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Reducing daily salt intake in China by 1 g could prevent almost 9 million cardiovascular events by 2030: a modelling study

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ABSTRACT

Introduction In China, salt intake is among the highest in the world (~11 g/day) and cardiovascular disease (CVD) accounts for 40% of deaths. We estimated the potential impact of reducing salt intake on CVD events in China, via systolic blood pressure (SBP).

Methods To develop our model, we extracted the effect of salt reduction on SBP from a meta-regression of randomised trials and a population study, and that of SBP on CVD risk from pooled cohort studies.

Results Reducing population salt intake in China by 1 g/day could lower the risk for ischaemic heart disease by about 4% (95% uncertainty interval 1.8%–7.7%) and the risk for stroke by about 6% (2.4%–9.3%). Should this reduced salt level be sustained until 2030,~9 million (M) (7M–10.8M) CVD events could be prevented, of which ~4M (3.1M–4.9M) would have been fatal. Greater and gradual salt intake reductions, to achieve WHO's target of 30% reduction by 2025 or the Chinese government's target of ≤5 g/day by 2030, could prevent ~1.5 or 2 times more CVD events and deaths, respectively. Should the prolonged effect of salt reduction over several years be accounted for, all estimates of CVD events and deaths prevented would be 25% greater on average.

Conclusion Bringing down the high salt intake levels in China could result in large reductions in CVD. An easily achievable reduction of 1 g/day could prevent ~9M CVD events by 2030. Urgent action must be taken to reduce salt intake in China.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Salt intake in China has consistently been high and latest figures from 24-hour urinary sodium excretion indicate it averages 11 g/day, making it one of the highest in the world and over twice the recommended maximum intake of 5 g/day by the WHO and the Chinese government. Via its effect on blood pressure, excess salt intake is a major risk factor of cardiovascular disease (CVD), which account for 40% of the deaths in China. Previous estimations of the health impact of reducing salt intake in China used either obsolete or otherwise unreliable data sources and did not account for the more prolonged effect of salt reduction on blood pressure over several years.

WHAT THIS STUDY ADDS

⇒ Reducing salt intake in China, even by a modest amount of just 1 g/day, might prevent some 9 million (M) CVD events (of which almost 4M fatal) if sustained until 2030. Accounting for the more prolonged effect of salt reduction on blood pressure could result in 10M CVD events (of which more than 4M fatal) prevented.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE AND/OR POLICY

⇒ A salt reduction programme that is workable, coherent, sustainable and targeting current and upcoming major dietary sources of salt in China is urgently needed. As the most populous country in the world with a population of 1.4 billion, reducing salt intake in China would also considerably improve global health.

INTRODUCTION

Excess salt intake raises blood pressure and thus increases the risk of cardiovascular disease (CVD), which is the leading cause of death and disability in the world.[1] The WHO has set an interim global target of reducing population salt intake by 30% by 2025 and recommends all adults reduce their salt intake to less than 5 g/day.[2]

In China, salt intake has consistently been very high[3] and CVD accounts for 40% of all deaths.[4] Despite various governmental campaigns since 2007,[5] the latest estimates show that salt intake in adults still averages at 11 g/day,[6] making it one of the highest intake levels in the world.[7] Importantly, the slow progress made so far in salt reduction could be offset by the rapid increase in the consumption of processed and out-of-home foods that comes with urbanisation.[8]

Estimating the health gains that could be obtained by reducing salt intake would provide further evidence for the development of an effective salt reduction programme in China. The aim of this study is to estimate the potential impact of reducing salt intake on

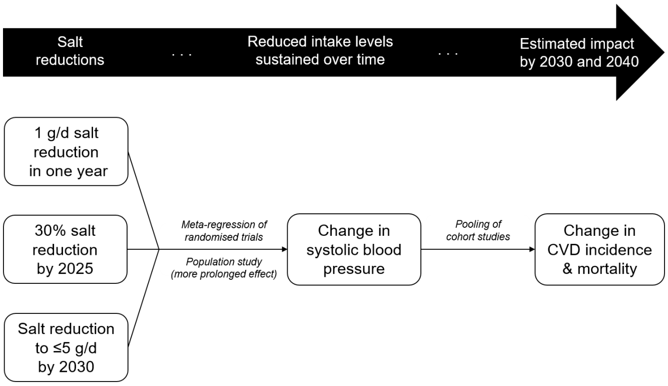

Figure 1 Outline of the comparative risk assessment model used to estimate the potential health impact on CVD of reducing salt intake in China. CVD, cardiovascular disease. The text in italic indicates the type of data sources used to quantify the relationships between salt intake and systolic blood pressure, and between systolic blood pressure and CVD risk.

stroke and ischaemic heart disease events (IHD) in China, using the latest and most robust data sources available.

METHODS

Salt reductions

We developed a simple comparative risk assessment model to estimate the potential health impact of reducing salt intake in China (figure 1). While excess salt consumption has been linked to an increased risk for a multitude of non-cardiovascular conditions such as gastric cancer,[1] reliable estimates of these associations are still unavailable. Therefore, we focused on IHD and stroke, the main CVD, and refer to both IHD and stroke from now on as CVD—an approach that has been widely adopted in salt reduction modelling so far.[9–12] There is strong and consistent evidence for a causal and dose–response relationship between salt intake and blood pressure, which is a leading risk factor for CVD. Reducing salt intake lowers blood pressure, and thus CVD risk as well.[1]

Baseline data for population size, salt intake (24-hour urinary sodium excretion), blood pressure and disease rates were taken from the latest and most robust figures available (online supplemental table 1).[6 13–20] The data sources and their integration in the model are described in detail in the online supplemental materials.

We modelled three gradual salt reductions for the adult population of China. First, a 1 g/day reduction to be achieved in 1 year, the feasibility of which has previously been demonstrated in local salt reduction projects in parts of China.[21 22] Second, achieving WHO's interim target of 30% salt reduction by 2025, which is equivalent to a gradual reduction of 3.2 g/day (95% uncertainty interval (UI) 2.3–4.2) by 2025.[2] Third, reducing salt intake to ≤5 g/day by 2030, which is the target set by the Chinese Government in its action plan for health and development, 'Healthy China 2030'.[23] The salt reductions to the WHO and the Chinese government targets were modelled as gradual percentage salt reductions, for example, a gradual reduction of 7% per year in salt intake to achieve a total of 30% reduction by 2025. We then estimated the falls in systolic blood pressure (SBP) levels and CVD risk, events and deaths resulting from the salt reductions, by comparing them to the levels at which they would have been without salt reduction (online supplemental figure 2).

Health impact modelling

A two-step process was used to estimate the impact of salt reduction on CVD, following the well-established causal relationships between salt intake and SBP, and between SBP and CVD risk.[1] First, changes in SBP following salt reduction were estimated. Second, changes in the incidence of first-ever CVD events (fatal and non-fatal, with premature deaths defined as occurring before the age of 70 years) as a result of the changes in SBP were estimated using relative risks, and applied to baseline CVD rates in the population (table 1). We derived the parameters to describe these relationships from a meta-regression of randomised trials (to quantify the effect of salt reduction on SBP in hypertensive and normotensive individuals), a population study (to quantify the more prolonged effect of salt reduction on SBP) and a pooling of cohort studies (to quantify the effect of SBP reduction on CVD risk reduction).[13 19 20]

Region-specific, age-specific and sex-specific estimates of baseline salt intake, SBP and disease rates (as shown in online supplemental table 3) were used, and subgroup-specific results are reported in the online supplemental materials. Uncertainty intervals reflect the uncertainty in baseline salt intake and SBP, disease rates, and relationships between salt intake, SBP and CVD risk. We estimated them using 5000 iterations of a Monte Carlo analysis based on the published uncertainty of each parameter estimate (online supplemental table 2). All simulations were written and performed on R V.3.5.1, using Queen Mary's Apocrita HPC facility, supported by QMUL Research-IT. http://doi.org/10.5281/zenodo.438045.

RESULTS

On average, the adult population of China consumes 11.1±1.6 g/day of salt and has an SBP of 128.1±13 mm Hg.

Reducing this salt intake by 1 g/day should lower average SBP levels by approximately 1.2 mm Hg (95% UI 0.5–2.2), which could lower the risk for IHD by about 4% (95% UI 1.8–7.7) and the risk for stroke by about 6% (95% UI 2.4–9.3) (table 2). If this 1 g/day reduction was achieved in a year and the reduced salt intake levels were sustained thereafter, some 9M (95% UI 7M–10.8M) CVD events could be prevented by 2030, of which approximately 4M (95% UI 3.1M–4.9M) could have been fatal. Of those CVD deaths, about 2M (95% UI 1.6M–2.7M) could have been premature. Should the reduced salt intake levels be sustained for 10 more years, the cumulative

Table 1 Model input parameters and data sources

	Parameter	Data source
Effect of salt reduction on systolic blood pressure:		
Based on randomised trials	Decrease in systolic blood pressure per 1 g/day salt reduction: ► Normotensive adults: 0.75 mm Hg (95% CI 0.20 to 1.30) ► Hypertensive adults: 1.89 mm Hg (95% CI 0.84 to 2.93)	Meta-regression of randomised trials of salt reduction, adjusted for age and ethnic group.[13] Median trial duration: 4–5 weeks
Based on a population study	Decrease in systolic blood pressure per 1 g/day salt reduction: ► Normotensive and hypertensive adults: 1.93 mm Hg (95% CI 1.45 to 2.40)	Population study of salt reduction.[19] Timespan observed: 8 years
Effect of systolic blood pressure change on cardiovascular disease risk:		
Ischaemic heart disease	Reduction in relative risk of first ischaemic heart disease event (fatal or non-fatal) for each 1 mm Hg systolic blood pressure reduction: ► 35–44 yeas: 4.0% (95% CI 2.2% to 5.5%) ► 45–54 years: 3.6% (95% CI 2.2% to 4.7%) ► 55–64 years: 3.1% (95% CI 2.2% to 3.8%) ► 65–74 years: 2.5% (95% CI 2.2% to 2.8%) ► 75–84 years: 2.1% (94% CI 1.9% to 2.2%)	Pooling of meta-analysis of epidemiological studies (Asia Pacific Cohort Studies Collaboration and the Prospective Studies Collaboration), representing a total of 1.38M participants with 65 000 cardiovascular disease events from 99 cohorts.[20]
Stroke	Reduction in relative risk of first stroke event (fatal or non-fatal) for each 1 mm Hg systolic blood pressure reduction: ► 35–44 years: 5.1% (95% CI 4.7% to 5.5%) ► 45–54 years: 4.5% (95% CI 4.2% to 4.8%) ► 55–64 years: 3.9% (95% CI 3.6% to 4.1%) ► 65–74 years: 3.1% (95% CI 2.8% to 3.3%) ► 75–84 years: 2.2% (95% CI 2.0% to 2.5%)	

benefits by 2040 of reducing salt intake could reach a total of approximately 13M (95% UI 9.5M–17.6M) CVD events prevented. Of these CVD events, about 6M (95% UI 4.3M–8.1M) could have been fatal, of which 3M (95% UI 2.2M–4.2M) prematurely so (figure 2, online supplemental table 4.1).

Achieving WHO's interim target of 30% salt reduction by 2025 would require a 3.2 g/day (95% UI 2.3–4.2) total reduction in salt intake. Once achieved in 2025, average SBP levels should have fallen by approximately 3.8 mm Hg (95% UI 1.5–7.5), lowering the risk for IHD by about 13% (95% UI 5.2–25.7) and the risk for stroke by about 17% (95% UI 6.1–30.5) (table 2). Should the 2025 salt intake levels be maintained until 2030, a cumulative total of about 14M (95% UI 10M–18.5M) CVD events could be prevented by 2030, of which some 6M (95% UI 4.4M–8.3M) could have been fatal. Of these CVD deaths, approximately 3M (95% UI 2.4M–4.6M) could have been premature. Should the 2025 salt intake levels be further maintained until 2040, the cumulative total number of CVD events prevented could reach approximately 27M (95% UI 17.2M–37.8M). Of these CVD events, about 12M (95% UI 7.6M–17.2M) could have been fatal, of which some 6M (95% UI 4M–9.2M) prematurely so (figure 2, online supplemental table 4.1).

Achieving the 'Healthy China 2030' target of ≤5 g/day by 2030 would require an 8.2% reduction in salt intake per year. This would represent a total of 6 g/day (95% UI 4.3–8) reduction in salt intake. Once achieved in 2030, average SBP levels should have fallen by approximately 7.1 mm Hg (95% UI 2.9–14.1), risk for IHD could be about 23% (95% UI 9.6–42.9) lower, risk for stroke could be about 30% (95% UI 11.2–49.7) lower (table 2) and some 17M (95% UI 12.1M–23.2M) CVD events could have been prevented, of which some 8M (95% UI 5.3M–10.4M) could have been fatal. Of these CVD deaths, about 4M (95% UI 2.8M–5.8M) could have been premature. Should salt intake levels remain ≤5 g/day until 2040, a cumulative total of about 40M (95% UI 25.1M–55.9M) CVD events could be prevented, of which some 18M (95% UI 11.2M–25.7M) could have been fatal. Of these CVD deaths, approximately 9M (95% UI 5.8M–13.5M) could have been premature (figure 2, online supplemental table 4.1).

When we accounted for the more prolonged effect of salt reduction on SBP, the estimated health impact of salt reduction was greater (table 2, figure 2). For example, the estimated number of CVD events prevented by 2030 was approximately 10M (95% UI 8.6M–11.4M) with a 1 g/day reduction achieved in a year, 17M (95% UI 13.9M–19.5M) with a 30% salt reduction by 2025 and 21M (95% UI 17.3M–24.3M) with a reduction to ≤5 g/day by 2030. The corresponding estimates for CVD deaths prevented by 2030 were approximately 4M (95% UI 3.4M–4.9M), 7M (95% UI 5.4M–8.2M) and 8M (95% UI 6.7M–10.2M) (online supplemental table 4.2).

Table 2 Estimated change in average salt intake, SBP and cardiovascular disease risk with salt reduction

	Effect of salt reduction on SBP based on randomised trials				Effect of salt reduction on SBP based on a population study			
Salt reductions	Salt intake (g/day)	SBP (mm Hg)	IHD risk (%)	Stroke risk (%)	Salt intake (g/day)	SBP (mm Hg)	IHD risk (%)	Stroke risk (%)
1 g/day reduction in 1 year	−1 (−1 to −1)	−1.2 (−0.5 to −2.2)	−4.2 (−1.8 to −7.7)	−5.7 (−2.4 to −9.3)	−1 (−1 to −1)	−1.9 (−1.5 to −2.3)	−7.1 (−4.6 to −14)	−9.9 (−6 to −15)
30% reduction by 2025	−3.2 (−2.3 to −4.2)	−3.8 (−1.5 to −7.5)	−12.9 (−5.2 to −25.7)	−17.3 (−6.1 to −30.5)	−3.3 (−2.4 to −4.2)	−6.3 (−4.5 to −8.8)	−22 (−12.1 to −41.3)	−29.7 (−15.3 to −45.1)
Reduction to ≤5 g/day by 2030	−6 (−4.3 to −8)	−7.1 (−2.9 to −14.1)	−23 (−9.6 to −42.9)	−30.1 (−11.2 to −49.7)	−6.2 (−4.6 to −8)	−12 (−8.5 to −16.6)	−37.4 (−21.6 to −63.5)	−48.6 (−27 to −67.8)

Data are median (95% UI). The changes reported for salt intake and SBP are absolute reductions; those reported for disease risk are relative reductions.
IHD, ischaemic heart disease; SBP, systolic blood pressure.

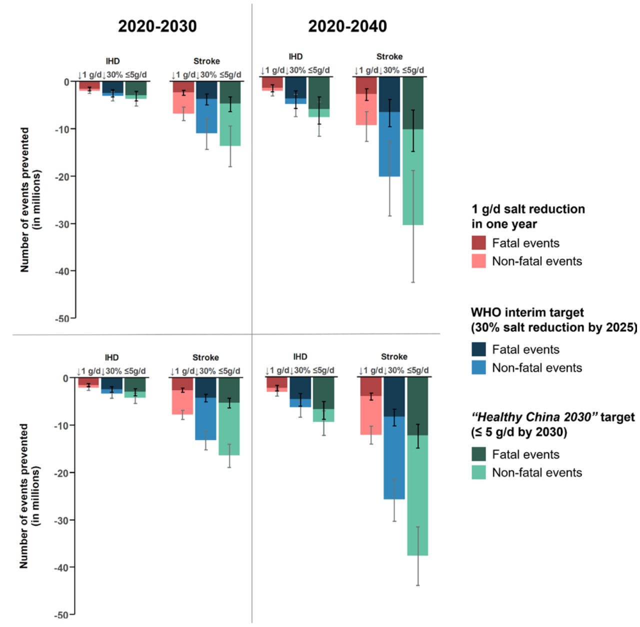

Figure 2 Number of CVD events and deaths prevented with different salt reductions, estimating the effect of salt reduction on blood pressure from (A) randomised trials and (B) a UK-based population study. CVD, cardiovascular disease; IHD, ischaemic heart disease.

All region, age and sex subgroups would benefit from reducing their salt intake (online supplemental figures 3–5, online supplemental tables 4.1 and .2).

DISCUSSION

Reducing salt intake in China has the potential to substantially reduce CVD incidence and mortality in men and women of all ages across the country. As demonstrated in various parts of China, a reduction by 1 g/day in a year would be easily achievable.[5 21 22] Should this very modest reduction be sustained, some 9M CVD events could be prevented by 2030; and if we account for the more prolonged effects of salt on blood pressure, this figure might increase to 10M. Achieving WHO's interim target of 30% reduction by 2025 and the Chinese government's recommendation of bringing salt intake down to ≤5 g/day by 2030, representing average salt reductions of 3.2 g/day and 6 g/day, respectively, could prevent approximately 1.5 and 2 times more CVD events and deaths.

Our results are concordant with those of a previous simulation estimating the health impact of a 15% salt reduction in 23 low-income and middle-income countries (including China).[24] Furthermore, when we accounted for the more prolonged effect of salt reduction on blood pressure, we obtained estimates of reductions in blood pressure and relative risk of CVD that correspond to what has been observed in countries with successful salt reduction programmes and 24-hour urinary sodium data, namely the UK and Finland.[19 25]

However, our estimates of CVD events and deaths prevented are greater than those of a previous projection by Wang *et al*.[26] This discrepancy could be explained by Wang *et al*'s use of different salt reduction scenarios, notably affecting individuals with a high salt intake only (as opposed to the entire population); salt intake estimates derived from dietary assessment methods (which are notoriously unreliable in settings such as China, where most of the salt consumed comes from the discretionary salt[27]); smaller CVD risk reductions following SBP change based on a recalibration of the US-based Framingham Heart Study risk function[28] (while we derived ours from a pooled analysis of 1.38 million participants in North America, Western Europe and Asia Pacific[20]); accounting for lag time (while we did not, due to the uncertainty around the time it takes for sustained reductions in SBP to reduce CVD risk) and obsolete CVD incidence rates (dating back to 1991–2009).[29] A more in-depth discussion around CVD relative risks and incidence can be found in the online supplemental materials.

Our study has multiple strengths. First, we made use of the most up-to-date and robust data available. Baseline salt intake and the effect of salt reduction on blood pressure were derived from 24-hour urinary sodium excretions, that is, the most accurate method to assess salt intake.[6 13 19 27] Salt intake and blood pressure data were extracted from the published baseline data of three large-scale cluster randomised controlled trials of over 5000 adult participants from six different provinces throughout China (Qinghai, Hebei, Heilongjiang, Sichuan, Jiangxi and Hunan), where stringent protocols were followed to ensure data collection quality.[6] The parameter estimate of the relationship between salt reduction and SBP was drawn from a meta-regression of modest salt reduction trials lasting at least 4 weeks,[13] so as to exclude trials bearing no relevance to public health (ie, trials of very short duration that consist of acute salt loading followed by severe salt restrictions, for example, from 20 g/day to less than 1 g/day of salt for only a few days). Nevertheless, it is still unlikely that salt reduction has exerted its maximal effect within 4–5 weeks (the average duration of the randomised trials included in the meta-regression)[30 31] and we, therefore, for the first time to our knowledge, conducted additional analyses using parameter estimates from a population study to approximate the more prolonged effect of salt reduction on blood pressure over several years. Second, we modelled salt reductions that are highly relevant to policy-making, as they align with key national and international salt reduction targets, both in the extent of salt reduction and in time frame. Moreover, we modelled them as gradual percentage reductions, which is more likely to reflect the reality of salt reduction than a linear or an 'overnight' reduction. As existing models did not provide enough flexibility to suit the structure and parameterisation needed to meet our modelling objectives,[9–12] a de novo model was built. Though not formally piloted, calibrated and validated, the model's results were concordant with those of other major modelling studies[24] as well as with empirical data from countries with successful salt reduction programmes.[19 25 32]

Due to scarce data, we were unable to model all health gains that would be expected from salt reduction. First, we did not account for the reduction in the risk for recurrent CVD events (ie, secondary prevention) and for diseases other than CVD, such as chronic kidney disease and gastric cancer, the rates of which are either increasing or already very high in China.[33] Second, it has been suggested that higher salt intake levels were associated with a greater increase in blood pressure as one gets older.[34] This means that in addition to lowering blood pressure immediately, salt reduction could also attenuate the rise in blood pressure associated with ageing. Taking this into account would have captured the full effect of salt reduction on blood pressure; however, there was insufficient data to quantify the association between salt intake and the rise in blood pressure with age. Third, although it has been shown that salt reduction in childhood leads to falls in blood pressure that could prevent hypertension and CVD in later life,[35] we did not have sufficient data to include children in our model. Fourth, the proportion of haemorrhagic strokes is significantly higher in countries like China, and raised blood pressure is a stronger predictor of haemorrhagic than ischaemic strokes.[36 37] The inclusion of Prospective Studies Collaboration participants (90% of whom from Europe, North America or Australia) in the pooling of relative risks of SBP change on CVD risk may have led to an underestimation of the potential impact of salt and SBP reduction on stroke incidence in China. It is, therefore, probable that we have underestimated the full potential of reducing salt intake in China.

The Chinese government's action plan 'Healthy China 2030' includes nutritional recommendations to reduce the intake of salt, sugar and oil.[23] This modelling study shows that salt reduction alone could bring enormous health benefits to the entire population of China. It is important to note that our estimates rely on salt reductions to not only be achieved, but also sustained over time, which may be a great challenge given the fast-changing dietary patterns seen in China given its rapid urbanisation. Most notably, the consumption of processed and out-of-home foods has increased in recent years and this trend is expected to continue.[8] Processed foods in China have also been found to be saltier than in other countries.[38] To anticipate this, it would be necessary to implement a strategy based on setting incremental salt targets for all manufactured foods in order to decrease salt content over the whole range of products from the food industry, as pioneered in the UK and successfully adopted by many countries, for example, Australia and South Africa.[39] Nevertheless, most (70%–75%) of the salt consumed in

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China still comes from the salt added by the consumer during cooking.[8 40] Health education can effectively lead to behaviour change, as shown in the trial in Northern China of a school-based programme, which was successful in reducing salt intake in both schoolchildren and their families.[21] A scale-up study of this school-based programme is currently ongoing in other parts of China, with the aim of nationwide implementation if proved to be effective. Other trials, on low-sodium high-potassium salt substitutes, health education to home cooks and restaurant interventions are ongoing or have recently been completed, some of which have already shown promising results.[41]

The evidence for the substantial benefits of salt reduction in China is consistent and compelling. Achieving and sustaining population salt reduction in China could prevent millions of unnecessary cardiovascular events and deaths. Given the sheer size of the Chinese population, this would also bring major benefits to global health.

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Contributors MT, FH, JKM and GM conceived the study. MT, FH and JKM designed the methods. MT and FH identified the data. MT ran the analyses. MT and FH wrote the first draft of the manuscript. All authors designed the salt reductions analysed, interpreted results, commented on the manuscript, made critical revisions and approved the final version of the manuscript. MT is the guarantor.

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Competing interests FH is a member of the Consensus Action on Salt & Health group, a non-profit charitable organisation, and its international branch, World Action on Salt & Health, and does not receive any financial support from the Consensus Action on Salt & Health or World Action on Salt & Health. GM is the Chairman of Blood Pressure UK, Chairman of the Consensus Action on Salt & Health, and Chairman of World Action on Salt & Health and does not receive any financial support from any of these organisations. Blood Pressure UK, the Consensus Action on Salt & Health, and World Action on Salt & Health are non-profit charitable organisations. MT and JKM declare no competing interests.

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Data availability statement Data are available on reasonable request. Requests for access to data and statistical code should be addressed to MT.

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SUPPLEMENTARY MATERIALS

Table of Contents

List of tables

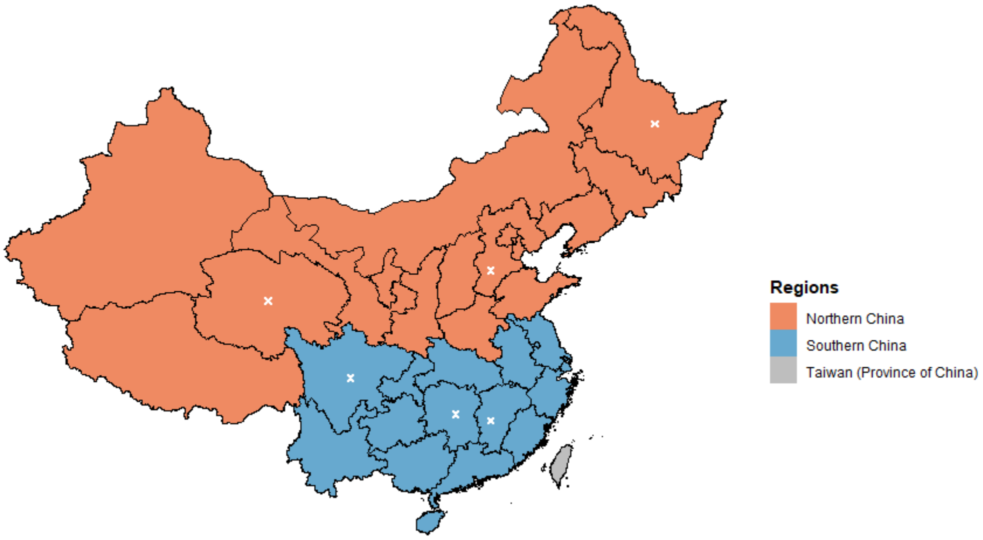
Baseline values

Population size

Population size was extracted from the latest governmental censuses.[1 2] Population subgroups were defined by 5-year age groups, sex, and geographical regions. Regions were defined as northern and southern China (Supplementary Figure 1), as distinct patterns in salt intake over time were found between those two regions.[3] The North-South demarcation was determined using a spatial analysis using geographic information system, following a model of climate-, geography-, and human-related indicators.[4]

Supplementary Figure 1. Definition of regions

White crosses indicate the provinces where the *"Action on Salt China"* study sites were located.



Generating values for levels of salt intake and systolic blood pressure

Each individual in our model was assigned a salt intake and a systolic blood pressure (SBP). This was done by generating values based on the means and covariance of salt intake and SBP (specific to each region-, age-, and sex-subgroup) from the published baseline results of "*Action on Salt China*", a programme of salt reduction in China consisting of three large-scale cluster randomised controlled trials (RCTs). Together, they involved 5353 adult participants from six different provinces throughout China (Qinghai, Hebei, Heilongjiang, Sichuan, Jiangxi, and Hunan; indicated with white crosses in Supplementary Figure 1), so as to represent the broad range of dietary habits and economic levels in the country. Participants were randomly selected from the general population using a two-stage sampling procedure.[5 6]

In the three *"Action on Salt China"* RCTs, salt intake was measured by 24h urinary sodium excretion, i.e. the most accurate method to assess salt intake.[7] The combined baseline data of the three RCTs, collected in September-November 2018, represent the largest collection of

24h urinary sodium excretion ever conducted in China; and this collection followed a stringent protocol to ensure data quality.[6 8] All participants had one to two consecutive 24h urine sample(s) collected, and the completeness of the urine samples was determined using well-established criteria. Salt intake (g/d) was derived from the 24h urinary sodium excretion using standard conversion values (1 mmol sodium = 23 mg sodium, 1 g sodium = 2.5 g salt).[6 8]

As to SBP, the participants' blood pressure was measured at the baseline of the "*Action on Salt China"* RCTs by averaging the last two of three readings. Measurements were taken with validated automated electronic sphygmomanometers on the participants' right arm at 1-minute intervals, after they had rested in sitting position for about 10 minutes in a quiet room.[6 8]

Baseline disease rates

The use of disease rate estimates that were as recent as possible was crucial, as the burden of cardiovascular disease (CVD) in China has rapidly increased since 1990, and is now the leading cause of both death and premature death.[9] For example, the mortality rate of ischaemic heart disease (IHD) per 100,000 population is estimated to have increased significantly over the past three decades, from 52.2 (95% uncertainty interval [UI]: 49.2–55.6) in 1990 to 105.6 (95%UI: 101.0–110.8) in 2015.[10] Over that same time period, the incidence rates of both IHD and stroke have also risen steadily.[9]

In order to obtain incidence and mortality rates for IHD and stroke that were (i) recent and (ii) disaggregated by region-, age-, and sex- subgroups, a combination of different data sources was necessary. Although empirical data were preferred, they were often obsolete or unavailable (Supplementary Table 1).

For stroke, we obtained region-specific incidence and mortality rates from a nationally representative door-to-door survey conducted in 2013 in 31 provinces (n=480,687).[11] From this survey, we extracted the province-level incidence and mortality rates for stroke. We then determined the relative difference between the rates in each region and the average rates at the national level. These regional differences to the national mean rates were then applied to the more recent (2017) estimates of stroke incidence and mortality rates, which were reported at the national level and disaggregated by age and sex. These 2017 estimates were modelled by the Global Burden of Disease (GBD) collaborators using original data from national health surveillance programmes, vital registrations, governmental censuses, and hospital data (more details in Supplementary Table 1).

For IHD, the latest nationally representative and empirical data for incidence rate come from the 1999-2000 follow-up of a cohort that started in 1991 (the China Hypertension Epidemiology Follow-up Study).[12] As these estimates are unlikely to reflect current disease rates, we used modelled data from the GBD study to obtain more recent estimates. The original data used by the GBD collaborators to estimate IHD rates in China are similar to those used to estimate stroke rates, and are presented in Supplementary Table 1. From a 2015 GBD publication, we obtained province-specific (but neither age- nor sex-disaggregated) mortality rate estimates, from which we determined the relative difference in the rates of each region with the national average rates. We then applied those regional differences to the 2017 national-level GBD estimates for incidence and mortality rates, which were disaggregated by age and sex (Supplementary Table 1).

All disease rates thus obtained and used in our model are presented for each region-, age-, and sex- subgroup in Supplementary Table 3.

Modelling salt reductions

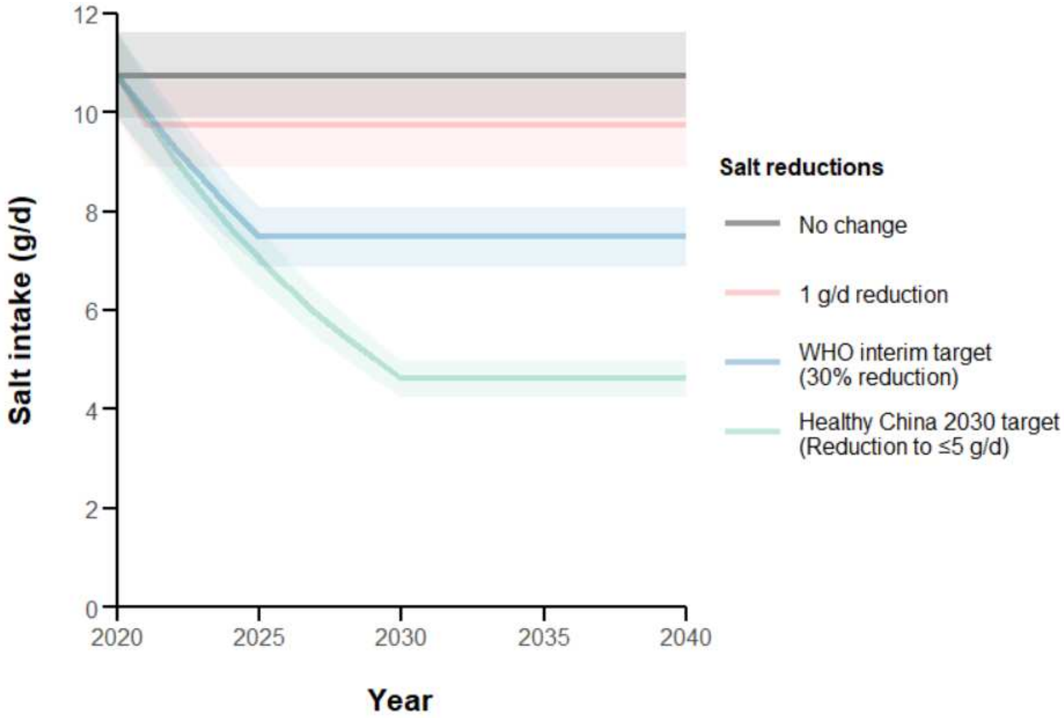
Starting at the same time and with the same baseline levels of salt intake, three different salt reductions were modelled:

- A 1 g/d reduction to be achieved in a year;
- A 30% reduction to be achieved by 2025, following the World Health Organization's interim global target (modelled as a gradual 7% reduction per year);
- A reduction to ≤5 g/d by 2030, following the *"Healthy China 2030"* target (modelled as a gradual ~8% reduction per year).

In all cases, once the salt reduction was achieved, the reduced salt intake levels were then maintained for the rest of the simulation. All salt reductions were compared to a reference case without salt reduction (Supplementary Figure 2).

The mean salt intake levels in our simulations ranged from a maximum of 10.8 g/d to a minimum of 4.6 g/d. Within this range, the association between salt intake and blood pressure has been demonstrated to be linear,[13 14] and that between salt intake and mortality as well.[15]

Supplementary Figure 2. Salt intake
Lines depict mean population salt intake (± standard deviation).



Modelling health outcomes

We estimated the impact of reducing salt intake on CVD incidence and mortality in China. The well-established causal relationships between salt intake, SBP, and CVD risk were reflected in our model by using a two-step process, whereby salt reduction led to SBP reduction, which in turn resulted in CVD risk reduction.[16] Each step is described below.

Step 1: Modelling systolic blood pressure reduction

Following common practice in salt reduction modelling,[17] we used SBP in our model, as SBP has been shown to be a better predictor of CVD risk than diastolic blood pressure.[18-22]

To describe the relationship between salt reduction and fall in SBP, we used the effect size estimate from He et al.'s systematic review and meta-analysis of randomised trials of salt reduction.[23] We used this source as it aimed to estimate the effect of a longer-term, modest salt reduction, and thus only included trials lasting at least 4 weeks. This therefore excluded very short (e.g. 3-5 days) trials of abrupt and severe salt restriction following acute salt loading, which are of no relevance to the public health recommendation for a modest salt reduction over a prolonged period of time. From He et al.'s systematic review and meta-analysis, we extracted the effect size of salt reduction on SBP from their meta-regression, as this analysis was adjusted for age and ethnic group and was reported for normotensive and hypertensive individuals separately.

Similar effect sizes were found by Huang et al. in their systematic review and meta-analysis of randomised trials of salt reduction, published in 2020.[24] Although more recent than He et al.'s review, Huang et al.'s review included trials of very short duration, with more than half of their data points (77 out of 136) reporting interventions that lasted less than two weeks. A key finding of Huang et al.'s review is that such short-term studies underestimate the effect of salt reduction on blood pressure. In view of this, we derived our parameter estimate for the effect of salt reduction on SBP from He et al.'s review instead.

Nevertheless, the median duration of the trials included in He et al.'s meta-regression was of 4-5 weeks. As the full effect of salt reduction on blood pressure is unlikely to have been exerted over this time span,[25 26] we used a population study to estimate the more prolonged (over several years) effect of salt reduction on blood pressure in an additional analysis. The population study consisted of the analysis of nationally representative health and nutrition survey data as well as data from the Office for National Statistics for England and Wales.[27] Salt intake, as measured by the most accurate assessment method of 24h urinary sodium excretion, was shown to be reduced by 15% between 2003 and 2011 (from 9.5±0.2 to 8.1±0.2 g/d). Over those eight years, average SBP in individuals who were not on antihypertensive medication was found to have decreased by 2.7±0.34 mm Hg after adjusting for potential confounding factors (i.e. age, sex, ethnic group, household income, alcohol consumption, fruit and vegetable intake, and body mass index), suggesting the fall in SBP to be largely attributable to salt reduction. The effect size thus obtained was about double that from He et al.'s meta-regression of randomised trials: according to the effect size estimated from the population study, for each 1 g/d salt reduction, SBP would fall by 1.9 mm Hg (95% confidence interval [CI] 1.5 to 2.4); whereas the effect size from the randomised trials for the same amount of salt reduction was estimated at 1.0 mm Hg (95% CI 0.5 to 1.6).[23 27]

We used this population study in England because to the best of our knowledge, no such population study exists for any low- or middle-income country. Among high-income countries, the only other population study using nationally representative 24h urinary sodium data was conducted in Finland. This study showed that in Finland from 1972 to 2002, salt intake was reduced from about 14 g/d to about 9 g/d, and blood pressure fell by over 10 mm Hg.[28 29] Although salt reduction is likely to have played an important role in the fall in blood pressure (especially given the rising rates of obesity and alcohol consumption over that time period), the authors did not formally estimate the proportion of blood pressure and disease risk reduction attributable to salt reduction – thus precluding us from using deriving any effect size from their study.

In terms of ethnicity, a consistent finding is that salt reduction has a greater effect on the blood pressure of those belonging to non-Caucasian ethnic groups compared with those of Caucasian descent.[23 24] However, the majority of the non-Caucasian participants were of black ethnicity and there is scarce evidence on the effect size specific to individuals of Chinese descent. To date, only six trials of salt reduction were conducted with Chinese participants. Five of those trials consisted of non-controlled, non-randomised dietary feeding studies in which all participants were sequentially assigned to a low-salt diet, then to a high-salt diet. In those trials, the participants' salt intake was reduced by amounts ranging from -9.2 to -12.4 g/d, and this salt restriction was maintained for a week only. Such large and sudden salt reductions that bear no relevance to public health. The sixth trial was conducted on hypertensive patients with chronic kidney disease, and thus its findings cannot be used for the general population.[30] Given the lack of randomised trials of modest, longer-term salt reduction in Chinese participants, we made the conservative assumption that the effect of salt reduction on blood pressure in Chinese individuals would correspond to that found in studies with predominantly Caucasian participants.

Step 2: Modelling cardiovascular disease outcomes

Numerous randomised trials have shown the benefits of lowering blood pressure on CVD risk and thus demonstrate the causal relationship between SBP and CVD risk.[31] We used estimates from observational studies instead to extract the relative risks for IHD and stroke, as cohort studies are based on the participants' usual risk factor levels, as opposed to the effect of pharmacological interventions that could act through more pathways than risk factor reduction alone. For example, in addition to their beneficial effect via blood pressure reduction, calcium channel blockers confer greater protection for stroke, and beta-blockers have a special protective effect in preventing IHD events in individuals a few years after an acute myocardial infarction.[32] Nevertheless, both meta-analyses of randomised trials of blood pressure-lowering drugs and meta-analyses of cohort studies have found similar magnitudes of reductions in disease events for the same reduction in blood pressure.[32]

The relative risks for IHD and stroke were thus extracted from a pooled analysis of the Prospective Studies Collaboration (PSC)[18] and the Asia-Pacific Cohort Studies Collaboration (APCSC),[33] together representing a total of 99 cohorts with 1.38 million participants in North America, Western Europe, and the Asia-Pacific, totalling 65,000 CVD events and over 15 million person-years of follow-up. For the pooling of the PSC and the APCSC, the relative risks were adjusted for regression bias with age-specific correction factors and by accounting for the time between baseline SBP measurement and CVD event occurrence. Moreover, the use of individual data allowed for a consistent adjustment for confounders.[34] For our present study, the relative risks reported for ischaemic stroke and haemorrhagic stroke were pooled using random-effects meta-analysis.

The pooling of the PSC and APCSC showed that the proportional effect of SBP change on the relative risk for CVD declined with age, while being generally similar between men and women and between Western and Asian populations.[34]

The relative risks we extracted and used in our model are presented in the main manuscript, Table 1.

Supplementary Table 1. Data sources

Model parameters		Data sources
Baseline values	Population size	Latest population census from the National Bureau of Statistics of China[1] and population estimates for the corresponding year from the Census and Statistics Department of the Government of the Hong Kong Special Administrative Region[2]
	Baseline salt intake and systolic blood pressure levels	Values generated using subgroup-specific means and covariance of salt intake and systolic blood pressure from the published baseline data of three cluster randomised controlled trials in six provinces throughout China (n=5353), as part of the "*Action on Salt China*" programme[5]
	Baseline disease incidence and mortality rates	A combination of different sources was necessary to obtain age-, sex-, and region-specific estimates. - Stroke: Nationally representative door-to-door survey across 31 provinces of the prevalence, incidence, and mortality of stroke in China (n=480,687)[11] - Ischaemic heart disease and stroke: Original data from sources including national health surveillance programmes (China Disease Surveillance Points, China Maternal and Child Health Surveillance System), vital registrations (Chinese Center for Disease Control and Prevention Cause of Death Reporting System, Hong Kong Vital Registration Death Data), governmental censuses (China Statistical Yearbook), and hospital data (China Hospital Inpatient Data) adapted by the Global Burden of Disease collaborators[10 35]
Effect estimates	Effect of salt reduction on systolic blood pressure	- Meta-regression of randomised trials of salt reduction, adjusted for age and ethnic group, and reported by blood pressure status (median trial duration: 4-5 weeks).[23] - Population study of salt reduction (timespan observed: 8 years).[27]
	Effect of systolic blood pressure change on cardiovascular disease risk (relative risks)	Pooling of meta-analysis of epidemiological studies (Asia Pacific Cohort Studies Collaboration – APCSC; and the Prospective Studies Collaboration – PSC), representing a total of 1.38M participants with 65,000 cardiovascular disease events from 99 cohorts.[34]

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There is considerable uncertainty around the time taken for sustained reduction in systolic blood pressure to reduce CVD risk. While some authors included various time lags in CVD risk reduction or reversal*,[36-38] others did not.[39-43] Notably, in their proportional multistate life-table model of the effect of salt reduction interventions on CVD in the Australian population, Cobiac et al. found similar outcomes with and without incorporating a 3-year-time lag for full reversal of stroke risk and a 3-year-time lag for a two-thirds reversal of heart risk, with the remaining heart disease risk reversed over 7 subsequent years.[44] In order to avoid introducing another source of uncertainty and undue complexity in this present study, we assumed that the effect of blood pressure reduction on CVD risk is fully realised within one year. This is in line with the findings of a review of randomised trials evaluating the effects of blood-pressure-lowering drugs on heart disease and stroke events.[32]

Uncertainty analysis

We conducted a Monte Carlo analysis with 5000 iterations to quantify the uncertainty in the modelled results due to uncertainty around the model parameters. Uncertainty around the following parameters were included in the analysis: baseline salt intake and systolic blood pressure estimated from the *"Action on Salt China"* trials, effect of salt reduction on SBP estimated by the meta-regression and the population-based study, relative risks of IHD and stroke following blood pressure reduction estimated by pooling of cohort studies. The prior distributions were estimated using data from the source material (Supplementary Table 2).

At each iteration, the model parameters were drawn randomly from the specified distributions. We assumed Poisson distributions for disease rates, log-normal distributions for relative risks, and normal distributions for all other parameters. The salt reductions were then modelled using this random set of model parameters. Results for the iterations were saved, and uncertainty intervals for the results were based on the 2.5th and 97.5th percentile of the results across the 5000 iterations.

* In this context, risk reversal is defined as the diminution of excess CVD risk and raised blood pressure, down to the CVD risk levels of individuals who never had raised blood pressure.

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Supplementary Table 2. Statistical distributions and parameters used in the uncertainty analysis

Inputs	Distributions	Parameters	Source
Baseline salt intake	Normal	Mean and SD of 24h urinary sodium excretion	Baseline results of the *"Action on Salt China"* trials[5]
Baseline systolic blood pressure levels	Normal	Mean and SD of systolic blood pressure	Baseline results of the *"Action on Salt China"* trials[5]
Baseline disease incidence and mortality rates	Poisson	Lambda = disease rate per 100,000 person-years	Nationally representative door-to-door survey[11] and Global Burden of Disease estimates[10 35]
Effect of salt reduction on systolic blood pressure	Normal	Mean = regression coefficient SD = SE of the coefficient	Meta-regression of randomised trials of salt reduction[23] and population study[27]
Effect of systolic blood pressure change on cardiovascular disease risk (relative risks)	Lognormal	Mean on the log scale = natural logarithm of the relative risk SD on the log scale = natural logarithm of the SE (estimated from 95% confidence interval)	Pooled cohort studies[34]

SD = standard deviation; SE = standard error.

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Supplementary Table 3. Baseline disease rates used in the model

Abbreviations: IHD = ischaemic heart disease, SD = standard deviation, UI = uncertainty interval.

Region	Age groups (years)	Sex	IHD incidence rate per 100,000 person-years Median (95% UI)	IHD mortality rate per 100,000 person-years Median (95% UI)	Stroke incidence rate per 100,000 person-years Median (95% UI)	Stroke mortality rate per 100,000 person-years Median (95% UI)
Northern	35–39	Women	19.5 (8.5–38.2)	5.4 (4.3–6.7)	70.1 (33.4–114.8)	22.7 (4.7–48)
Northern	40–44	Women	35.7 (21.7–55.7)	9.8 (8–12.1)	404 (270.2–544.2)	117.1 (56.9–185.8)
Northern	45–49	Women	59.7 (33.7–95.8)	22.3 (18.2–27.2)	404 (270.2–544.2)	117.1 (56.9–185.8)
Northern	50–54	Women	93.9 (59.5–138.6)	38.6 (31.6–47.1)	1984.5 (1439.5–2505.1)	429.3 (239.3–624.4)
Northern	55–59	Women	138.1 (75.9–217.7)	53 (43.5–64.5)	1984.5 (1439.5–2505.1)	429.3 (239.3–624.4)
Northern	60–64	Women	233.4 (156.6–333.6)	139.3 (114.9–167.8)	4678.7 (3466.7–5796.5)	932.1 (543–1312.6)
Northern	65–69	Women	378.6 (241.5–577.6)	291.4 (239.2–351.8)	4678.7 (3466.7–5796.5)	932.1 (543–1312.6)
Northern	70–79	Women	591 (419.5–839.4)	494.3 (405.2–596.3)	7179 (5289.9–8938.1)	1540.4 (890.7–2182)
Northern	35–39	Men	25.3 (11.9–46.6)	18.9 (15.4–23.1)	96.2 (50.5–150.5)	33.3 (9.7–64.9)
Northern	40–44	Men	50.4 (31.4–76.4)	34.7 (28.4–42.2)	549.4 (377–725.7)	175.4 (91.3–267.3)
Northern	45–49	Men	88.9 (52.7–137.5)	66.3 (54.2–80.3)	549.4 (377–725.7)	175.4 (91.3–267.3)
Northern	50–54	Men	149.3 (97.9–214)	106.9 (87.6–129.3)	2552.5 (1868.4–3196.7)	666.6 (385.2–943.9)
Northern	55–59	Men	231.8 (138.2–353.5)	134.4 (111–161.5)	2552.5 (1868.4–3196.7)	666.6 (385.2–943.9)
Northern	60–64	Men	362.2 (247.3–508.2)	271.7 (224.3–326)	5762.5 (4288.8–7110.7)	1146 (674.3–1600.2)
Northern	65–69	Men	538.2 (349.8–810.8)	478.7 (395.5–573.5)	5762.5 (4288.8–7110.7)	1146 (674.3–1600.2)
Northern	70–79	Men	777.9 (552.2–1098.9)	698.2 (577.5–835.4)	9180.1 (6807.2–11365.6)	1875.3 (1094.6–2635.3)
Southern	35–39	Women	13.3 (5.8–25.9)	3.7 (3–4.5)	63.2 (33.4–97.3)	19 (5.1–34.8)
Southern	40–44	Women	24.3 (14.9–37.8)	6.7 (5.5–8.2)	364.1 (270.3–461.3)	98 (62.2–134.6)
Southern	45–49	Women	40.6 (23.1–65)	15.1 (12.5–18.4)	364.1 (270.3–461.3)	98 (62.2–134.6)
Southern	50–54	Women	63.8 (40.8–94)	26.2 (21.6–31.9)	1787.2 (1439.1–2122.2)	359.2 (261.2–452.3)
Southern	55–59	Women	93.7 (51.9–147.3)	36 (29.8–43.7)	1787.2 (1439.1–2122.2)	359.2 (261.2–452.3)
Southern	60–64	Women	158.6 (107.3–226.1)	94.6 (78.7–113.7)	4214.2 (3466.3–4911.3)	780 (592.7–950.8)
Southern	65–69	Women	257.1 (165.5–391.3)	197.9 (163.9–238.3)	4214.2 (3466.3–4911.3)	780 (592.7–950.8)
Southern	70–79	Women	401.4 (287.4–568.8)	335.7 (277.6–404)	6465.4 (5288.6–7572.1)	1289 (972.1–1580.4)
Southern	35–39	Men	17.2 (8.1–31.6)	12.9 (10.6–15.6)	86.6 (50.4–127.4)	27.9 (10.6–47.1)
Southern	40–44	Men	34.3 (21.5–51.8)	23.6 (19.5–28.6)	494.3 (376.6–614.2)	147 (100.1–193.8)
Southern	45–49	Men	60.5 (36.1–93.3)	45.1 (37.2–54.5)	494.3 (376.6–614.2)	147 (100.1–193.8)
Southern	50–54	Men	101.5 (67.1–145.1)	72.7 (60.1–87.7)	2294 (1864.3–2702.2)	558.2 (421.5–683.7)
Southern	55–59	Men	157.3 (94.6–239.3)	91.2 (76–109.3)	2294 (1864.3–2702.2)	558.2 (421.5–683.7)

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Southern	60–64	Men	246 (169.5–344.4)	184.5 (153.7–220.9)	5177.9 (4278.6–6009.6)	959.4 (737.8–1159)
Southern	65–69	Men	365.5 (239.7–549.4)	325.1 (271–388.6)	5177.9 (4278.6–6009.6)	959.4 (737.8–1159)
Southern	70–79	Men	528.3 (378.3–744.6)	474.2 (395.7–566)	8247.4 (6789.9–9604)	1569.9 (1197.5–1908.4)

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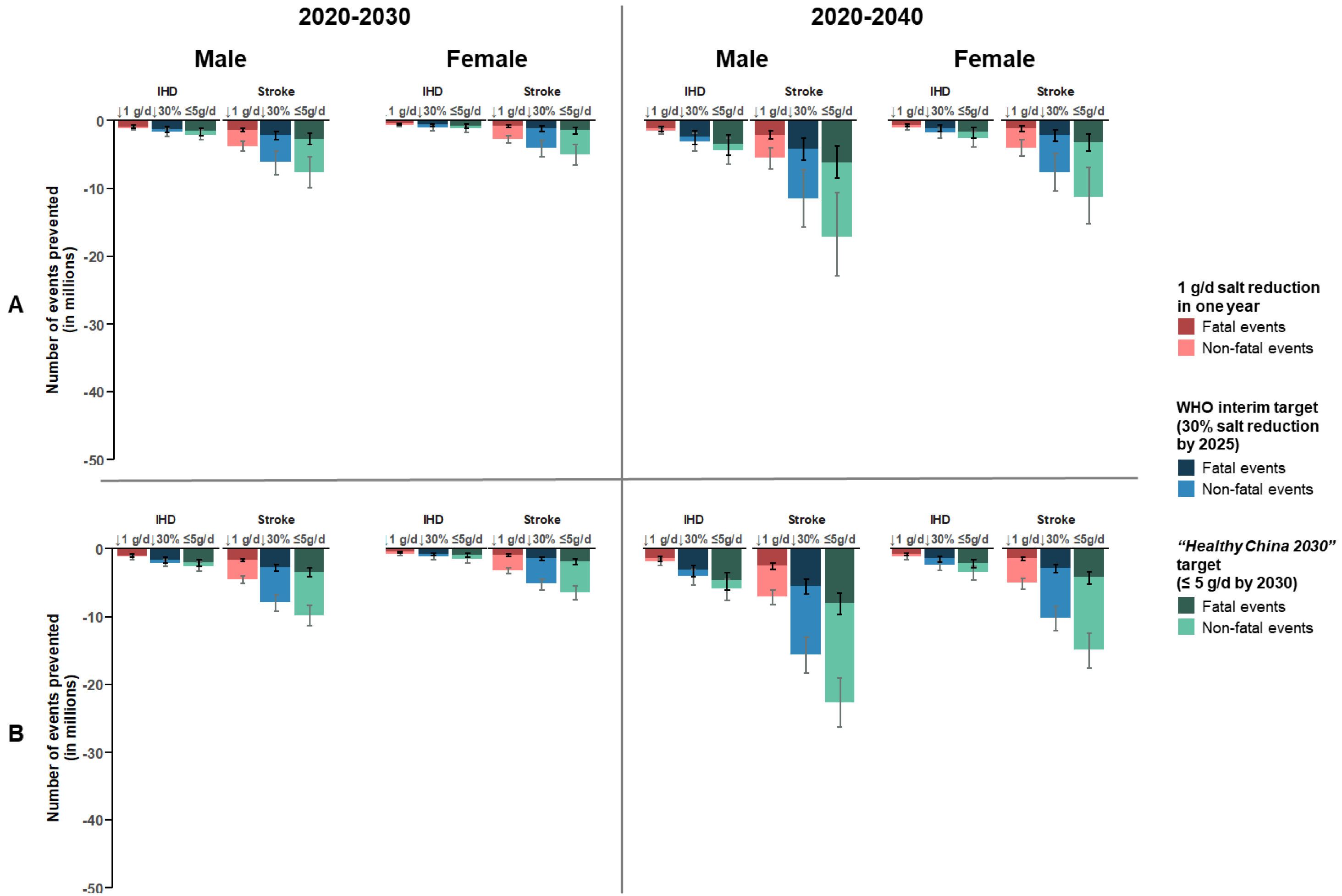
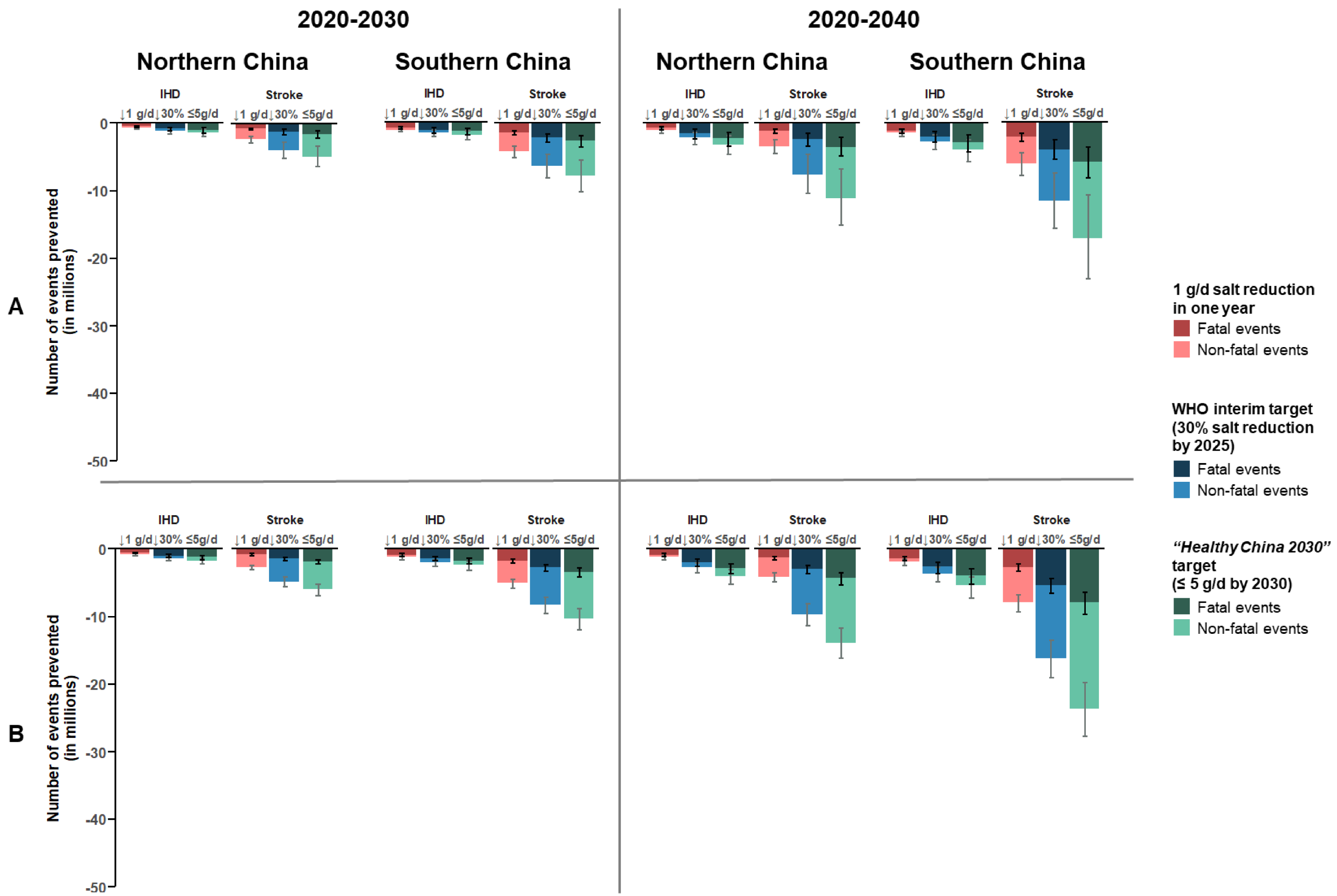
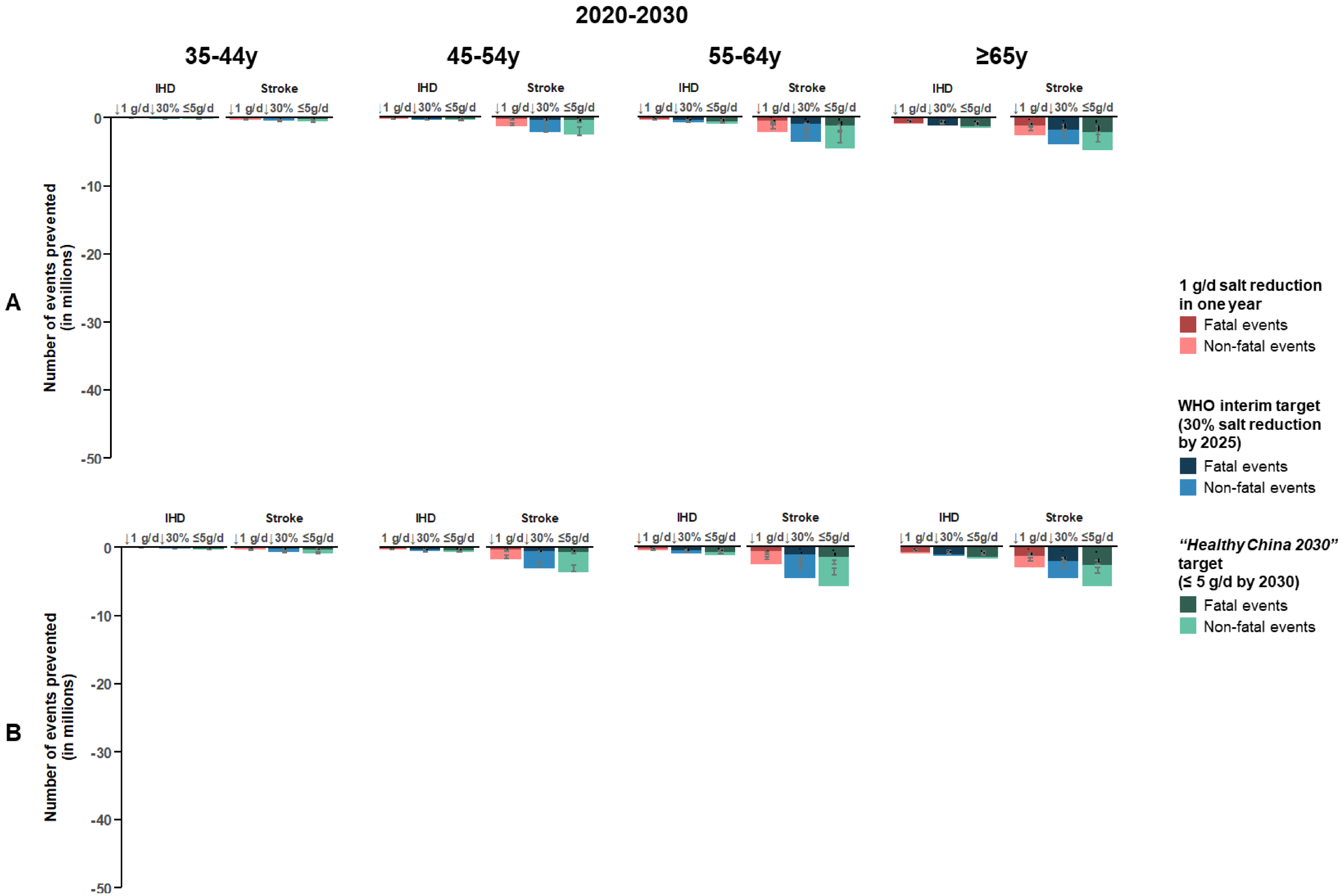
Supplementary Figure 3. Number of CVD events and deaths prevented with different salt reductions, by sex, estimating the effect of salt reduction on blood pressure from (A) randomised trials and (B) a UK-based population study



Supplementary Figure 4. Number of CVD events and deaths prevented with different salt reductions, by region, estimating the effect of salt reduction on blood pressure from (A) randomised trials and (B) a UK-based population study



Supplementary Figure 5. Number of CVD events and deaths prevented with different salt reductions, by age group, estimating the effect of salt reduction on blood pressure from (A) randomised trials and (B) a UK-based population study



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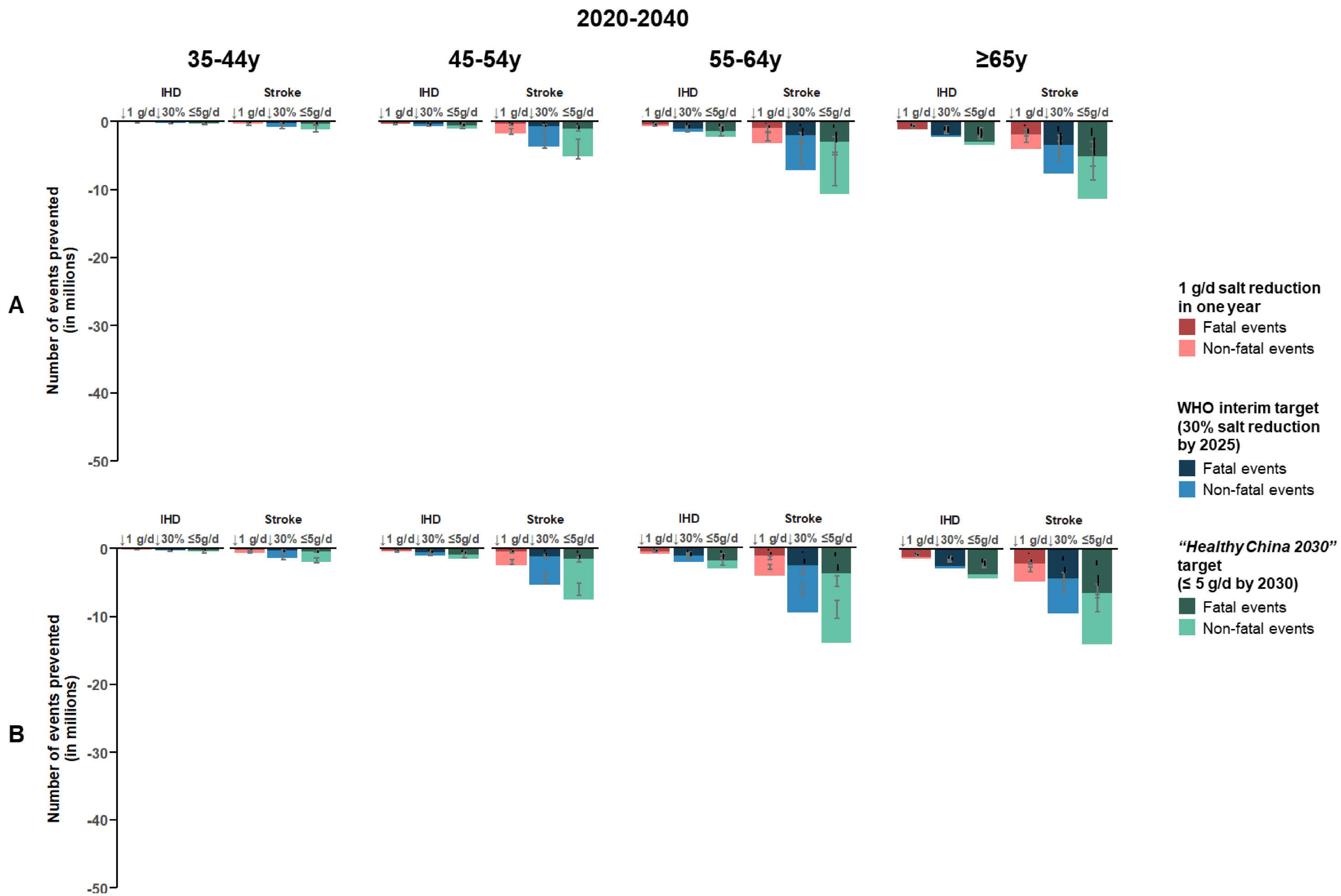
Supplementary Figure 5. *(continued)*



Supplementary Table 4.1. Reduction in salt intake, systolic blood pressure, and CVD risk, events, deaths, and premature deaths, with effect size of salt reduction based on randomised trials

All results are reported in median (95% uncertainty interval). The changes reported for salt intake and SBP are absolute reductions; those reported for disease risk are relative reductions. Abbreviations: IHD = ischaemic heart disease, SBP = systolic blood pressure.

Region	Age groups (years)	Sex	Salt reductions	↓ salt intake (g/d)	↓ SBP (mm Hg)	↓ IHD risk (%)	↓ stroke risk (%)	↓ IHD events by 2030 (n)	↓ stroke events by 2030 (n)	↓ IHD deaths by 2030 (n)	↓ stroke deaths by 2030 (n)	↓ IHD events by 2040 (n)	↓ stroke events by 2040 (n)	↓ IHD deaths by 2040 (n)	↓ stroke deaths by 2040 (n)
Northern	35–39	Women	1 g/d in a year	1 (1–1)	0.8 (0.3–1.3)	3.8 (7.5–1.2)	5.5 (9.2–1.9)	4507 (7842–2507)	6057 (8725–3511)	1252 (2521–452)	712 (1663–0)	5504 (10531–3160)	7595 (11921–4534)	1569 (3253–518)	910 (2141–0)
Northern	35–39	Men	1 g/d in a year	1 (1–1)	0.9 (0.4–1.3)	4.2 (7.9–1.7)	6 (9.4–2.4)	6493 (10075–3663)	9696 (13845–6131)	4510 (7547–2415)	2132 (3966–903)	8200 (12935–4524)	12629 (19078–7187)	5625 (9807–2753)	2794 (5481–1210)
Northern	40–44	Women	1 g/d in a year	1 (1–1)	0.8 (0.3–1.3)	3.9 (7.7–1.2)	5.6 (8.9–2.1)	9068 (13365–5574)	33060 (43622–24614)	2435 (4479–1115)	7981 (12438–5420)	11414 (18763–6537)	45414 (65345–29750)	3219 (6010–1410)	10802 (18105–6592)
Northern	40–44	Men	1 g/d in a year	1 (1–1)	0.9 (0.4–1.3)	4.1 (7.8–1.5)	5.8 (9.1–2.4)	13362 (18082–9940)	51552 (63930–39494)	8893 (11827–5802)	11978 (17429–8114)	17069 (26370–12059)	71419 (96419–49587)	11537 (17317–7266)	16754 (25785–10767)
Northern	45–49	Women	1 g/d in a year	1 (1–1)	1 (0.5–1.4)	3.8 (8.2–2.1)	5.8 (8.5–3.2)	17052 (24843–12726)	37889 (46335–30884)	6419 (9673–4047)	9537 (13068–6797)	21140 (33677–14733)	50526 (65540–38226)	8068 (12741–4870)	12626 (18217–7951)
Northern	45–49	Men	1 g/d in a year	1 (1–1)	1.1 (0.6–1.5)	4.4 (8.9–2.3)	6.4 (9.3–3.6)	27778 (35163–21828)	60272 (75637–48161)	20674 (26990–16127)	14576 (18555–10404)	35015 (48145–26962)	81606 (107692–61616)	26308 (36520–19189)	19571 (26668–13544)
Northern	50–54	Women	1 g/d in a year	1 (1–1)	1.1 (0.6–1.5)	4.8 (8–2.3)	6.5 (9–3.5)	27800 (39648–20875)	143084 (168712–115768)	11237 (16699–7421)	27093 (36289–20984)	34897 (54740–25675)	192023 (238281–142029)	14347 (22806–9283)	36596 (50391–26326)
Northern	50–54	Men	1 g/d in a year	1 (1–1)	1.3 (0.7–1.9)	5.3 (9.1–2.7)	7.3 (10.7–4)	46412 (61167–37698)	237402 (287474–190352)	33438 (44140–26996)	39789 (51004–31782)	60467 (86502–44914)	322240 (416943–236457)	43342 (62073–33209)	54828 (74161–40000)
Northern	55–59	Women	1 g/d in a year	1 (1–1)	1.4 (0.8–2.2)	4.9 (8.2–2.6)	6.7 (10–3.9)	29863 (41795–23056)	106966 (131887–81706)	11507 (16499–7987)	20952 (26808–15563)	41976 (63932–30170)	158849 (209929–111993)	16473 (25210–10187)	31234 (42386–21646)
Northern	55–59	Men	1 g/d in a year	1 (1–1)	1.4 (0.8–2.1)	4.8 (8–2.5)	6.6 (9.9–3.8)	50544 (69215–40154)	167985 (210159–133105)	29502 (39005–22599)	29153 (37843–21882)	71445 (107580–51326)	248483 (334467–180888)	41312 (59433–28885)	43576 (59863–30601)
Northern	60–64	Women	1 g/d in a year	1 (1–1)	1.5 (0.8–2.3)	5.4 (8.8–3)	7.1 (10.8–3.8)	50823 (64962–41137)	226787 (282579–182380)	30818 (39306–24645)	48358 (60701–36973)	75418 (105733–55596)	359042 (486869–253218)	46260 (63926–33306)	76819 (102399–51971)
Northern	60–64	Men	1 g/d in a year	1 (1–1)	1.5 (0.8–2.3)	5.3 (8.7–3)	7.1 (10.7–3.8)	80047 (102395–64919)	284870 (348836–220920)	60306 (75672–48438)	102185 (127656–81291)	118128 (170149–89134)	450413 (599700–307773)	89066 (121420–65223)	161150 (214285–111056)
Northern	65–69	Women	1 g/d in a year	1 (1–1)	1.7 (0.8–2.7)	4.6 (7.6–2.3)	6 (9.7–3.2)	61391 (77078–49323)	167066 (207911–134835)	47512 (61361–39497)	35974 (46709–27996)	93327 (131464–66418)	270058 (375056–191229)	72259 (104341–52187)	58897 (83425–40805)
Northern	65–69	Men	1 g/d in a year	1 (1–1)	1.6 (0.8–2.4)	4.4 (6.9–2.3)	5.6 (8.8–3.1)	87207 (105880–72321)	203029 (249753–162522)	77982 (95071–63465)	74220 (89312–61278)	131453 (172843–95494)	323480 (438051–228791)	116043 (154735–83251)	117090 (156301–85565)

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Northern	70–79	Women	1 g/d in a year	1 (1–1)	1.6 (0.8–2.6)	4.6 (7–2.3)	5.7 (9.2–3)	67016 (83620–53904)	191604 (249200–145202)	55653 (71050–43108)	94404 (120645–69075)	105654 (144040–74494)	317300 (453700–209439)	88296 (121254–59183)	156213 (218921–100073)
Northern	70–79	Men	1 g/d in a year	1 (1–1)	1.5 (0.8–2.4)	4.3 (6.5–2.3)	5.4 (8.6–3.1)	86275 (107510–71767)	231874 (299391–185006)	76713 (93678–63965)	137279 (176483–105853)	134256 (181873–98100)	378856 (537251–267631)	119068 (157952–88667)	224846 (316623–155505)
Southern	35–39	Women	1 g/d in a year	1 (1–1)	0.8 (0.3–1.3)	3.9 (7.5–1.3)	5.6 (9.2–2)	6898 (12542–3810)	11165 (16790–4889)	2114 (4674–459)	1196 (3116–0)	8676 (16385–4581)	14734 (23204–6237)	2678 (5995–522)	1549 (4411–0)
Southern	35–39	Men	1 g/d in a year	1 (1–1)	0.8 (0.3–1.3)	4 (7.6–1.4)	5.6 (9.3–2.2)	9960 (15475–5430)	18038 (27085–10424)	7401 (13121–2957)	4110 (8913–1770)	12530 (20006–6236)	23403 (37006–13046)	9165 (17378–3576)	5382 (11834–2225)
Southern	40–44	Women	1 g/d in a year	1 (1–1)	0.8 (0.3–1.3)	3.9 (7.6–1.1)	5.5 (8.8–2)	12955 (19055–8208)	60298 (86953–43427)	3437 (6616–1119)	15855 (24907–9986)	16763 (26502–10474)	83436 (129700–50896)	4287 (9399–1444)	21689 (35784–12313)
Southern	40–44	Men	1 g/d in a year	1 (1–1)	0.9 (0.4–1.3)	4.1 (7.9–1.6)	5.9 (9.2–2.6)	20715 (30077–11575)	100096 (126997–71472)	14494 (21597–8495)	24669 (35770–16289)	26455 (42071–14078)	139328 (187457–87969)	19300 (30599–9770)	34333 (50918–20901)
Southern	45–49	Women	1 g/d in a year	1 (1–1)	0.9 (0.4–1.3)	3.5 (7.4–1.4)	5 (7.9–2.2)	26268 (37593–17761)	67230 (85039–49112)	9376 (14246–4644)	18955 (26622–13298)	32405 (49283–20427)	87778 (119192–57248)	11708 (18890–5712)	24892 (35666–16433)
Southern	45–49	Men	1 g/d in a year	1 (1–1)	1 (0.5–1.4)	3.7 (8–1.9)	5.6 (8.4–3)	41613 (54054–31945)	110707 (139671–91024)	31174 (48162–20756)	29558 (37696–21535)	51696 (73259–37599)	145994 (195700–108983)	39208 (67588–23526)	38904 (51453–26518)
Southern	50–54	Women	1 g/d in a year	1 (1–1)	1 (0.5–1.4)	4.4 (7.5–2)	5.9 (8.3–3)	40444 (54084–30038)	255313 (302620–207202)	17153 (24191–9827)	54508 (67865–40164)	50233 (73537–36043)	337313 (420686–251843)	21588 (31127–11826)	72917 (93287–48419)
Southern	50–54	Men	1 g/d in a year	1 (1–1)	1.1 (0.6–1.6)	5 (8.2–2.4)	6.7 (9.5–3.6)	72278 (90696–56083)	444214 (527256–343204)	51045 (66145–39766)	82415 (105899–62571)	92373 (126118–66281)	596011 (750138–429677)	66368 (90370–46468)	111481 (147808–78495)
Southern	55–59	Women	1 g/d in a year	1 (1–1)	1.2 (0.7–1.8)	4.2 (6.9–2.3)	5.9 (8.6–3.3)	40374 (57564–32062)	186026 (229625–154396)	15854 (23425–10948)	38977 (49865–29315)	56486 (85938–41688)	269831 (357002–207160)	22112 (33847–14460)	56239 (74994–39722)
Southern	55–59	Men	1 g/d in a year	1 (1–1)	1.2 (0.7–1.7)	4.1 (6.5–2.2)	5.6 (8–3)	74908 (94322–55854)	299176 (373146–243416)	41476 (57757–29757)	55367 (73753–40271)	102915 (135691–70277)	432588 (570140–317086)	57048 (83950–38226)	80219 (111210–54238)
Southern	60–64	Women	1 g/d in a year	1 (1–1)	1.3 (0.7–2)	4.7 (7.3–2.8)	6.2 (9.1–3.5)	72428 (93033–57684)	403134 (465689–321370)	44325 (56420–34894)	90407 (113316–73538)	104669 (143892–77420)	619179 (759191–443906)	63782 (86800–46792)	139615 (185054–102265)
Southern	60–64	Men	1 g/d in a year	1 (1–1)	1.3 (0.8–2)	4.8 (7.6–2.9)	6.4 (9.4–3.5)	121692 (153165–97991)	528429 (640069–426959)	89877 (113645–74355)	206174 (249398–170272)	175966 (240107–131622)	808942 (1062963–584043)	131477 (177830–100373)	315737 (418329–233110)
Southern	65–69	Women	1 g/d in a year	1 (1–1)	1.5 (0.8–2.2)	4 (6.3–2.2)	5.2 (8.2–3)	89140 (110056–75280)	290820 (365575–240156)	70174 (86920–54851)	67254 (86767–55677)	131624 (175765–100749)	457193 (629291–334554)	102067 (140174–72488)	104778 (148222–77347)
Southern	65–69	Men	1 g/d in a year	1 (1–1)	1.3 (0.7–1.9)	3.5 (5.4–2.1)	4.6 (7–2.8)	129486 (150478–107726)	368489 (446656–308088)	112852 (137962–100060)	143741 (170185–116700)	187014 (229455–141058)	563994 (744106–423805)	162383 (214570–134940)	219287 (284542–158789)
Southern	70–79	Women	1 g/d in a year	1 (1–1)	1.4 (0.8–2.2)	4 (6–2.3)	5 (8–3.1)	97235 (120627–80117)	340968 (429003–278235)	80384 (101463–65934)	178859 (229577–146753)	148259 (200053–109902)	550153 (757135–407040)	122879 (167098–91073)	288501 (409067–214950)
Southern	70–79	Men	1 g/d in a year	1 (1–1)	1.4 (0.8–2.2)	4 (6–2.4)	5.1 (8–3.1)	133578 (159196–110200)	437572 (545295–358581)	118950 (143540–97781)	277926 (340737–225652)	203410 (264351–151398)	708301 (963538–522746)	184296 (238795–135180)	447987 (605267–327253)

Northern	35–39	Women	30% by 2025	3.4 (3.4–3.4)	2.7 (0.9–4.3)	12.2 (22.9–4)	17.3 (27.6–6.3)	6603 (13065–3881)	9224 (14851–5228)	1865 (3982–570)	1117 (2670–0)	10154 (20837–5757)	14934 (24846–7596)	2827 (6214–795)	1774 (4441–0)
Northern	35–39	Men	30% by 2025	4.1 (4.1–4.1)	3.6 (1.6–5.4)	16.1 (28.6–6.7)	22.4 (33.3–9.7)	11047 (17995–5909)	17462 (26915–8984)	7507 (13708–3462)	3868 (7776–1685)	17747 (31039–8300)	28460 (45411–13112)	11594 (23361–5306)	6435 (13286–2523)
Northern	40–44	Women	30% by 2025	3.5 (3.5–3.5)	2.9 (1.1–4.6)	13.1 (24.6–4.3)	18.3 (28–7.3)	13071 (21987–7235)	52867 (76482–32865)	3716 (6997–1589)	12653 (21190–7332)	22394 (39862–10581)	91715 (144543–47426)	5829 (12765–2318)	22377 (39714–10802)
Northern	40–44	Men	30% by 2025	4 (4–4)	3.4 (1.5–5.3)	15.4 (28–6)	21.4 (31.9–9.5)	20976 (33421–13272)	89050 (122005–57842)	14032 (21884–8485)	20934 (32642–13453)	36180 (62812–19095)	162466 (235565–88552)	24252 (40340–12256)	38086 (62454–21324)
Northern	45–49	Women	30% by 2025	3.5 (3.5–3.5)	3.5 (1.9–4.8)	12.8 (25.7–7.1)	18.7 (26.8–10.8)	23865 (38753–16169)	58214 (75640–42948)	9052 (14586–5410)	14494 (21027–8726)	38178 (67250–23222)	99378 (137023–67743)	14588 (25261–7643)	24672 (37849–12980)
Northern	45–49	Men	30% by 2025	4.1 (4.1–4.1)	4.6 (2.5–6.3)	16.7 (31.7–8.9)	23.7 (32.8–13.9)	42816 (60418–31318)	101890 (135919–74624)	32024 (45956–22148)	24361 (33665–16709)	70640 (109364–47097)	180854 (252268–120278)	53497 (83571–33753)	43363 (62867–28590)
Northern	50–54	Women	30% by 2025	3.5 (3.5–3.5)	3.9 (2.1–5.3)	15.8 (25.2–7.7)	20.6 (27.9–11.5)	41854 (67235–29967)	233616 (292924–167093)	17451 (27941–10980)	44515 (61923–31211)	66562 (115415–44662)	390243 (508322–253630)	27502 (47267–16283)	73900 (106964–47481)
Northern	50–54	Men	30% by 2025	4.2 (4.2–4.2)	5.3 (3–7.9)	20.5 (33.1–11)	27.3 (37.8–15.9)	81963 (119995–56885)	444102 (578747–309582)	58443 (86160–43871)	75506 (102841–53660)	136861 (213082–85747)	768130 (1039636–492282)	98238 (151705–66804)	130490 (184954–86566)
Northern	55–59	Women	30% by 2025	3.3 (3.3–3.3)	4.6 (2.7–7.1)	15.3 (24.6–8.3)	20.5 (29.3–12.2)	50996 (77832–35393)	193342 (254012–134243)	19909 (30687–11894)	37999 (51379–25870)	90233 (144532–57197)	353895 (482833–229648)	35095 (56391–19629)	69333 (97302–44286)
Northern	55–59	Men	30% by 2025	3.8 (3.8–3.8)	5.3 (3–8.2)	17.2 (27.5–9.4)	22.9 (32.9–13.7)	95625 (144925–64409)	334461 (449329–236637)	54636 (80267–36698)	58767 (80516–39722)	170613 (276936–105116)	618041 (862960–410625)	97287 (151064–59720)	108969 (154131–67974)
Northern	60–64	Women	30% by 2025	3.5 (3.5–3.5)	5.2 (2.8–8)	17.3 (27.2–9.9)	22.6 (32.5–12.5)	82089 (114258–60059)	390011 (518806–274700)	50322 (69056–35930)	83395 (109126–56415)	160956 (241762–106662)	803697 (1135515–508466)	99163 (146023–63879)	172338 (238707–105329)
Northern	60–64	Men	30% by 2025	4 (4–4)	6 (3.3–9.2)	19.7 (30.7–11.4)	25.6 (36.5–14.4)	140154 (201016–104124)	535141 (700533–360538)	105835 (144240–75340)	191386 (252610–129545)	284881 (438933–193956)	1134075 (1561361–692263)	216256 (307672–136596)	406132 (554299–242765)
Northern	65–69	Women	30% by 2025	3 (3–3)	5.1 (2.4–7.9)	13.1 (20.8–6.8)	16.7 (26.1–9.1)	90719 (124945–65499)	260855 (349837–187759)	70199 (99245–51576)	56719 (78108–40060)	182493 (274793–115811)	545842 (798208–349751)	141923 (217651–88348)	119440 (177269–74633)
Northern	65–69	Men	30% by 2025	3.8 (3.8–3.8)	5.9 (3–9.2)	15.4 (23.5–8.3)	19.4 (29.3–11.1)	145978 (191524–104065)	359517 (479969–252149)	128730 (171663–90793)	130101 (171114–94298)	301672 (427970–188148)	777466 (1110862–487243)	266518 (381210–163587)	282517 (397286–182182)
Northern	70–79	Women	30% by 2025	2.6 (2.6–2.6)	4.3 (2.1–6.8)	11.6 (17.4–5.9)	14.4 (22.4–7.7)	100580 (134559–72383)	299310 (416036–202454)	83957 (113594–57482)	147430 (201010–96499)	199127 (285497–124684)	616438 (916818–368480)	167955 (239090–98475)	302938 (442011–176859)
Northern	70–79	Men	30% by 2025	3.7 (3.7–3.7)	5.7 (3–8.8)	15 (22.1–8.3)	18.6 (28.2–10.8)	156497 (212380–111762)	442874 (621357–308817)	138886 (184480–101018)	262811 (366239–179892)	323631 (464885–206210)	951783 (1404915–602166)	287751 (403511–186414)	563341 (827918–355372)
Southern	35–39	Women	30% by 2025	3.2 (3.2–3.2)	2.5 (0.9–4)	11.8 (21.9–4)	16.5 (26.3–6.2)	10243 (19506–5280)	17467 (27960–7077)	3165 (7092–580)	1839 (5319–0)	14712 (31444–7110)	27400 (46828–9961)	4761 (11047–776)	2891 (9007–0)
Southern	35–39	Men	30% by 2025	3.2 (3.2–3.2)	2.7 (1–4.2)	12.4 (22.5–4.4)	17 (26.8–6.8)	14764 (23953–7013)	28197 (44951–14782)	10717 (21116–4067)	6502 (14368–2634)	22517 (39802–9733)	45085 (75836–21306)	16090 (34345–6005)	10464 (23652–3683)

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Southern	40–44	Women	30% by 2025	2.9 (2.9–2.9)	2.4 (0.9–3.8)	10.9 (20.8–3.3)	15.3 (23.8–5.8)	17696 (28084–11060)	88464 (136789–53263)	4499 (9941–1526)	22945 (37692–12758)	28309 (50416–14732)	149419 (250486–75888)	7195 (17256–2096)	39115 (68319–18453)
Southern	40–44	Men	30% by 2025	3.1 (3.1–3.1)	2.7 (1.2–4.1)	12.3 (22.5–5)	17.3 (25.9–7.7)	28533 (45854–15137)	151612 (202965–94337)	20866 (33353–10295)	37392 (55472–21904)	46755 (81098–22062)	263497 (380900–140360)	34440 (59303–15316)	65232 (99513–33268)
Southern	45–49	Women	30% by 2025	3 (3–3)	2.6 (1.1–3.9)	10.1 (20.6–4)	14.1 (21.9–6.4)	34293 (52358–21357)	93258 (126540–59217)	12284 (20019–5993)	26417 (37922–17178)	50701 (90644–28039)	151353 (221125–82349)	18748 (33178–8528)	42576 (64440–24531)
Southern	45–49	Men	30% by 2025	3.3 (3.3–3.3)	3.2 (1.6–4.5)	11.6 (23.8–6.1)	17.1 (25–9.5)	56728 (81649–40351)	161876 (218085–119366)	42928 (75255–25100)	43247 (57312–28431)	88164 (144571–55470)	271442 (384641–184774)	67592 (131277–35830)	73213 (102820–43299)
Southern	50–54	Women	30% by 2025	3.1 (3.1–3.1)	3.1 (1.7–4.3)	13.1 (21.6–6.2)	17.3 (23.6–9.2)	56777 (84762–39789)	387015 (485909–280826)	24500 (35418–13180)	83780 (107687–54156)	88970 (141020–53117)	623973 (826370–410104)	37611 (55419–19184)	136267 (181317–79939)
Southern	50–54	Men	30% by 2025	3.3 (3.3–3.3)	3.8 (2.1–5.3)	15.4 (24.5–7.8)	20.2 (27.8–11.4)	108755 (149959–74728)	706139 (892439–495858)	78001 (107479–52076)	131987 (175718–90979)	174072 (256021–106521)	1177272 (1548235–753526)	123653 (183412–76866)	219805 (301737–138580)
Southern	55–59	Women	30% by 2025	3.2 (3.2–3.2)	3.9 (2.2–5.8)	12.8 (20.4–7.2)	17.7 (25–10)	66856 (102157–47687)	320128 (423546–240605)	26088 (40120–16726)	66805 (89109–46316)	116266 (187930–74523)	571683 (791953–396535)	45053 (71711–27611)	120332 (165213–77434)
Southern	55–59	Men	30% by 2025	3.2 (3.2–3.2)	3.7 (2.1–5.3)	12.3 (19.1–6.7)	16.5 (23.3–9.2)	120414 (160582–80045)	511312 (675324–366689)	66982 (99309–44081)	95030 (131837–63150)	201505 (291238–124692)	908547 (1253206–596694)	114068 (177411–69443)	168822 (241534–106641)
Southern	60–64	Women	30% by 2025	2.9 (2.9–2.9)	3.8 (2.2–5.8)	13.1 (20–8)	17.1 (24.4–9.9)	104632 (142719–77845)	615165 (744130–446153)	63916 (86127–47133)	138236 (181689–102660)	195088 (284881–130442)	1214665 (1541523–782473)	121038 (172270–80548)	269751 (377500–181950)
Southern	60–64	Men	30% by 2025	3.2 (3.2–3.2)	4.3 (2.5–6.6)	14.8 (22.5–8.9)	19.2 (27.3–11)	185037 (251240–138261)	847776 (1098488–613892)	138271 (186105–105278)	330870 (431860–244933)	354636 (515492–238810)	1715561 (2343966–1102989)	261233 (377332–179779)	667646 (923707–439887)
Southern	65–69	Women	30% by 2025	2.8 (2.8–2.8)	4 (2.3–6.2)	10.8 (16.4–5.9)	13.7 (21–8.1)	123849 (163157–97439)	426051 (572121–319395)	96957 (129682–69803)	98053 (134585–74160)	239580 (337027–160578)	863178 (1252363–573591)	185848 (270602–118065)	200310 (295973–130696)
Southern	65–69	Men	30% by 2025	2.9 (2.9–2.9)	3.8 (2.2–5.7)	10.1 (15.1–5.9)	12.9 (19.3–7.9)	183247 (222131–139259)	547554 (709315–416452)	158553 (207306–133355)	212788 (270954–156036)	346061 (449946–232172)	1095799 (1529285–747682)	298776 (424804–222379)	424321 (586026–279896)
Southern	70–79	Women	30% by 2025	2.4 (2.4–2.4)	3.4 (2–5.3)	9.3 (13.7–5.5)	11.6 (18–7.3)	135032 (177502–102908)	491657 (658512–373158)	111718 (148614–84693)	258004 (354259–197371)	254053 (360357–174834)	975693 (1400604–672521)	209549 (300755–143088)	510983 (759280–357321)
Southern	70–79	Men	30% by 2025	2.9 (2.9–2.9)	4.2 (2.4–6.5)	11.3 (16.6–6.8)	14.1 (21.7–8.9)	206364 (265672–154004)	714573 (955207–531392)	186931 (239927–137541)	452095 (599213–332279)	406509 (557898–271860)	1461679 (2090290–997496)	370062 (503664–240877)	923874 (1315209–627858)
Northern	35–39	Women	≤5 g/d by 2030	6.3 (6.3–6.3)	5 (1.8–8.1)	21.8 (38.8–7.3)	30.1 (45.7–11.5)	8080 (16140–4783)	11474 (18507–6114)	2267 (4915–667)	1377 (3333–0)	14394 (29711–7692)	21319 (35264–10460)	3932 (8795–1077)	2523 (6334–0)
Northern	35–39	Men	≤5 g/d by 2030	7.8 (7.8–7.8)	6.7 (2.9–10.3)	28.3 (47.1–12.3)	38 (53.4–17.5)	13709 (22413–6926)	21741 (33628–10771)	9225 (17123–4220)	4817 (9711–2085)	25290 (43485–11699)	40607 (64513–18129)	16444 (33042–7501)	9143 (18766–3362)
Northern	40–44	Women	≤5 g/d by 2030	6.7 (6.7–6.7)	5.5 (2.1–8.6)	23.3 (41.3–8)	31.7 (46.2–13.3)	15861 (27057–8318)	64225 (94375–37697)	4431 (8572–1867)	15579 (26125–8453)	32024 (57533–14441)	132152 (206125–63954)	8285 (18211–3065)	32215 (56712–14794)
Northern	40–44	Men	≤5 g/d by 2030	7.6 (7.6–7.6)	6.5 (2.8–10)	27.1 (46.2–11)	36.6 (51.7–17.1)	25553 (41268–15101)	109626 (150212–67434)	17028 (26997–9835)	25715 (40213–16034)	52114 (89884–26093)	233874 (331701–124096)	34990 (58134–16447)	54811 (88583–29883)

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Northern	45–49	Women	≤5 g/d by 2030	6.6 (6.6–6.6)	6.6 (3.5–9.2)	22.8 (43–12.9)	32.4 (44.5–19.3)	28165 (46746–18394)	69957 (91843–50341)	10752 (17476–6228)	17299 (25518–9929)	53129 (95660–30321)	141296 (194059–94999)	20426 (35883–10032)	35083 (53664–18026)
Northern	45–49	Men	≤5 g/d by 2030	7.7 (7.7–7.7)	8.6 (4.7–11.8)	29.2 (51.3–16.2)	40 (52.9–24.7)	50800 (73282–36287)	123258 (165090–88236)	38154 (55786–25701)	29523 (40878–20135)	100026 (154284–64055)	257082 (353804–169208)	75748 (118059–46591)	61432 (87901–40438)
Northern	50–54	Women	≤5 g/d by 2030	6.5 (6.5–6.5)	7.3 (4–10)	27.7 (42.2–14.1)	35.4 (46.2–20.5)	50359 (82468–35296)	284834 (359452–198171)	21116 (34210–13020)	54245 (75967–37099)	94012 (163206–60762)	553752 (716189–353333)	38616 (67027–21984)	104899 (150919–66146)
Northern	50–54	Men	≤5 g/d by 2030	8 (8–8)	10.1 (5.7–14.9)	35.2 (53.2–19.8)	45.3 (59.3–28)	100193 (146779–67309)	544952 (705899–373175)	71258 (105622–52770)	92606 (125316–65280)	194260 (295728–119220)	1084225 (1428978–695192)	139293 (212365–92393)	183946 (253683–122469)
Northern	55–59	Women	≤5 g/d by 2030	6.2 (6.2–6.2)	8.7 (5–13.4)	26.9 (41.3–15)	35.1 (48.1–21.8)	64878 (99484–43464)	246943 (323515–168529)	25274 (39181–14680)	48469 (65524–32401)	133614 (212380–82970)	522124 (698552–338565)	51907 (83127–28294)	102256 (141291–65394)
Northern	55–59	Men	≤5 g/d by 2030	7.3 (7.3–7.3)	10 (5.7–15.4)	30 (45.5–17)	38.9 (52.9–24.3)	121503 (184293–79289)	427456 (569770–298491)	69491 (102518–45309)	75107 (102235–49861)	252655 (398791–152879)	909788 (1234868–607023)	143894 (220463–86969)	160442 (221369–100379)
Northern	60–64	Women	≤5 g/d by 2030	6.5 (6.5–6.5)	9.8 (5.3–15.1)	30.2 (45.1–17.9)	38.3 (52.4–22.4)	102344 (144454–73126)	491548 (654073–337402)	62663 (87281–43394)	105130 (137907–69502)	240569 (358206–156333)	1197771 (1652806–754700)	147878 (216305–94399)	256453 (347245–156166)
Northern	60–64	Men	≤5 g/d by 2030	7.6 (7.6–7.6)	11.3 (6.2–17.5)	34 (50–20.5)	42.9 (57.6–25.5)	176396 (253751–128644)	676554 (879679–447215)	133319 (182453–91853)	241966 (318508–159723)	425694 (640306–287619)	1678255 (2235170–1033219)	323224 (454559–202315)	601031 (805403–361102)
Northern	65–69	Women	≤5 g/d by 2030	5.6 (5.6–5.6)	9.6 (4.6–15)	23.4 (35.6–12.4)	29.2 (43.5–16.4)	110668 (155279–77020)	320614 (435771–224082)	85769 (123300–60009)	69900 (97295–47827)	273670 (411929–167070)	821428 (1183771–517311)	212435 (326586–127411)	179699 (263365–110373)
Northern	65–69	Men	≤5 g/d by 2030	7.1 (7.1–7.1)	11.2 (5.7–17.3)	27.2 (39.7–15.1)	33.4 (48.1–20)	179207 (238461–123078)	445206 (597490–304193)	158138 (213479–107286)	161287 (212926–113755)	454153 (639586–275991)	1168368 (1634607–726751)	401197 (569404–239815)	424380 (583251–271725)
Northern	70–79	Women	≤5 g/d by 2030	5 (5–5)	8.2 (4–12.8)	20.8 (30.3–10.8)	25.4 (38.1–14.1)	127468 (173451–87545)	383116 (538374–248946)	106572 (146204–69282)	188590 (260112–119239)	304059 (437242–182922)	944636 (1390481–552079)	256828 (366478–144462)	464166 (670967–264980)
Northern	70–79	Men	≤5 g/d by 2030	7 (7–7)	10.8 (5.6–16.6)	26.5 (37.6–15.2)	32.3 (46.5–19.4)	200620 (274906–138146)	571694 (802246–388946)	178229 (238807–124872)	339319 (472879–227518)	496366 (707367–310363)	1454289 (2099483–917462)	441280 (614293–280580)	861332 (1237421–542600)
Southern	35–39	Women	≤5 g/d by 2030	6 (6–6)	4.8 (1.8–7.6)	21.1 (37.3–7.4)	28.9 (43.8–11.5)	12192 (24072–6052)	21447 (34897–7855)	3792 (8696–666)	2262 (6644–0)	20722 (44596–9370)	39057 (66590–14189)	6594 (15682–1025)	4114 (12770–0)
Southern	35–39	Men	≤5 g/d by 2030	6.1 (6.1–6.1)	5 (2–7.8)	22.2 (38.2–8.2)	29.7 (44.6–12.5)	17960 (29629–8182)	34874 (56004–17667)	12910 (26261–4907)	8009 (17893–3089)	31788 (56508–12432)	64336 (107483–29171)	22849 (49048–8197)	14853 (33754–4740)
Southern	40–44	Women	≤5 g/d by 2030	5.6 (5.6–5.6)	4.5 (1.7–7.1)	19.7 (35.6–6.2)	26.8 (40.1–10.7)	21030 (34362–12943)	106999 (168587–60824)	5307 (12092–1764)	28046 (46320–14685)	40132 (72434–17006)	214659 (360858–101519)	10267 (24827–2690)	56105 (98510–24931)
Southern	40–44	Men	≤5 g/d by 2030	5.9 (5.9–5.9)	5.1 (2.2–7.7)	21.9 (38.3–9.2)	30.2 (43.3–14.1)	33934 (56062–17772)	184103 (250589–109985)	24959 (40969–11912)	45673 (67995–25186)	66757 (117020–28211)	380606 (545181–191974)	48609 (85637–20124)	94115 (143504–46317)
Southern	45–49	Women	≤5 g/d by 2030	5.7 (5.7–5.7)	4.9 (2.1–7.4)	18.2 (35.3–7.4)	25 (37.3–11.8)	39465 (62964–23944)	110091 (152865–66205)	14388 (23911–6821)	31178 (45452–19641)	69367 (128942–34051)	212592 (314460–109125)	25259 (46811–11594)	59773 (91565–32505)
Southern	45–49	Men	≤5 g/d by 2030	6.2 (6.2–6.2)	6 (3.1–8.5)	20.8 (40.1–11.3)	29.8 (41.9–17.1)	66467 (98870–45417)	192864 (263734–139418)	50221 (90799–28564)	51897 (69358–32397)	122742 (205480–70816)	385468 (546119–255140)	94509 (186475–47947)	103768 (145802–59884)

Southern	50–54	Women	≤5 g/d by 2030	5.9 (5.9–5.9)	5.9 (3.2–8.2)	23.2 (36.8–11.5)	30.1 (39.8–16.6)	67813 (103412–45331)	468442 (595347–328093)	28826 (42455–15384)	101941 (131728–63515)	125612 (200080–71468)	883454 (1171058–562141)	52932 (78277–26443)	192653 (257245–110052)
Southern	50–54	Men	≤5 g/d by 2030	6.2 (6.2–6.2)	7.1 (4–10.1)	27 (41.1–14.2)	34.8 (46–20.4)	131872 (183778–86683)	861885 (1095151–588274)	94364 (131747–61526)	161024 (215295–108436)	245652 (362293–142625)	1671135 (2181913–1050057)	173114 (259723–104145)	311752 (425297–192834)
Southern	55–59	Women	≤5 g/d by 2030	6 (6–6)	7.4 (4.2–10.9)	22.9 (35–13.2)	30.7 (41.9–18.1)	84722 (130476–58078)	406749 (541031–298256)	32842 (50931–20773)	85125 (113837–57645)	171230 (276967–106354)	846194 (1159478–579298)	66284 (106084–39912)	177982 (242588–113581)
Southern	55–59	Men	≤5 g/d by 2030	6 (6–6)	7 (3.9–10)	21.9 (33–12.3)	28.9 (39.3–16.8)	149951 (204497–96984)	649076 (862881–452345)	83891 (126233–53589)	120776 (168334–78622)	296947 (430346–177118)	1344870 (1840986–867579)	168248 (262492–99867)	249878 (356322–157300)
Southern	60–64	Women	≤5 g/d by 2030	5.6 (5.6–5.6)	7.2 (4.1–10.9)	23.4 (34.4–14.7)	29.9 (41–17.8)	128981 (178635–93052)	768153 (938966–538614)	78695 (107722–56481)	172998 (229031–124716)	289570 (425764–188590)	1815316 (2295111–1146380)	180627 (257373–116341)	402391 (560930–266681)
Southern	60–64	Men	≤5 g/d by 2030	6.1 (6.1–6.1)	8.2 (4.6–12.4)	26 (38.3–16.2)	33.1 (45.3–19.8)	229371 (316259–166399)	1065080 (1388673–747131)	171141 (233926–126340)	415634 (545882–297963)	529081 (768315–348146)	2562566 (3458265–1626432)	389455 (562939–261719)	997075 (1361227–648645)
Southern	65–69	Women	≤5 g/d by 2030	5.2 (5.2–5.2)	7.6 (4.3–11.7)	19.3 (28.7–10.8)	24.2 (36–14.8)	149889 (200416–112186)	521337 (710671–377192)	115949 (159642–81213)	119415 (167028–86724)	356992 (507022–228025)	1295785 (1878633–840145)	277330 (407137–169197)	301271 (443462–191521)
Southern	65–69	Men	≤5 g/d by 2030	5.6 (5.6–5.6)	7.2 (4.1–10.8)	18.1 (26.6–10.9)	22.9 (33.2–14.5)	218942 (271532–162096)	667153 (879142–491802)	190835 (254140–153962)	259104 (335997–184220)	514390 (675845–329840)	1644012 (2298618–1093306)	442900 (638882–317686)	636021 (880502–409837)
Southern	70–79	Women	≤5 g/d by 2030	4.5 (4.5–4.5)	6.4 (3.7–9.9)	16.9 (24.3–10.2)	20.8 (31.3–13.3)	167634 (226300–122920)	622972 (848577–457654)	138968 (189144–101429)	326695 (457267–242211)	384909 (551855–256532)	1489939 (2142835–1004130)	317473 (460623–208921)	780313 (1161049–534537)
Southern	70–79	Men	≤5 g/d by 2030	5.5 (5.5–5.5)	8 (4.5–12.2)	20.4 (29.1–12.4)	25 (37.1–16.1)	260560 (341663–187315)	913198 (1235848–660657)	235886 (308606–167439)	577404 (775267–414296)	620118 (855053–403590)	2239609 (3178986–1507295)	565252 (772088–356766)	1415544 (1997561–949531)

Supplementary Table 4.2. Reduction in salt intake, systolic blood pressure, and CVD risk, events, deaths, and premature deaths, with effect size of salt reduction based on a population study (more prolonged effect)

All results are reported in median (95% uncertainty interval). The changes reported for salt intake and SBP are absolute reductions; those reported for disease risk are relative reductions. Abbreviations: IHD = ischaemic heart disease, SBP = systolic blood pressure.

Region	Age groups (years)	Sex	Salt reduc-tions	↓ salt intake (g/d)	↓ SBP (mm Hg)	↓ IHD risk (%)	↓ stroke risk (%)	↓ IHD events by 2030 (n)	↓ stroke events by 2030 (n)	↓ IHD deaths by 2030 (n)	↓ stroke deaths by 2030 (n)	↓ IHD events by 2040 (n)	↓ stroke events by 2040 (n)	↓ IHD deaths by 2040 (n)	↓ stroke deaths by 2040 (n)
Northern	35–39	Women	1 g/d in a year	1 (1–1)	1.9 (1.4–2.4)	9.2 (16.7–5.6)	13.1 (16.1–9.6)	6839 (11207–3879)	9413 (13713–5787)	1798 (3695–554)	911 (2528–0)	9559 (16551–5270)	13948 (20525–8444)	2547 (5500–743)	1372 (3791–0)
Northern	35–39	Men	1 g/d in a year	1 (1–1)	1.9 (1.5–2.4)	9.2 (16.6–5.6)	13.1 (15.9–9.9)	8982 (14983–5340)	14295 (19961–9528)	6723 (11163–3711)	3246 (5841–1377)	12649 (22554–7327)	21048 (29786–13723)	9463 (16861–4962)	4788 (8653–2062)
Northern	40–44	Women	1 g/d in a year	1 (1–1)	1.9 (1.5–2.4)	9.5 (16.7–5.6)	13 (16–9.9)	12577 (18935–7996)	48219 (59787–38073)	3463 (6380–1416)	12341 (17474–8150)	18941 (30242–11184)	76722 (97096–58672)	5226 (9967–2091)	19677 (28322–12724)
Northern	40–44	Men	1 g/d in a year	1 (1–1)	1.9 (1.5–2.4)	9.5 (16.6–5.6)	13 (16–9.9)	17991 (27142–12598)	74089 (89367–60486)	12553 (18992–7942)	17913 (24389–12565)	26982 (44571–17571)	117370 (145184–93160)	18803 (30599–11201)	28442 (39365–19747)
Northern	45–49	Women	1 g/d in a year	1 (1–1)	1.9 (1.5–2.3)	8.1 (12.7–5.1)	11.1 (13.3–8.9)	21809 (29780–16004)	49431 (59804–39923)	8138 (12813–4817)	12746 (17776–8407)	30818 (45156–21208)	73766 (90995–58294)	11404 (19005–6616)	19032 (26909–12545)
Northern	45–49	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	8.1 (12.6–5.2)	11.1 (13.2–9)	33669 (45632–25585)	76326 (90896–63867)	25089 (33889–18169)	18436 (24646–12825)	47687 (68793–33940)	114067 (138092–93058)	35414 (50411–24620)	27456 (37000–18767)
Northern	50–54	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	8.2 (13.2–5.2)	11.1 (13.1–8.8)	34535 (46936–25041)	181264 (206407–157787)	14151 (20262–9431)	35110 (44166–27115)	48155 (69807–33418)	264954 (308497–224231)	19682 (29739–12737)	51147 (65216–39033)
Northern	50–54	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	8.2 (13.1–5.3)	11.1 (13–9)	55912 (74474–43792)	287927 (322557–252905)	39803 (53315–30099)	49786 (60452–39380)	77825 (110354–57969)	419700 (480061–359570)	55473 (78548–40060)	72569 (89123–56883)
Northern	55–59	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	6.9 (9.6–4.9)	9 (10.6–7.4)	34895 (44514–27412)	125912 (142591–109250)	13310 (18351–9500)	24400 (30192–18805)	52116 (69675–39628)	197231 (227945–166689)	19789 (28556–13773)	38153 (48164–28935)
Northern	55–59	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	6.9 (9.6–4.9)	9 (10.6–7.4)	59551 (74242–47522)	199210 (226481–175070)	34327 (44445–27122)	34317 (42015–27282)	89242 (116289–67955)	311857 (361864–266484)	51285 (69979–39016)	53590 (66424–42320)
Northern	60–64	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	6.8 (9.3–4.9)	9 (10.7–7.3)	55347 (67793–46288)	253200 (282750–224573)	33217 (41642–26599)	54172 (63165–45396)	86670 (112568–68907)	419859 (483854–359329)	51869 (68518–39861)	89809 (106604–73898)
Northern	60–64	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	6.8 (9.3–4.9)	9 (10.7–7.3)	87732 (105674–74406)	316765 (351757–285988)	65963 (79068–55636)	115226 (130079–100248)	137172 (174930–109477)	525916 (601399–456211)	103394 (130393–82305)	191323 (221401–160589)
Northern	65–69	Women	1 g/d in a year	1 (1–1)	1.9 (1.5–2.3)	5.3 (6.7–4.2)	6.8 (8.5–5.4)	64862 (74117–56964)	176808 (198512–157625)	49542 (57216–43236)	37959 (45144–31872)	102142 (121317–85939)	294422 (342841–251040)	77940 (92949–65958)	62895 (77522–51392)
Northern	65–69	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	5.3 (6.6–4.3)	6.8 (8.3–5.5)	93854 (105799–83111)	221145 (245659–199127)	83319 (94032–73537)	80527 (91660–70716)	147441 (173462–125591)	367561 (424486–317173)	130867 (153326–112527)	133937 (158451–114167)

Northern	70–79	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	5.4 (6.6–4.2)	6.8 (8.3–5.5)	101083 (113515–90410)	289622 (320874–265530)	84756 (95342–74972)	140252 (156532–125567)	146018 (169670–125841)	439764 (503235–385705)	122389 (142506–105043)	213303 (245751–184094)
Northern	70–79	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	5.3 (6.6–4.2)	6.8 (8.3–5.5)	134525 (149994–120898)	357605 (392686–327175)	120977 (134456–108778)	211507 (234222–190268)	194062 (223515–167476)	541960 (618474–476904)	174355 (201719–150348)	320202 (369908–275764)
Southern	35–39	Women	1 g/d in a year	1 (1–1)	2 (1.4–2.4)	9.5 (16.7–5.6)	13 (16–9.9)	18785 (30533–11409)	89623 (112052–69984)	5123 (10419–1513)	24413 (35761–15276)	28121 (49076–16289)	142168 (182251–107390)	7708 (16263–2239)	38799 (57675–23774)
Southern	35–39	Men	1 g/d in a year	1 (1–1)	1.9 (1.5–2.4)	9.5 (16.6–5.6)	13 (15.9–10)	28207 (42788–18229)	142049 (172694–115285)	19601 (32462–11658)	36610 (51550–24713)	42653 (69672–25961)	225389 (280534–177980)	29336 (52215–17128)	58365 (82810–39094)
Southern	40–44	Women	1 g/d in a year	1 (1–1)	1.9 (1.5–2.4)	8.1 (12.9–5)	11.1 (13.5–8.6)	33203 (48551–22592)	92654 (113030–73330)	12393 (19989–6050)	25421 (37050–16452)	46828 (72420–30214)	138362 (171636–106782)	17385 (29444–8593)	38036 (55961–24877)
Southern	40–44	Men	1 g/d in a year	1 (1–1)	1.9 (1.5–2.3)	8.1 (12.6–5.1)	11.1 (13.3–8.8)	52207 (73216–37988)	145655 (174759–120869)	39101 (54269–26978)	38094 (52035–25501)	73476 (111062–51568)	217403 (266297–175851)	55298 (81315–36468)	56922 (77698–37853)
Southern	45–49	Women	1 g/d in a year	1 (1–1)	1.9 (1.5–2.3)	8.1 (13.3–5.2)	11.1 (13.2–8.7)	52085 (74341–37162)	339194 (389644–288351)	21223 (30912–13057)	70897 (88466–53547)	72561 (109698–48814)	495574 (578181–407780)	29536 (45483–17538)	103391 (131091–77117)
Southern	45–49	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	8.2 (13.1–5.2)	11.1 (13.1–8.9)	86687 (117098–64633)	556537 (631340–486845)	61536 (84529–45416)	103566 (125423–82086)	120455 (170721–86588)	813148 (940353–694073)	85842 (126025–61492)	150765 (184945–118001)
Southern	50–54	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	6.9 (9.6–4.9)	9 (10.6–7.4)	52547 (68147–40620)	234885 (272827–200339)	20162 (28808–13712)	49441 (62991–37423)	78528 (105753–58768)	367686 (434646–306498)	30120 (44424–19850)	77446 (99960–57538)
Southern	50–54	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	6.9 (9.6–4.9)	9 (10.6–7.3)	92974 (118391–74553)	385829 (440297–335525)	53986 (71266–40833)	71367 (88189–56280)	139052 (186491–106044)	603297 (702677–512459)	80346 (110363–58637)	111654 (140023–86475)
Southern	55–59	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	6.8 (9.4–4.9)	9 (10.6–7.5)	84439 (105746–68222)	473269 (525854–418814)	50371 (63138–39410)	109345 (129051–90853)	131832 (174946–102726)	787329 (895137–675662)	78537 (104889–59049)	181489 (218324–147627)
Southern	55–59	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	6.8 (9.3–4.9)	9 (10.7–7.5)	138217 (165342–114915)	612252 (682043–548786)	103847 (126914–84525)	240535 (273995–209879)	215713 (273345–171135)	1016782 (1166006–880397)	161424 (208159–127010)	398627 (466294–336912)
Southern	60–64	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	5.3 (6.5–4.3)	6.9 (8.2–5.6)	97716 (114030–84829)	332513 (369882–296217)	75795 (88500–63852)	76214 (88523–64018)	153904 (184581–129421)	553497 (638809–475945)	119435 (143048–98106)	126776 (151055–104047)
Southern	60–64	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	5.4 (6.5–4.4)	6.9 (8.3–5.6)	146817 (166435–127768)	428467 (479827–383147)	131025 (149067–114230)	168297 (192838–147294)	230840 (269158–195551)	714633 (824970–614904)	205803 (243334–173100)	279452 (332088–238878)
Southern	65–69	Women	1 g/d in a year	1 (1–1)	1.9 (1.6–2.3)	5.3 (6.5–4.3)	6.8 (8.2–5.5)	153637 (173816–136037)	543373 (595350–494206)	128426 (146814–112701)	283749 (317381–254299)	222722 (258798–191954)	826505 (938056–723990)	185960 (220024–159485)	431146 (497550–375194)
Southern	65–69	Men	1 g/d in a year	1 (1–1)	1.9 (1.6–2.2)	5.4 (6.5–4.3)	6.8 (8.2–5.6)	211856 (237000–189195)	691513 (758343–629575)	190276 (213997–168810)	440283 (487686–396975)	305706 (354316–264743)	1052160 (1191347–923308)	275032 (318953–237144)	669294 (764605–581646)
Southern	70–79	Women	1 g/d in a year	1 (1–1)	1.9 (1.5–2.3)	7.1 (14–4.6)	9.9 (15–6)	824163 (1004739–687246)	2681230 (3023801–2372695)	597128 (725059–495520)	848850 (990282–719974)	1227480 (1569453–978700)	4200146 (4874333–3588687)	889900 (1128576–711861)	1327695 (1592604–1092919)
Southern	70–79	Men	1 g/d in a year	1 (1–1)	1.9 (1.5–2.3)	7.1 (14–4.6)	9.9 (15–6)	1273620 (1577449–1040619)	5112562 (5783345–4488048)	926083 (1145525–748403)	1746864 (2049447–1477256)	1896312 (2452615–1497026)	8020178 (9308829–6822400)	1380377 (1779499–1083500)	2734993 (3287641–2252877)

Northern	35–39	Women	30% by 2025	3.4 (3.4–3.4)	6.5 (4.8–8)	27.6 (45.8–17.6)	37.6 (44.5–28.8)	11926 (20445–6561)	17289 (25345–10476)	3171 (6764–917)	1687 (4652–0)	20235 (35926–10908)	30274 (44541–18214)	5379 (11852–1480)	2982 (8215–0)
Northern	35–39	Men	30% by 2025	4.1 (4.1–4.1)	8 (6.1–9.7)	32.7 (52.7–21.2)	43.9 (51.1–34.9)	17926 (31521–10257)	29648 (41749–19450)	13441 (23142–6993)	6746 (12174–2896)	30770 (56096–17458)	52533 (74420–34313)	23235 (41539–11780)	11943 (21625–5117)
Northern	40–44	Women	30% by 2025	3.5 (3.5–3.5)	6.9 (5.1–8.4)	29.7 (47.5–18.3)	38.9 (46–30.8)	22141 (34891–13098)	88286 (110591–68412)	6077 (11511–2448)	22660 (32223–14765)	42058 (68282–23691)	173283 (219152–131267)	11492 (22249–4520)	44424 (63921–28635)
Northern	40–44	Men	30% by 2025	4 (4–4)	7.8 (5.9–9.5)	33.2 (51.9–20.6)	42.9 (50.3–34.3)	34162 (54237–22215)	146546 (178872–117446)	23703 (37649–14145)	35434 (48761–24651)	65524 (109654–40400)	289908 (357633–229638)	45717 (74858–26057)	70258 (96890–48401)
Northern	45–49	Women	30% by 2025	3.5 (3.5–3.5)	6.8 (5.4–8.1)	25.6 (37.7–16.8)	33.8 (39.3–27.7)	35553 (51581–24344)	84599 (103969–67249)	13139 (21704–7605)	21831 (30726–14392)	63783 (97137–41564)	158611 (197519–123915)	23621 (40819–13105)	40932 (57998–26815)
Northern	45–49	Men	30% by 2025	4.1 (4.1–4.1)	7.9 (6.4–9.3)	29.2 (42.3–19.4)	38.2 (43.9–31.9)	60081 (86365–42204)	143462 (172789–117466)	44576 (63220–30490)	34563 (46398–23697)	110077 (165306–73151)	272688 (331228–219289)	81566 (120506–53366)	65679 (89042–44493)
Northern	50–54	Women	30% by 2025	3.5 (3.5–3.5)	6.7 (5.4–7.8)	25.5 (38.6–16.8)	33.5 (38.5–27.2)	59146 (85233–40499)	324902 (375692–275624)	24173 (36358–15550)	62757 (79860–47967)	101098 (152813–66755)	576554 (675726–480228)	41417 (65032–25875)	111247 (142247–84371)
Northern	50–54	Men	30% by 2025	4.2 (4.2–4.2)	8.2 (6.7–9.5)	30.2 (44.7–20.4)	39.1 (44.5–32.7)	107753 (151722–78427)	582278 (661159–499546)	76770 (108616–54495)	100475 (122942–78932)	189106 (276584–131369)	1049359 (1203924–881525)	134411 (196849–91864)	181174 (223205–141256)
Northern	55–59	Women	30% by 2025	3.3 (3.3–3.3)	6.4 (5.3–7.4)	20.9 (28.3–15.2)	26.7 (31–22.3)	63493 (84764–48116)	239669 (275724–203009)	24098 (34753–16741)	46378 (58236–35223)	116573 (159333–85270)	451440 (525518–377930)	44255 (65222–29997)	87292 (111070–65858)
Northern	55–59	Men	30% by 2025	3.8 (3.8–3.8)	7.4 (6.2–8.6)	23.9 (32.1–17.4)	30.4 (35–25.6)	120210 (156314–90986)	420438 (485191–359888)	69126 (94029–52022)	72241 (89397–57055)	223791 (298619–162326)	800966 (935725–675120)	128480 (178398–93609)	137673 (171384–108029)
Northern	60–64	Women	30% by 2025	3.5 (3.5–3.5)	6.6 (5.5–7.8)	21.5 (28.5–16)	27.8 (32.3–23.1)	94166 (121093–75039)	451940 (516470–388910)	56372 (73843–43384)	96719 (114338–79842)	193748 (260697–149160)	970485 (1129761–815235)	116005 (157401–85726)	207488 (248127–167551)
Northern	60–64	Men	30% by 2025	4 (4–4)	7.7 (6.4–9.1)	24.5 (32.3–18.3)	31.5 (36.4–26.4)	163116 (206899–129732)	621161 (704747–541920)	122852 (154495–97723)	225836 (260340–190290)	342598 (450868–260412)	1355668 (1566231–1153895)	257809 (335252–196249)	493300 (574971–407985)
Northern	65–69	Women	30% by 2025	3 (3–3)	5.7 (4.6–6.9)	14.9 (18.5–11.9)	18.9 (23–15.1)	98811 (116639–83794)	281642 (325092–242419)	75416 (89462–64349)	60233 (73479–49602)	203467 (249385–165256)	608228 (723812–503432)	155401 (190601–126896)	129725 (162851–103906)
Northern	65–69	Men	30% by 2025	3.8 (3.8–3.8)	7.3 (5.9–8.6)	18.7 (22.6–15.2)	23.5 (27.8–19.3)	163941 (192474–139505)	407269 (467845–352492)	145512 (170173–125041)	148323 (174256–126904)	352022 (425399–288513)	912237 (1068824–766834)	312720 (377276–258953)	331630 (398753–275333)
Northern	70–79	Women	30% by 2025	2.5 (2.5–2.5)	4.8 (3.9–5.7)	12.8 (15.7–10.2)	16.2 (19.4–13.2)	136337 (157100–118509)	405596 (460044–360168)	114406 (131683–98926)	196567 (224079–170924)	244478 (292406–203314)	762280 (888416–650700)	204768 (244999–169831)	369851 (435950–309524)
Northern	70–79	Men	30% by 2025	3.5 (3.5–3.5)	6.7 (5.5–8)	17.5 (21.3–13.9)	21.9 (26.2–17.8)	216010 (248967–185590)	603446 (687350–531023)	194031 (224439–166935)	356476 (410635–306904)	410557 (489917–338951)	1197504 (1405730–1016195)	369645 (442129–304974)	708405 (837408–590173)
Southern	35–39	Women	30% by 2025	2.9 (2.9–2.9)	5.7 (4.3–7)	25.5 (41.6–15.6)	33.6 (40.2–26.4)	29542 (50089–17233)	146910 (185476–112120)	8043 (16815–2360)	40089 (59125–24738)	54706 (97492–30223)	282485 (363609–211839)	14924 (31991–4240)	77094 (114864–47069)
Southern	35–39	Men	30% by 2025	3.1 (3.1–3.1)	6 (4.6–7.3)	26.7 (43.1–16.3)	35.1 (41.6–27.9)	46052 (73235–28286)	240644 (295871–192282)	31749 (55226–18674)	62164 (88219–41807)	85848 (143841–50211)	465798 (580752–362071)	59128 (107744–32728)	120656 (171236–79774)

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Southern	40–44	Women	30% by 2025	3 (3–3)	5.8 (4.4–7.1)	22.4 (33.8–14.3)	29.8 (35.3–23.5)	49654 (76210–32115)	145112 (178915–112870)	18435 (30811–9099)	39847 (58578–25927)	87215 (139688–53887)	267455 (334223–202973)	32434 (56612–15266)	73335 (109383–46993)
Southern	40–44	Men	30% by 2025	3.3 (3.3–3.3)	6.4 (5–7.6)	24.2 (35.8–15.8)	32.1 (37.5–26.1)	81862 (122840–57413)	240620 (292848–195656)	61536 (89788–40641)	62876 (86227–42159)	145840 (228870–96094)	446579 (552299–356026)	109419 (168065–69016)	117160 (160989–76935)
Southern	45–49	Women	30% by 2025	3.1 (3.1–3.1)	6.1 (4.8–7.2)	23.3 (36–15.2)	30.7 (35.8–24.8)	83708 (125538–56225)	570034 (660325–470725)	34065 (52102–20187)	119059 (150311–88873)	142121 (223190–92140)	1002381 (1180071–815320)	57543 (92336–33145)	209263 (267124–154009)
Southern	45–49	Men	30% by 2025	3.3 (3.3–3.3)	6.4 (5.2–7.4)	24.3 (37–16.1)	32 (36.9–26.2)	143087 (202176–102003)	964384 (1105775–824374)	102039 (148413–72468)	178858 (218867–140244)	244886 (359889–166756)	1702316 (1984135–1429120)	174318 (265538–116557)	315306 (389681–245050)
Southern	50–54	Women	30% by 2025	3.2 (3.2–3.2)	6.2 (5–7.1)	20.3 (27.5–14.6)	26 (30–21.6)	93344 (125368–69787)	436006 (513686–364460)	35776 (52655–23481)	91807 (118267–68425)	170085 (235637–123937)	819446 (973857–672936)	64853 (97908–41898)	172412 (223475–127816)
Southern	50–54	Men	30% by 2025	3.2 (3.2–3.2)	6.1 (5–7.1)	20.2 (27.4–14.7)	25.9 (29.9–21.3)	164874 (220084–124849)	713108 (827501–607065)	95209 (130575–69236)	131997 (164857–102292)	300131 (414530–219898)	1337406 (1570159–1120434)	173326 (245915–122361)	247678 (312800–189513)
Southern	55–59	Women	30% by 2025	2.9 (2.9–2.9)	5.7 (4.7–6.6)	18.7 (25.1–13.7)	24.2 (28.2–20.4)	130412 (170489–102292)	766959 (866253–664959)	77631 (101705–58878)	176859 (211755–145123)	261633 (357725–195626)	1610615 (1855072–1361231)	155827 (213294–113784)	370822 (452282–297808)
Southern	55–59	Men	30% by 2025	3.2 (3.2–3.2)	6.3 (5.2–7.3)	20.4 (27.2–15.1)	26.3 (30.6–22.2)	225682 (283138–179932)	1053240 (1196689–917334)	168971 (216118–133763)	412992 (478484–351609)	458734 (599683–349353)	2233912 (2593078–1906357)	344934 (457551–260038)	877741 (1035086–726383)
Southern	60–64	Women	30% by 2025	2.8 (2.8–2.8)	5.3 (4.4–6.3)	14.1 (17–11.6)	17.9 (21.2–14.8)	143344 (171219–121638)	508691 (580556–441086)	111340 (132078–92078)	116499 (137828–96418)	292113 (357643–238738)	1084060 (1271843–909463)	226576 (276981–182446)	248536 (300277–200275)
Southern	60–64	Men	30% by 2025	2.9 (2.9–2.9)	5.7 (4.7–6.6)	15 (17.9–12.3)	18.9 (22.4–15.7)	222854 (258407–189734)	681328 (779358–591812)	198563 (232748–168471)	266707 (313563–230003)	458300 (546642–379524)	1469174 (1727469–1235758)	408789 (492079–333261)	574563 (693442–480734)
Southern	65–69	Women	30% by 2025	2.4 (2.4–2.4)	4.7 (3.9–5.5)	12.5 (15.2–10.1)	15.9 (18.9–13)	205591 (236709–178491)	752480 (843514–665299)	171632 (201145–148168)	392240 (447794–343280)	367431 (439396–307395)	1410065 (1631062–1203483)	306892 (373145–256342)	736091 (863376–620344)
Southern	65–69	Men	30% by 2025	2.8 (2.8–2.8)	5.4 (4.5–6.3)	14.4 (17.3–11.6)	18.1 (21.5–14.9)	303232 (349467–263833)	1034357 (1161965–913948)	272786 (315012–235545)	658293 (746371–576570)	556668 (660517–466347)	1986124 (2312154–1693536)	501721 (596395–418437)	1268182 (1479073–1070349)
Southern	70–79	Women	30% by 2025	3.5 (2.5–4.2)	7 (4.6–9.1)	23.7 (43.6–12.4)	31.9 (46.9–15.6)	1404773 (1800244–1108876)	4848171 (5592628–4155498)	1006861 (1281839–797766)	1488925 (1782497–1224043)	2709886 (3588423–2058498)	9662018 (11348161 –8077730)	1955921 (2564982–1494284)	2994003 (3643658–2407446)
Southern	70–79	Men	30% by 2025	3.1 (2.4–3.3)	5.9 (4.4–7.2)	20.6 (37.5–11.9)	27.8 (39.9–15.1)	1964341 (2539736–1544591)	8333425 (9605954–7121201)	1410293 (1818212–1102336)	2765653 (3313318–2282146)	3694982 (4935850–2804971)	16256701 (19135511 – 13563200)	2668574 (3549904–2015074)	5435774 (6630946–4371096)
Northern	35–39	Women	≤5 g/d by 2030	6.3 (6.3–6.3)	12.3 (9.1–15.2)	45.7 (68.6–30.6)	58.9 (67.1–47.4)	14884 (25237–8156)	21408 (31120–13060)	3954 (8385–1138)	2076 (5762–0)	28667 (49120–15541)	41794 (60805–25266)	7582 (16299–2114)	4059 (11253–0)
Northern	35–39	Men	≤5 g/d by 2030	7.8 (7.8–7.8)	15.2 (11.5–18.4)	52.7 (75.7–36.2)	66.4 (74.1–55.5)	22287 (38157–12777)	36489 (50999–24134)	16727 (28155–8726)	8296 (14903–3526)	43156 (74442–24480)	71317 (99574–47028)	32379 (54705–16700)	16215 (29118–6890)
Northern	40–44	Women	≤5 g/d by 2030	6.7 (6.7–6.7)	13 (9.7–15.9)	48.7 (70.4–31.8)	60.5 (68.8–50.1)	27266 (42345–16063)	108269 (134635–84136)	7491 (14137–3022)	27725 (39371–18162)	59704 (94075–34192)	239885 (299515–185944)	16301 (31259–6461)	61579 (87277–40120)

Northern	40–44	Men	≤5 g/d by 2030	7.6 (7.6–7.6)	14.8 (11.2–18)	53.3 (74.9–35.3)	65.3 (73.3–54.8)	41986 (65087–27396)	178670 (215838–144239)	29198 (45466–17446)	43165 (58909–29995)	92395 (144676–58275)	397346 (480184–318581)	64335 (100372–37484)	95972 (131002–66639)
Northern	45–49	Women	≤5 g/d by 2030	6.6 (6.6–6.6)	12.8 (10.2–15.2)	42.7 (59–29.4)	54.1 (61–45.8)	43095 (62190–29257)	102670 (125487–81659)	15899 (26278–9154)	26494 (37180–17457)	90248 (135159–59083)	221240 (272567–174537)	33481 (56634–18638)	57018 (80582–37571)
Northern	45–49	Men	≤5 g/d by 2030	7.7 (7.7–7.7)	15 (12.1–17.5)	47.9 (64.7–33.5)	59.7 (66.4–51.6)	72936 (104171–50911)	173366 (208171–142563)	54135 (76659–36959)	41759 (55972–28776)	155512 (226411–104063)	376080 (452522–307152)	114898 (165620–75825)	90503 (121630–61597)
Northern	50–54	Women	≤5 g/d by 2030	6.5 (6.5–6.5)	12.7 (10.2–14.8)	42.6 (60.3–29.4)	53.7 (60.1–45.1)	72369 (103935–49426)	397828 (457815–338093)	29577 (44523–18952)	76793 (97623–58822)	143027 (210202–94789)	801657 (927002–674115)	58499 (89785–36740)	154532 (196989–117851)
Northern	50–54	Men	≤5 g/d by 2030	8 (8–8)	15.4 (12.7–17.9)	49.3 (67.4–35)	60.8 (67.1–52.7)	132173 (182736–95774)	709256 (800416–610970)	94139 (132397–66715)	122311 (149550–96061)	264750 (370397–186485)	1436241 (1623251–1231973)	188357 (267374–130422)	247680 (303092–194677)
Northern	55–59	Women	≤5 g/d by 2030	6.2 (6.2–6.2)	12 (10–14.1)	35.8 (46.7–26.7)	44.4 (50.3–38)	81062 (108298–61194)	305877 (350993–259408)	30801 (44394–21272)	59245 (74084–44995)	171839 (232612–126278)	658303 (758673–554266)	65204 (95318–44402)	127283 (160232–96436)
Northern	55–59	Men	≤5 g/d by 2030	7.3 (7.3–7.3)	14 (11.7–16.3)	40.4 (51.8–30.4)	49.5 (55.7–42.7)	153617 (198638–115666)	535693 (614404–459620)	88312 (119343–66322)	91967 (113553–72722)	328066 (429665–240545)	1156677 (1332968–988054)	188655 (258217–138651)	198764 (245899–156996)
Northern	60–64	Women	≤5 g/d by 2030	6.5 (6.5–6.5)	12.6 (10.3–14.8)	36.7 (47–28)	46 (52.1–39.2)	118658 (152953–93891)	571424 (651504–491501)	70967 (93373–54260)	122286 (144469–100942)	288889 (383145–223128)	1427958 (1642732–1211923)	173215 (232901–128240)	305418 (362812–249278)
Northern	60–64	Men	≤5 g/d by 2030	7.6 (7.6–7.6)	14.6 (12–17.2)	41.2 (52.2–31.8)	51.1 (57.5–43.9)	206122 (261301–162914)	783720 (885218–685296)	155253 (195029–122709)	285145 (328061–240592)	508691 (658497–389669)	1977964 (2249781–1708538)	382997 (490324–293596)	719021 (830248–601905)
Northern	65–69	Women	≤5 g/d by 2030	5.6 (5.6–5.6)	10.8 (8.6–13)	26.3 (32–21.3)	32.7 (39–26.6)	121364 (144137–101916)	348962 (404723–298260)	92583 (110396–78141)	74536 (91380–61056)	305957 (375178–247242)	913900 (1080786–757642)	233827 (286690–189959)	194923 (243632–156336)
Northern	65–69	Men	≤5 g/d by 2030	7.1 (7.1–7.1)	13.7 (11.2–16.3)	32.3 (38.3–26.8)	39.7 (46–33.4)	203037 (239592–171395)	506792 (582871–437236)	180286 (211675–153724)	184658 (216957–157174)	529738 (638233–434362)	1361990 (1582449–1150609)	470451 (563848–389682)	495725 (590869–413355)
Northern	70–79	Women	≤5 g/d by 2030	4.7 (4.7–4.7)	9.1 (7.4–10.7)	22.8 (27.5–18.4)	28.4 (33.5–23.4)	165871 (192912–142597)	499668 (570765–438075)	139015 (162001–119110)	242223 (278263–209100)	358711 (431884–295358)	1127021 (1314802–954717)	300506 (361816–245369)	546783 (645132–454458)
Northern	70–79	Men	≤5 g/d by 2030	6.6 (6.6–6.6)	12.7 (10.3–15.1)	30.5 (36.4–24.7)	37.3 (43.6–31)	267151 (310372–227415)	752769 (859768–657568)	239997 (280227–204693)	444922 (514047–380487)	607846 (725065–499360)	1769282 (2060011–1504267)	547221 (654125–449237)	1046837 (1228866–873706)
Southern	35–39	Women	≤5 g/d by 2030	5.6 (5.6–5.6)	10.8 (8–13.3)	42.6 (63.7–27.3)	53.9 (62.2–43.9)	36382 (61505–21174)	180794 (227450–138427)	9870 (20702–2910)	49370 (72653–30539)	78495 (136157–43650)	398154 (503746–302296)	21412 (45681–6111)	108774 (160668–66897)
Southern	35–39	Men	≤5 g/d by 2030	5.9 (5.9–5.9)	11.4 (8.7–13.8)	44.4 (65.5–28.6)	55.8 (63.8–46)	56812 (89526–34670)	295741 (361936–237415)	39161 (67967–22678)	76374 (107890–51304)	122567 (198720–72497)	653831 (804210–516577)	84833 (149624–47261)	169172 (239702–113747)
Southern	40–44	Women	≤5 g/d by 2030	5.7 (5.7–5.7)	11 (8.4–13.4)	38.1 (54.1–25.3)	48.8 (56–39.7)	60069 (92402–38565)	176303 (217318–136890)	22272 (37401–10954)	48400 (70946–31473)	123778 (196261–76274)	375688 (466820–287932)	45965 (79521–21612)	103398 (152557–66750)
Southern	40–44	Men	≤5 g/d by 2030	6.2 (6.2–6.2)	12.1 (9.4–14.4)	40.8 (56.7–27.8)	51.9 (58.8–43.5)	99042 (149144–69117)	292149 (355096–237557)	74535 (109106–48804)	76331 (104779–51167)	206721 (320471–135800)	626557 (766383–504149)	155286 (234045–97594)	163969 (223758–108875)
Southern	45–49	Women	≤5 g/d by 2030	5.9 (5.9–5.9)	11.5 (9.1–13.6)	39.4 (56.9–26.8)	50 (56.7–41.6)	102472 (153872–68491)	699214 (808908–577547)	41637 (63742–24566)	145921 (183948–108992)	201147 (309618–130788)	1403370 (1631403–1149585)	81443 (127931–46908)	292642 (371064–218257)

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Southern	45–49	Men	≤5 g/d by 2030	6.2 (6.2–6.2)	12 (9.7–14)	41 (58.2–28.3)	51.8 (58.1–43.6)	175268 (247729–123930)	1182171 (1350771–1011619)	125007 (181155–87727)	219191 (267891–172063)	345951 (497734–236584)	2377296 (2730381–2012991)	246512 (366550–165407)	440305 (540100–344185)
Southern	50–54	Women	≤5 g/d by 2030	6 (6–6)	11.7 (9.5–13.5)	34.8 (45.5–25.8)	43.4 (49–36.9)	119258 (159870–88514)	556697 (654654–465339)	45559 (67279–29901)	117182 (150792–87426)	251163 (344113–183507)	1196141 (1412481–990162)	95759 (143961–61986)	251806 (325097–186746)
Southern	50–54	Men	≤5 g/d by 2030	6 (6–6)	11.6 (9.4–13.5)	34.7 (45.3–25.9)	43.3 (48.9–36.4)	210229 (280809–157833)	910523 (1054256–775596)	121361 (166813–87726)	168468 (210476–130617)	443436 (604247–325403)	1952949 (2274696–1646355)	255791 (356933–181164)	361419 (452711–279160)
Southern	55–59	Women	≤5 g/d by 2030	5.6 (5.6–5.6)	10.7 (8.9–12.5)	32.3 (42–24.3)	40.8 (46.5–35)	163663 (215184–127265)	969248 (1094928–837676)	97505 (128516–73149)	223443 (267682–182899)	390991 (531443–292223)	2392462 (2729374–2031038)	232929 (316983–169944)	550944 (665649–444862)
Southern	55–59	Men	≤5 g/d by 2030	6.1 (6.1–6.1)	11.8 (9.9–13.7)	35 (45–26.6)	43.8 (49.8–37.8)	284278 (357965–223827)	1331418 (1511156–1157623)	212757 (273064–166526)	522029 (603748–443528)	685942 (888442–521600)	3305220 (3796583–2839767)	514535 (677297–387164)	1295825 (1518348–1082032)
Southern	60–64	Women	≤5 g/d by 2030	5.2 (5.2–5.2)	10.1 (8.3–11.9)	25 (29.6–20.7)	31.1 (36.2–26.1)	175661 (210547–147562)	629068 (721183–543179)	136283 (162884–111931)	144104 (171018–118742)	439039 (538281–357296)	1631184 (1908807–1367926)	340271 (416597–272040)	373572 (450340–301041)
Southern	60–64	Men	≤5 g/d by 2030	5.6 (5.6–5.6)	10.8 (8.9–12.5)	26.4 (31.1–22)	32.7 (38.1–27.5)	273541 (319036–231006)	844640 (968764–728515)	243936 (288065–204351)	330347 (389919–282925)	689327 (822413–568846)	2207447 (2584999–1859043)	614967 (740385–499786)	863121 (1038990–722739)
Southern	65–69	Women	≤5 g/d by 2030	4.6 (4.6–4.6)	8.9 (7.4–10.4)	22.4 (26.7–18.2)	27.8 (32.6–23.1)	249691 (290413–214500)	926103 (1046424–811880)	208469 (246648–178451)	482915 (555786–420801)	539332 (648768–445909)	2083723 (2413727–1768678)	449816 (550801–372699)	1087866 (1277785–912514)
Southern	65–69	Men	≤5 g/d by 2030	5.3 (5.3–5.3)	10.2 (8.6–12)	25.4 (30.2–20.8)	31.3 (36.6–26.3)	371493 (432215–319606)	1282968 (1450119–1122412)	334511 (388974–286640)	816144 (930517–706982)	820958 (977515–684530)	2939691 (3419670–2499357)	739398 (882141–613142)	1877397 (2186188–1580291)
Southern	70–79	Women	≤5 g/d by 2030	6.6 (4.7–8)	13.2 (8.8–17.1)	40.1 (66.2–22)	51.7 (69.8–27.4)	1743877 (2232060–1366749)	6032862 (6944726–5165817)	1248333 (1592437–982342)	1853602 (2220086–1519866)	3977196 (5178760–3032851)	13978658 (16237622–11794612)	2877909 (3725285–2203522)	4362313 (5268633–3527816)
Southern	70–79	Men	≤5 g/d by 2030	5.9 (4.6–6.2)	11.1 (8.3–13.7)	35.3 (58.8–21.3)	46 (61.7–26.7)	2429074 (3152759–1891918)	10375642 (11967972–8840421)	1740870 (2255723–1347876)	3439311 (4128990–2825291)	5436767 (7194625–4124184)	23735760 (27726437–19889874)	3932504 (5191830–2964793)	7977403 (9682935–6439409)

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1 g cut in daily salt intake could ward off nearly 9 million cases of stroke/heart disease in China

...And save 4 million lives by 2030, modelling study suggests

A modest cut of just 1 g in daily salt intake could ward off nearly 9 million cases of heart disease and strokes and save 4 million lives by 2030, suggest the estimates of a modelling study published in the open access journal ***BMJ Nutrition Prevention & Health.***

Salt intake in China is one of the highest in the world, averaging 11 g/day—over twice the amount recommended by the Chinese government. High salt intake drives up blood pressure and therefore the risk of cardiovascular disease, which accounts for 40% of all deaths in China every year.

The researchers set out to estimate the health gains that could be achieved by reducing salt intake across the nation, with the aim of helping to inform the development of a doable salt reduction programme.

They compiled the latest and most reliable figures for population size, salt intake, blood pressure and disease rates by region and age and then estimated the impact on cardiovascular health for 3 different approaches.

The first of these was a 1 g/day reduction in salt intake to be achieved within 1 year. The second was the WHO's interim target of a 30% reduction by 2025—equivalent to a gradual reduction of 3.2 g/day.

The third was reducing salt intake to less than 5 g/day by 2030, the target set by the Chinese government in its action plan for health and development, 'Healthy China 2030'.

They then estimated the falls in systolic blood pressure—the higher number in a blood pressure reading that indicates the force at which the heart pumps blood around the body—and the subsequent risk of heart attacks/stroke and cardiovascular disease deaths.

Given that, on average, adults in China consume 11 g/day of salt, reducing this by 1 g/day should lower average systolic blood pressure by about 1.2 mmHg. And if this reduction were achieved in a year and sustained, some 9 million cases of heart disease and stroke could be prevented by 2030—4 million of them fatal.

Keeping this up for another 10 years could add up to around 13 million cases of heart attack and strokes avoided—6 million of them fatal.

Achieving the WHO's interim target by 2025 would require a 3.2 g/day fall in salt intake. Were this to be maintained for another 5 years, a cumulative total of about 14 million cases of heart disease and strokes could be prevented by 2030—6 million of them fatal.

And if kept up until 2040, the cumulative total could reach around 27 million cases, 12 million of them fatal.

Achieving the ‘Healthy China 2030’ target would require a 6 g/day reduction in salt intake, reducing average systolic blood pressure by just over 7 mmHg, adding up to 17 million cases of heart disease and strokes prevented—8 million of them fatal.

The benefits of a reduction in dietary salt intake would apply to men and women of all ages across China, say the researchers.

There might also be additional health benefits, which the lack of relevant data didn’t allow the researchers to estimate: these include secondary prevention of cardiovascular disease and reductions in cases of chronic kidney disease and stomach cancer, rates of which are already high or rising in China, they suggest.

“The Chinese government’s action plan ‘Healthy China 2030’ includes nutritional recommendations to reduce the intake of salt, sugar and oil. This modelling study shows that salt reduction alone could bring enormous health benefits to the entire population of China,” say the researchers, adding that a 1 g daily reduction in intake “would be easily achievable.”

But they highlight: “Our estimates rely on salt reductions to not only be achieved, but also sustained over time, which may be a great challenge given the fast-changing dietary patterns seen in China given its rapid urbanisation.”

They conclude: “The evidence for the substantial benefits of salt reduction in China is consistent and compelling. Achieving and sustaining population salt reduction in China could prevent millions of unnecessary cardiovascular events and deaths. Given the sheer size of the Chinese population, this would also bring major benefits to global health.”

“Modelling studies like this one provide an indicator of how specific dietary changes have the potential to alter the course of diet related disease,” comments Shane McAuliffe, Science and Digital Communications Lead at the NNEdPro Global Centre for Nutrition and Health, which co-owns the journal.

“Given the established dose-response relationship between salt intake, systolic blood pressure and cardiovascular disease, reducing the intake of one of the highest global consumers would have a significant impact on population health—something that has already been achieved in other countries worldwide,” he adds.