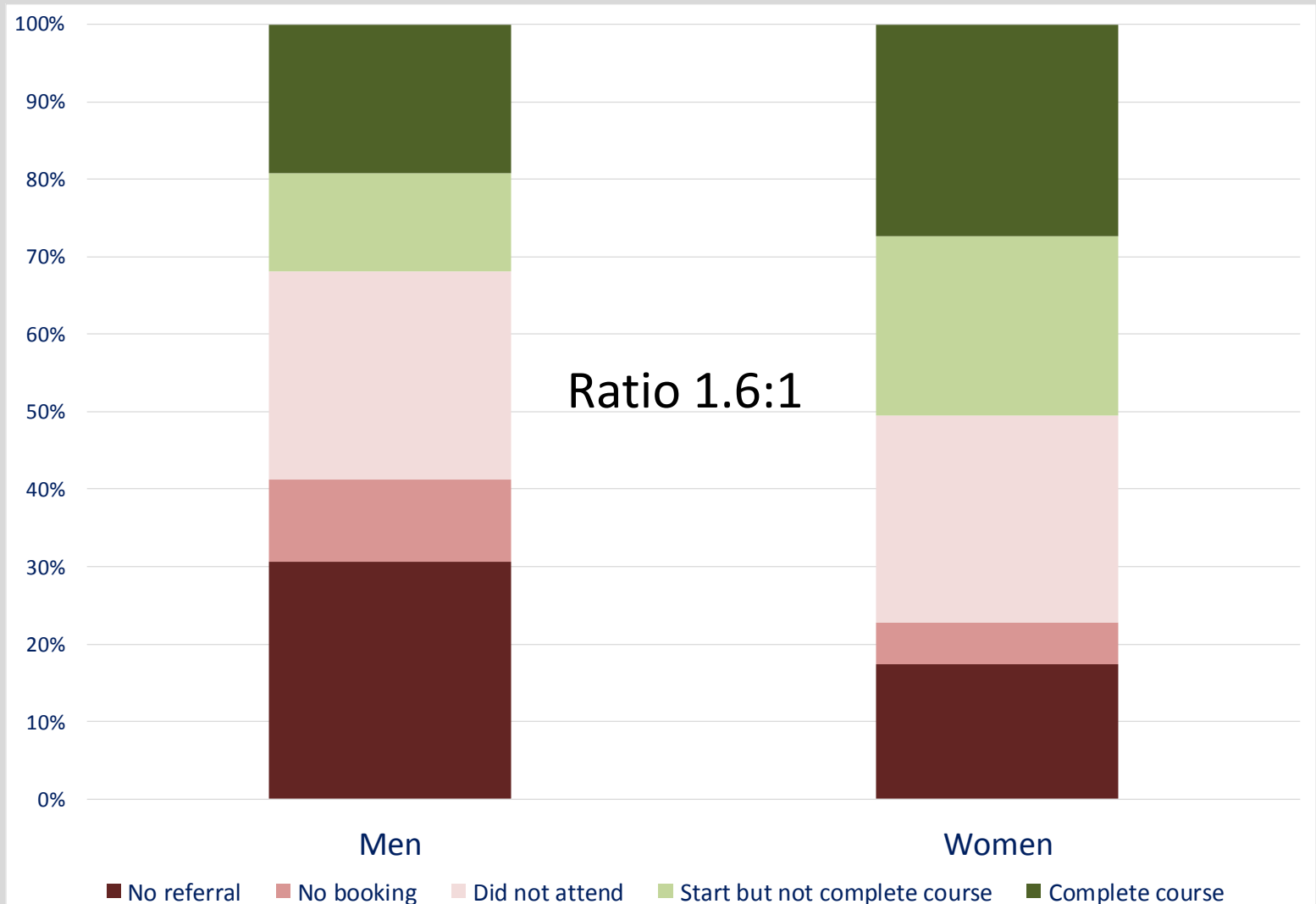
Success Stories



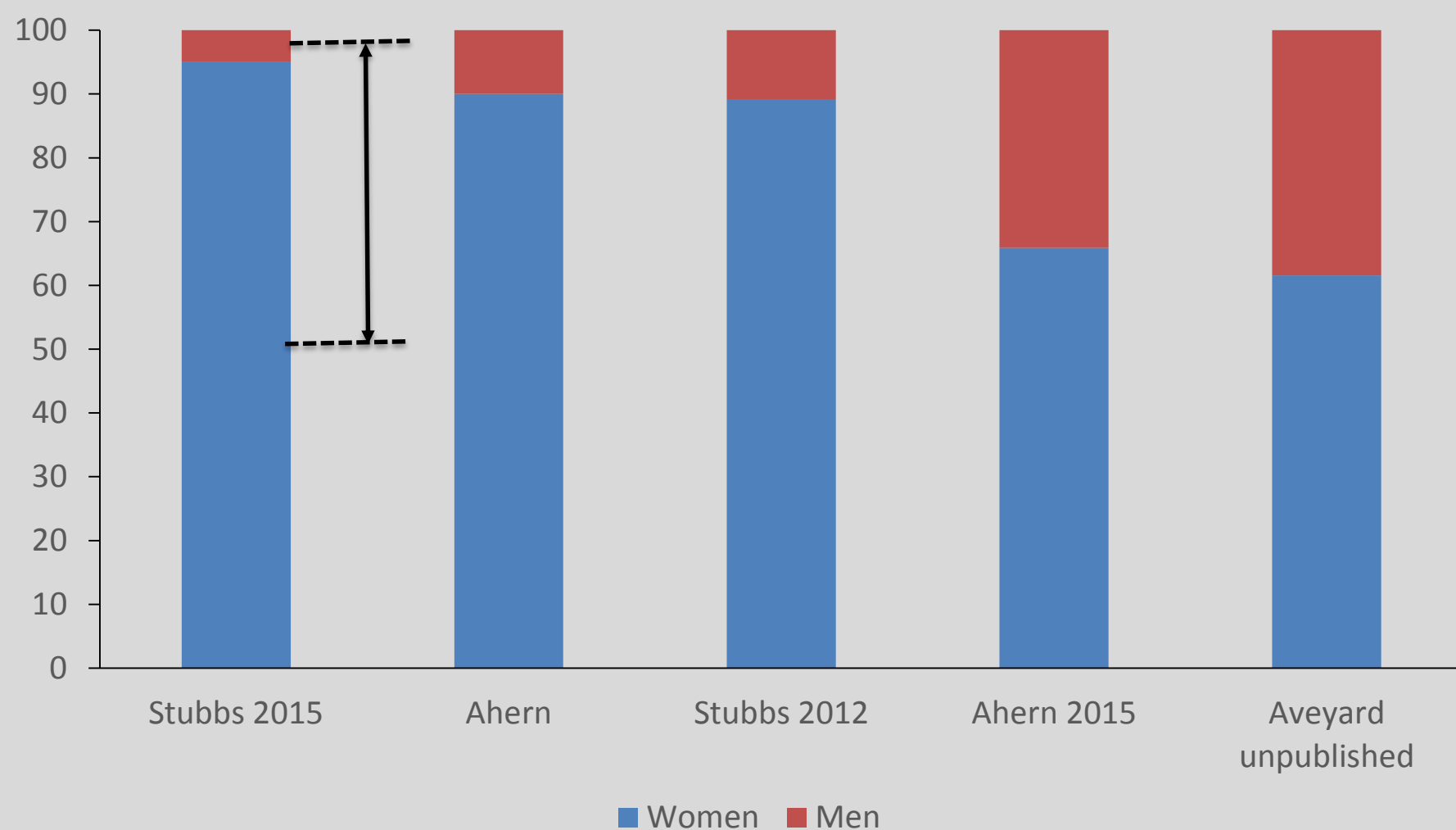
# Overcoming bias- offer help in writing

- Women 8.5% Men 4.4% Odds ratio 2.01 (1.75-2.32)
  - Ratio 1.9:1

# Uptake of support by gender



## Percentage of women and men attending (commercial) weight management services



	Advice	Support	Total N	Treatment Effect (95% C.I.)
<b>Gender</b>				
<b>Male</b>	0.68 (5.71)	2.39 (5.71)	806	-1.80 (-2.65; -0.95)
<b>Female</b>	1.31 (5.33)	2.46 (6.32)	1076	-1.17 (-1.87; -0.48)



# Marginal Treatment Effects by Gender with 95% CIs

Interaction test p-value = 0.29

