Note for ECPR readers: I apologise that this paper differs from that outlined in my abstract, as it does not discuss research ethics, but the application of a broadly Kantian moral theory (Scanlon’s contractualism) to problems in public health ethics. I hope, however, it will still be of interest, as it suggests a perhaps surprising way of developing some Kantian themes in an applied setting. I should also say that this paper is rather long – if your time is limited, Section 4 can be skipped

Resolving Rose’s “prevention paradox”: a deontological approach

In his classic textbook of public health policy, Geoffrey Rose stresses a “fundamental axiom in preventive medicine”, that “a large number of people exposed to a small risk may generate many more cases [of disease] than a small number of people exposed to a high risk”.¹ This axiom gives rise to what Rose called the “prevention paradox”: “population strategies” which reduce the (relatively) low risk of many in the population can (and often will) be more effective at improving overall population health than “high-risk strategies”, which reduce the (relatively) high risk of smaller sub-populations.² To illustrate, consider a simplified example:

---
² Ibid., Chap.3
Case 1: there are 100,000 people at a 0.5 ten-year risk and 10 million people at a 0.01 ten-year risk of a fatal heart attack. We could ensure that either A: each of the 100,000 takes a daily pill which will eliminate her risk but cause momentary nausea; or B: that each of the 10 million takes a daily pill which will eliminate her risk but cause momentary nausea.3

Despite the fact that each of the 100,000 seems to gain more from policy A than each of the 10 million does from B, we can reasonably predict that the high-risk strategy A would save 50,000 fewer lives than would the population strategy B.

It is unclear why Rose thought such cases were, and indeed if they truly are, paradoxical.4 However it is also clear, as Rose stressed, that population strategies are often controversial responses to “prevention paradox cases”. For example, it was recently proposed that, regardless of her individual risk, each British citizen over 55 should be prescribed a daily “polypill”, a combination of common drugs which reduce cardiovascular risk with minimal side effects.5 Although this paradigm population strategy could reduce UK heart disease rates by an estimated 80%, it has

3 I will discuss the risk estimates used in this and subsequent examples in §4.

4 For discussion, see my (reference omitted for blind review)

5 Nicholas Wald and Malcolm Law, “A strategy to reduce cardiovascular disease by more than 80%” British Medical Journal 326(1419) (June 23, 2003)
been extremely contentious. Current policy, where only the “high-risk” receive preventive cardiovascular drugs, is comparatively uncontroversial. Imagine, then, that public health agencies are faced with Case 1, where constraints prevent pursuing both A and B simultaneously. It is plausible that choosing B would be, at the very least, contentious.

Which policy should they choose? Thinking through this question is important for three reasons. First, examining simplified “prevention paradox” cases can help us to understand problems in actual public health practice (not only polypills, but also, for example, the distribution of vaccines or alcohol taxation) and in other areas of public policy (such as policing strategy). However, there is also a more general reason to investigate such cases. When we think about the normative foundations of public health policy, it is tempting to think of such policies in terms of a framework according to which rights, and other deontological considerations, function to limit consequentialist aggregation. The choice represented by the prevention paradox itself may, then, seem like a choice to be made from a broadly consequentialist perspective. My aim in this paper is to suggest that, regardless of worries about the limitations on consequentialist reasoning, the prevention paradox itself is best understood and

---

approached using the tools of Kantian moral theory (broadly construed). Specifically, after showing in §1 why the standard rights-and-consequences framework is inapplicable to the prevention paradox, in §2 I suggest a way of approaching that paradox which draws on Scanlon’s (broadly) Kantian “contractualist” moral theory. In §3, I then show how these arguments relate to the relationship between theoretical and practical reasoning, drawing partly on Onora O’Neill’s work on justifiability. §4 considers the relationship between my arguments and a problem for any broadly Kantian, indeed any non-consequentialist, moral theory: how to justify the claim that we should save the greatest number. It should be stressed at the outset, however, that although my aim in this paper is to examine the possibilities for a broadly Kantian approach to public health ethics, my focus is very much on first-order normative argument. I hope, then, to establish the usefulness of a broadly Kantian perspective on the kind of problems which seem ill-suited to such analysis.

The normative relevance of two issues has dominated recent writing on justice and health: personal responsibility, and the relationship between relative wealth and relative health inequalities. The scenario sketched above could be related to either issue (for example, if members of the 100,000 were at higher risk because of lifestyle choices). Although these are important issues, they are not my topic. Therefore, I

---

7 On the first topic, see, for example, Daniel Wikler “Personal and social responsibility for health”, on the second, see Fabienne Peter, “Health equity and social justice”, both in Fabienne Peter, Amartya Sen and Sudhir Anand, eds. Public health, ethics and equity (Oxford: Oxford University Press, 2004).
shall stipulate that in Case 1 (and later cases) relative risk differentials are not the
result of unjust social or unwise personal choices. (To simplify matters even further, I
shall also assume that members of the two groups are similar in other respects, such
as age).

§1 Two concerns

As I will discuss further in §4, I assume that public policy should be guided by what I
call the “SGN principle”: if you must choose between saving more or fewer lives and
all other morally relevant factors are equal you should save the greater number. If so,
then there are three ways to think about case 1. The first option is to say that we
should prefer strategy B because (we can reasonably expect that) it will save the
greater number. We would, then, have to explain why such cases are often
controversial, perhaps by appeal to the large literature on risk-perception.\(^8\) The
second, closely-related option would be to say that we should prefer B in principle,
but that we might have pragmatic reasons, consistent with the SGN principle, to
adopt A; for example, if it will be easier to motivate each of the 100,000 to take a pill,
such that policy A will in fact save more lives than B.\(^9\)

\(^8\) For a fascinating attempt to adopt such a strategy, see Cass Sunstein, Risk and Reason (Cambridge: Cambridge University Press, 2002)

\(^9\) At points, this seems to be Rose’s own view: see, for example, Rose, Strategy, p.60.
The third option is to deny that “all other morally relevant factors” are equal in case 1. There are three familiar sub-options here. First, we could claim that the costs of Policy A (the aggregate daily nausea suffered by 10 million people) and of B (the aggregate nausea of 100,000 people) are also morally relevant, such that we should prefer A because it produces greater net benefit. Second, we might suggest that policy B will be morally problematic but A will not, as ensuring that individuals take a daily pill when the expected individual benefit is so low may require rights-violating actions. Third, we might worry that policy B will “medicalise” a healthy population, whereas A does not, and argue that this constitutes a morally relevant difference.

None of these three sub-options is attractive. Some consequentialists may argue that the aggregate sum of daily nausea for 9,900,000 people could justify foregoing saving 50,000 lives, but this looks more like a reason to doubt those forms of consequentialism than an argument for A. Second, although convincing people to take medication can be difficult, psychological biases can be manipulated to encourage such behaviour.¹⁰ Maybe such manipulations are rights-violating, but they are distant from paradigm cases where worries about rights-violation mandate saving

¹⁰ See, for example, Theresa Marteau et al “Judging nudging: can nudging improve population health?” *British Medical Journal* 2011; 342:d228
ECPR paper: Stephen John: please do not circulate without permission

the lesser number.\textsuperscript{11} Third, medicalisation critiques of public health are notoriously inconclusive; as the polypill’s proponents have argued, it is unclear why providing a pill to healthy people at a high risk is less “medicalising” than providing a pill to healthy people at a lower risk.\textsuperscript{12}

It seems, then, that we should say that in principle and perhaps in practice policy B is preferable to A. However, we might have two less familiar worries about the population strategy. First, even if we could ensure in a rights-respecting manner that each of the 10 million takes a daily pill, it seems possible that each member of that population might reasonably prefer not to suffer daily nausea for the sake of a tiny risk-reduction (whereas a similar scenario does not seem plausible for policy A). Policy B may, then, be problematic because it seems that, although it generates a net benefit for the group as a whole (100,000 lives saved at the cost of minor nausea for 10 million), each affected individual is burdened more than she is benefitted by it!\textsuperscript{13} Second, we might have a broadly prioritarian concern that even if each of the 10 million is benefited more than burdened by policy B, each of the 10 million has a weaker claim to help than each of the 100,000, given that each in the latter group is

\textsuperscript{11} For discussion, see Daniel Hausman and Brynn Welch, “To nudge or not to nudge” Journal of Political Philosophy 18(1); 123-136

\textsuperscript{12} See Watts, “What happened”, p.1822

\textsuperscript{13} John Worrall has stressed a similar point with regard to the prescription of statins; see his “Do We Need Some Large, Simple Randomized Trials in Medicine?” in Mauricio Suárez, Mauro Dorato and Miklós Rédei eds. EPSA Philosophical Issues in the Sciences (London: Springer, 2010).
both more at risk and stands to gain more than each of the 10 million. How are such concerns best articulated?

§2: Ex-ante contractualism

In this section, I shall show how these concerns relate to “contractualism”. By contractualism I mean the moral theory developed by Thomas Scanlon, according to which “actions are right only if there is a principle permitting them that no one could reasonably reject”. An individual can reasonably reject a principle (or set of principles) if and only if she can give some reason against adoption of the relevant principles and propose an alternative (set of) principle(s), such that no-one else has a stronger objection against her proposal than she has against the original. In Rahul Kumar’s crisper formulation, “a valid principle is one that is most acceptable to the person for whom it is least acceptable”. Following Scanlon’s own comments, I understand contractualism to constitute a Kantian approach to ethical reasoning. First,

---

14 This is not to endorse prioritarianism as a basic moral principle, but to say that broadly prioritarian considerations, which may be explained as ultimately reflecting other principles, seem relevant here (see Michael Otsuka and Alex Voorhoeve “Why it matters that some are worse off than others” Philosophy and Public Affairs 37 (2):171-199).

15 This formulation is from Scanlon, Moral Dimensions, (Cambridge, MA: Harvard University Press, 2008), p.98. See also, Scanlon What we owe to each other (Cambridge, MA : Harvard University Press, 1998).

many of the specific moral claims mandated by contractualist reasoning resemble those endorsed by Kant and by Kantians (such as injunctions against lying, some form of a doing/allowing distinction, and so on). Second, the contractualist formula for permissibility can be understood as a way of spelling out some forms of the categorical imperative (that is to say, not being reasonably rejectable might count as a ground for thinking that a principle is universalisable). Third, more generally, contractualism can be seen as a way of developing the key Kantian thought that moral reasoning involves responding to the fact that other agents are reasonable and autonomous, and that action must be justified to them. Of course, contractualist moral theory also derogates from Kant himself and from Kantian themes in other ways (most notably, in its account of moral motivation). However, for the first-order normative purposes of this paper, these differences are less important than the similarities.

A final way in which contractualism resembles Kantianism is in its denial of the aggregative reasoning which characterises consequentialist reasoning (perhaps stemming from a more fundamental difference between focusing on agents and patients of justice). Both of the concerns raised above seem to relate to worries about aggregation: that population policies threaten to over-ride individuals’ interests for aggregate “population benefit”, and that they aim at maximising benefit, rather than helping the worst-off. Contractualist reasoning provides a very concrete way of explaining the thought that certain sorts of aggregation are impermissible. For
example, imagine a technician has trapped his arm inside the machinery broadcasting
the World Cup final. Contractualist reasoning implies that because his complaint
against not releasing his arm is stronger than the complaint of any of the viewers
against missing the final, we should halt the transmission, even if the resulting
aggregate annoyance outweighs the benefit to the technician. Although
contractualism is intended primarily as an account of the morality of interpersonal
relationships, given the theory’s roots in political thought, it seems plausible to apply
similar reasoning to social policy. Therefore, contractualist reasoning seems an
appealing way to articulate concerns about prevention paradox cases. This section
will show that this thought is half-right: we should turn to contractualism, but only in
an “ex-ante” form.

There has been much discussion of how contractualists should think about imposing
risks on non-consenting others. In particular, debate has focused on Scanlon’s claim
that “the grounds for rejecting a principle are based simply on the burdens it involves,
for those who experience them, without discounting them by the probability that there

---

17 Scanlon, *What we owe*, p.235

useful, more general discussion of ethical issues around risk imposition, see Hansson, S. O. 2003.
will be anyone who actually does so”. My concern is not with risk imposition, but risk reduction, i.e. when we must choose between courses-of-action all of which will avoidably leave some agents at different risks of harm. Applied to such cases, Scanlon’s claim seems best interpreted as that we should assess courses-of-action in terms of the harms they do involve. If so, then presumably we should choose principles in accordance with the objections which we reasonably believe agents will have as a result of (failing to) act on them. Applied to Case 1, then, we can reason as follows. Imagine our choice were between policy A and doing nothing: we should follow A, because the complaints of each of those (as yet unidentifiable) 50,000 individuals who will die if we do nothing against doing nothing are stronger than the complaints against policy A of each of those 50,000 who will survive but be nauseated (much as in the World Cup case). Similar reasoning implies that were our choice between policy B and doing nothing, we should prefer policy B (100,000 complaints of death versus 9,900,000 complaints of needless nausea). We can, then, disregard the side-effect of nausea as irrelevant, such that Case 1 is a choice between saving 100,000 and 50,000 lives.

——

19 Scanlon, What we owe, p.208.

20 Strictly, Scanlon’s comments seem open to a second interpretation: that we should assess courses-of-action in terms of the worst harms they might involve, such that we should choose principles in accordance with the strongest objections others could have. This would seem to imply that in Case 1, we should choose as if everyone will die without intervention. This seems very strange, which is why I adopt the interpretation in the text instead (following a similar interpretation in Otsuka and Voorhoeve (“Why it matters”, p.183). The worry I raise to the actual harms interpretation in the text would, however, apply equally well to the “worst case” interpretation.
Scanlon has used the “tie-breaking argument” to justify a SGN principle in cases involving certainties of harm without condoning aggregative reasoning. For example, if we must choose between saving Alex and saving 100 lives; Alex’s complaint against saving the many is tied with the complaint of any of the 100 against saving Alex. The complaints of each of the remaining 99 against saving Alex then break this tie.\(^\text{21}\) Case 1 looks morally identical to such a case from the “actual harm” perspective. Therefore, from that perspective, contractualist reasoning implies that B is preferable to A. (Indeed, in treating nausea as irrelevant, contractualist reasoning provides a more straightforward justification of that conclusion than does the consequentialist reasoning typically employed by public health policy makers!)

Of course, the “tie-breaking” argument is controversial.\(^\text{22}\) My point, however, is that if we assume, as extending Scanlon’s remarks about risk imposition may seem to imply, that differences in the ex-ante probability of the harm individuals suffer are morally irrelevant to risk reduction cases, then contractualist reasoning does not capture concerns about aggregation outlined in §1. However, there are independent reasons to doubt Scanlon’s remarks about the moral irrelevance of probability in


\(^{22}\) For critical discussion, see Michael Otsuka, “Saving lives, moral theory and the claims of individuals” *Philosophy and Public Affairs*, 34 (2), 2006, pp109–135
cases of risk-imposition: it renders his theory extremely demanding and leaves the contractualist unable to argue for more equitable over less equitable distributions of risk.  

Furthermore, even if Scanlon’s claim is defensible, claims about risk imposition may be irrelevant to failures-to-reduce-risk, given familiar worries about the doing/allowing distinction, and Scanlon’s interpretation of reasonable risk imposition in terms of “reasonable precautions” is clearly irrelevant in rescue cases.  

More generally, it is arguable that a focus on permissibility undergirds Scanlon’s focus on what will happen, but this is to overlook the fact that a decent moral theory must be action-guiding. Therefore, it seems sensible to investigate a second way of developing contractualist reasoning, in what I shall call ex-ante terms. According to this view, in risk-reduction cases, agents’ complaints against principles are proportional to the risks of harm which acting on those principles would avoidably fail to reduce. As such, permissibility of principles should be assessed in terms which treat agents’ complaints as proportional to the avoidable risks they suffer, and deliberation should be guided by similar considerations.

Returning to Case 1, consider two scenarios. In the first scenario, imagine – not implausibly – that each of the 10 million would reasonably prefer to suffer an avoidable 0.01 risk of heart attack over daily nausea, but each member of the 100,000

23 See Ashford “The demandingness”; Lenman, “Contractualism and risk imposition”.

24 Strictly contractualism is not committed to a doing/allowing distinction per se, but it certainly has the resources to capture similar kinds of distinctions (see Scanlon, Moral Dimensions, Chap.1).
would reasonably accept nausea for a risk-reduction from 0.5 to zero. If so, then, regardless of whether or not policy B *could* be implemented in a rights-respecting manner, each member of the 10 million has an objection against that policy (that it would burden her more than benefit her) and, at least from the *ex ante* perspective, no-one has an objection against doing nothing. Policy B is “reasonably rejectable” in favour of doing nothing. By contrast, each of the 100,000 would have a strong objection against doing nothing – this would avoidably fail to reduce a risk at a cost she finds acceptable – and no-one has an objection against policy A (given that the opportunity cost of not following policy B is irrelevant). Therefore, we should adopt policy A, rather than B. Adopting *ex-ante* contractualism allows us to capture the worry that population strategies can involve problematic aggregation, whereby individuals interests are sacrificed for “population benefit”, while also allowing that such concerns do not apply to *all* public health policies, such as policy A.

A 0.01 risk of fatal heart attack is not negligible. What should we say, though, if each of the 10 million is willing to suffer nausea for the sake of risk reduction? If so, as well as each of the 100,000 being able reasonably to reject doing nothing in favour of policy A, each of the 10 million would be able reasonably to reject doing nothing in favour of policy B. How, then, should we choose between policies A and B? From the *ex-ante* perspective, each member of the 100,000 has a stronger objection against policy B (that doing so would avoidably leave her at a 0.5 risk of harm) than each of the 10 million has against policy A (that doing so would avoidably leave her at a 0.01
risk of harm). Of course, many more people would have a complaint against policy A than against policy B. However, the complaint of each of the larger group against A is weaker than the complaint of each of the smaller group against B. Therefore, much as in the World Cup case, *ex-ante* contractualism implies that we should choose policy A over policy B. In doing so, it can capture the second concern about aggregation: that, although choosing population strategies over high-risk strategies may maximise aggregate benefit, they are problematic insofar as they sacrifice the least well-off.

My Introduction asked which of A or B policy-makers should choose in Case 1. I have now outlined a normative theory, *ex-ante* contractualism, which implies that on the basis of the facts in the example they should prefer the high-risk strategy to the population strategy, even though choosing the latter would save more lives. This normative perspective allows us to articulate more precisely two intuitive concerns we might have in “prevention paradox” cases. It is one thing, however, to say that we *can* articulate certain concerns if we adopt *ex-ante* contractualism, but another to show that the position is theoretically coherent, and another again to show that we should hold it. The next section takes up the first of these challenges; §4 takes up the second, specifically with regard to the SGN principle.
§3: The perspectivalism problem

Central to \textit{ex-ante} contractualism is the claim that agents’ complaints against principles are proportional to the risk of harm which acting on those principles would fail to reduce. To clarify, as §2 stressed, this claim is concerned solely with cases where we must choose between helping agents \textit{already} at risk of harm; not with risk imposition. Furthermore, it is not intended as a denial of the difference between being at risk of harm and being harmed. We might use this principle to construct an account of how well-off people are for purposes of political calculation, but that account of advantage should not be confused with well-being.\footnote{Note that it is a general feature of contractualist reasoning that it does not assume that complaints against principles must be grounded solely on welfare gains and losses; admittedly, this claim is normally taken to refer to concerns about fairness or discriminatory or disrespectful treatment, but I see no principled reason to think that we cannot say similar things about risk.} Finally, the claim is intended in objective terms: what matters is what changes in individuals’ level of risk \textit{could be}, not what they \textit{believe} it could be.\footnote{For further discussion of how to draw this distinction see my (reference omitted for blind reviewing)} To think otherwise would be to reward inveterate worriers, conspiracy theorists and hypochondriacs at the expense of the ill-informed, the deluded and the incurably optimistic. Unfortunately, this “objectivism” condition gives rise to an important challenge to the theoretical cogency of \textit{ex-ante} contractualism, which this section discusses.
Most epidemiological claims concern sub-populations: for example, “50% of the group of 100,000 people with gene A will suffer a heart attack in the next ten years”.

From the *ex-ante* perspective, it seems that we must interpret such data along the following lines (as I did above): each person with gene A has a 0.5 risk of heart attack, which grounds a complaint against acting on principles which avoidably fail to reduce that risk. However, most philosophers agree that, ultimately, for any individual, it is a fact that she either will or will not suffer a heart attack.27 How, then, should we understand statements about individuals’ risks?

There are two dominant answers to this question. On the first “epistemic” account, claims about individuals’ chances of suffering harm are, strictly, claims about the degree-of-belief we should assign the proposition that they will suffer harm, conditional on our evidence.28 For example, the claim that Alex is at a 0.5 ten-year risk of suffering a heart attack should be understood as “given our evidence (about Alex and others with gene A), we should assign a degree-of-belief of 0.5 to the proposition that Alex will suffer a heart attack in the next ten years”. Were we to

---

27 Although he himself disagrees, the best discussion of these topics is in Hugh Mellor, *Probability: A philosophical introduction* London: Routledge, 2005. See also Donald Gillies *Philosophical theories of probability* (London: Routledge, 2000)

28 There are, of course, huge debates over how the two views I distinguish in the text relate to one another (see Simon Blackburn, *Reason and Prediction* (Cambridge: Cambridge University Press, 1973). For current purposes, I treat them as distinct, but this is as a matter of exposition, rather than intended to reflect any deeper claims.
discover more evidence – for example, that gene B, which Alex also possesses, inhibits heart attacks – then a different claim about Alex’s risk might be correct conditional on that evidence.

An analogous issue arises on the alternative “frequentist” interpretation of probability claims, according to which claims about the individuals’ risks are claims about those individuals considered *qua* member of some “reference class”. The claim that Alex is at a 0.2 risk of harm should be understood as “considered *qua* member of the class of people with gene A, Alex’s risk is 0.2”. Unlike epistemicists, frequentists think that probability claims are warranted by facts about the world (i.e. the claim about Alex is true if the frequency of cases of heart attack in gene A people is 20%), rather than by our evidence. However, frequentist claims are still *conditional*, such that different estimates of an individual’s risk could all be correct. Considered *qua* gene-B carrier, Alex’s risk might be lower than considered *qua* gene-A carrier; considered *qua* vegetarian, it might be lower again.

On either major interpretation of probability statements, *ex-ante* contractualism faces what I call the perspectivalism problem: any risk-based complaint must be conditional on a particular perspective (a body of incomplete evidence or some

---

29 For a useful discussion, see Alan Hajek, “The reference class problem is your problem too” *Synthese*, 156(3), pp. 563-85.
reference class), but can complaints be perspectival, and, if so, how do we identify the proper perspective?\textsuperscript{30} Even worse, this problem arises for \textit{ex-ante} contractualism, but not for other theories, including other non-consequentialist normative theories. Consider, for example, the position I rejected in \textsection 2, according to which we should care about the complaints people \textit{will} (foreseeably) have if we adopt a policy. If we know that (an unidentifiable) 50\% of 100,000 people will avoidably die if we adopt policy B, then this suffices for normative assessment; it allows us to say that 50,000 people will have a complaint if we follow policy B. We do not need to make any claims about the \textit{ex-ante} risks of any of the 100,000 people from whom this 50,000 will come. Further evidence, conditional on which it is proper to say that half of those 100,000 are at 0.25 risk and half at 0.75 risk, might be strategically relevant, but would not alter the (im)permissibility of policy B, because we would still be dealing with a policy which leaves the same number of people with the same strength of complaint. This is not to suggest that \textit{ex-post} contractualists (and other theorists) do not face serious problems in deciding when population level claims are well-

\textsuperscript{30} The problems raised above are set out most clearly by Stephen Perry in his “Risk, Interests” op.cit. However, Perry focuses only on the general “reference class problem” for frequentism (i.e. the problem of justifying use of a particular reference class for the generation of risk estimates) as it relates to the claim that imposing risks of harm is to harm. The very general result that a version of the reference class problem arises for other interpretations of probability has been argued for by Alan Hajek (in his “The reference class problem”.) As far as I know, there is no literature on the problem raised above: that if the reference class problem generalises to other accounts of probability, then so, too, do the problems for claiming that risks of harm are a form of harm.
formulated. However, even if we know that we have correct population-level data which allows us to make accurate population-level predictions (which I shall assume), \textit{ex-ante} contractualists face a further problem: understanding how those claims relate to individuals’ complaints. I shall now respond to the perspectivalism problem as it arises on each interpretation of probability.

If the epistemic interpretation of probability claims is correct, and if individuals’ complaints against principles must be indexed to facts about the world, then \textit{ex-ante} contractualism would be incoherent. However, individuals’ complaints should not be directly indexed to facts about the world. Rather, there are independent reasons to index complaints to facts about what reasonable agents would believe about the world. Imagine that I must decide whether or not to pull the trigger of a gun aimed at Alex, who is unaware of my presence. The gun is, in fact, loaded but I believe it is unloaded. Should we assess Alex’s complaint against me pulling the trigger by reference to what will be the case or to what I believe will be the case? It may seem that we should index Alex’s complaint to what will happen, rather than to what I believe. Imagine, however, that my belief that the gun is unloaded is completely reasonable given all of the evidence which I have (or could have) collected, such that the most epistemically virtuous agent in my position would believe the gun to be unloaded. If we wish to retain a link between our accounts of permissibility and action guidance,

\footnote{For a useful overview of some of the problems here, see John Worrall, 'Evidence in Medicine and Evidence-Based Medicine', \textit{Philosophy Compass} 2(6), 2007, 981-1022}
then it seems plausible that Alex has no complaint against me pulling the trigger. Undoubtedly, the world would be a better place were I not to do so, but pulling the trigger would be tragic, rather than impermissible. I suggest, then, that if we adopt a moral position which takes agency as its key starting point, rather than a focus on which states-of-the-world are better or worse (which I take, in turn, to be a key distinction between Kantian theories such as contractualism and consequentialism), then it seems plausible to suppose that agents’ objections against principles should be indexed not directly to the facts, but, rather, to what epistemically well-located agents would believe the facts to be.  

As such, then, the fact that on an epistemic interpretation risk estimates are indexed to evidence about the world, rather than to the world itself, does not show that the contractualist cannot treat individuals’ complaints against principles as related to such estimates. The real challenge is in identifying when the body-of-evidence conditional on which some estimate has been made is such that it is proper to use the resulting estimate in normative deliberation.

We might say that proper risk estimates are those conditional on *all* of the evidence. However, this claim is ambiguous between *all* of the evidence which is, in principle, collectable or all of the evidence which we happen to have collected. The first

---

32 As suggested by Scanlon (*Moral Dimensions*, p47-49)
reading threatens to be empty: we could never collect all of the collectable evidence, and if we did, there might well be no risk estimates anyway! On the other hand, identifying proper risk estimates with those made conditional on all of the evidence we have collected would seem potentially problematic if, for example, the problems of discriminated-against groups are simply never investigated. A quasi-technical solution to the perspectivalism problem, by appeal to some notion of “all of the evidence” is unworkable and even threatens to be immoral.

Rather, I suggest that we should say that a proper risk estimate for normative purposes is one which is relative to the body-of-evidence which it is reasonable to expect those whose actions should be guided by such evidence to collect. What makes it the case that it is reasonable to use one body-of-evidence rather than another turns not only on epistemic, but also on moral and practical, issues: for example, the costs of generating new information, the costs of analysing evidence, or even the possible trade-offs between precision and usefulness of data. In turn, the contractualist is well-equipped to deal with these issues, as she can, at least in principle, extend her account of moral permissibility to the realm of data collection. That is to say, she can say that a “reasonable” body of evidence is that which would be collected according to principles which are not reasonably rejectable; if it would be extremely expensive to collect yet more evidence, such that some could reasonably reject funding further investigations, then there is nothing wrong with indexing agents’ complaints to the (known to be incomplete) available evidence.
More formally: for purposes of *ex-ante* contractualist assessment, acting on some principle avoidably leaves some patient of justice at risk of harm in a way which grounds a possible complaint against that principle when, relative to the evidence which it is reasonable to expect the agent of justice to collect, we would assign different degrees-of-belief to the claim that the agent will survive if we do and if we do not act on that principle. It is reasonable to expect an agent of justice to collect evidence when some individual has a complaint against not collecting that evidence, and where no other individual has a stronger complaint against collecting the evidence than she has against not collecting the evidence. More straightforwardly: if it is reasonable to expect state agencies to collect data on genetic constitution, but not reasonable to expect them to collect data on dietary habits, then it is reasonable to treat Alex’s complaint against policy B as proportional to a 0.5 risk of harm. If, however, it were reasonable to expect agencies to collect dietary data, and Alex’s diet is such that he is less likely to have a heart attack, then it would be reasonable to treat Alex as having a far weaker complaint against that policy. What makes it reasonable to index Alex’s complaint to evidence about his genetic constitution rather than eating habits, for example, is not that the former evidence is necessarily “epistemically superior” to the latter, but could be that it is far easier to obtain in a cost-effective manner.
Two potential complexities need to be noted about this account of “proper risk estimates”. First, that account implies that there could be a difference between the evidence which agencies are using and the evidence which they ought to use, such that we should always be careful about moving from (even a well-founded) generalisation to any specific claim about agents’ complaints. An important question for future research is how we should conceptualise agents’ complaints in cases where we suspect that evidence which ought to have been collected has not been. Second, my account allows that a “proper risk estimate” for normative purposes may differ according to who is assessing the risk. For example, it might be reasonable to expect public policy-makers and physicians to collect different kinds of data, such that Alex’s risk-based complaints about how the state distributes a drug might differ from his risk-based complaints about how his physician distributes a drug. For purposes of thinking about the prevention paradox, clearly what matters is the evidence it would be reasonable for state agencies to collect, but when physicians are employed by the State, interesting problems might arise.

The fact that different risk estimates might be proper in different normative contexts raises a second interesting question: why should individuals endorse “proper risk estimates” as relevant to assessing their complaints against principles, given that they themselves might have access to other, more detailed evidence, conditional on which they suffer a different risk of harm? For example, imagine that Alex discovers some new evidence, say through personalised genetic testing, which it is unreasonable to
expect the State to collect, such that conditional on this evidence, his risk of heart
disease is judged 0.9, rather than the 0.5 judged by the State. I suggest that even
though such cases will arise, policy-makers’ risk estimates will tend to co-vary with
other risk estimates, such that these disjunctions will be uncommon and the gap
between “official” and “personal” estimates typically not too wide. This may be too
sanguine an assumption. However, I suggest that even if it is false, ultimately, such
disjunctions are simply a phenomenon which reasonable agents should be willing to
accept, much as they should be willing to accept that official estimates of wealth may
not capture the fact that they have written a stack of IOU notes to their friends.
(Again, one can push further on the arguments here in a Kantian direction: once we
allow that the right is prior to the good, then it seems that concerns about the
accuracy of our descriptions of how well-off individuals are will always have to be
subordinated to concerns about what can legitimately be done.)

What, though, if we adopt the frequentist interpretation of probability? If so, and if
individuals’ complaints against principles cannot rest on facts about their group
membership, then *ex-ante* contractualism would be incoherent. However, although
contractualism places an “individualist restriction” on the complaints which can be
offered against principles, denying the salience of numbers of complainants, it also
holds that the reasons for and against principles must be “generic”. Justification of
principles does not concern whether a principle is justifiable to *this particular*
*individual*, but, rather, whether it is justifiable to an individual viewed *under a*
generic description.\textsuperscript{33} Scanlon himself argues for such a restriction as arising from the need to assess principles as grounds for “general regulation”, rather than on a one-off basis.\textsuperscript{34} Furthermore, we might add to Scanlon’s arguments here by noting that the claim that reasons must be generic reflects a deeper fact about practical reasoning, central to Kantian forms of non-consequentialism: that justification must always abstract from particulars, and, hence, must always involve thinking about individuals and their claims in some abstract manner.\textsuperscript{35} That is to say, once we allow that moral justification is a matter of justification to others, but also recognise that justification must involve some form of abstraction, we can allow that justification will always involve a certain amount of “grouping” of individuals in generic ways.

Therefore, the fact that, on a frequentist interpretation, risk claims are claims about individuals viewed in some generic way – say, as people who possess gene A – does not in and of itself disqualify using those claims to assess individuals’ objections to principles or policies, at least on the account of practical moral reasoning which I take to be central to any Kantian project. The real challenge is in identifying which reference classes are proper as ways of grouping people for normative purposes (specifically, when thinking about policy).

\textsuperscript{33} Scanlon, \textit{What we owe}, 204-205.

\textsuperscript{34} Ibid.

\textsuperscript{35} See Onora Nell (O’Neill), \textit{Acting on Principle} (New York, NY: Columbia University Press, 1975); see also O’Neill’s \textit{Towards Justice and Virtue} (Cambridge: Cambridge University Press), Chap.2
Clearly, we cannot say that agents’ complaints should be referenced to the class in which they are a unique member. Not only would this be an impossible demand to meet, but there would be no risk estimates at all. An apparently more plausible answer might be that we should use the most fine-grained reference classes available given our evidence, because the narrower the reference classes we use, the more accurate our risk estimates.\footnote{See, for example, Kasper Lippert-Rasmussen’s “Nothing personal”, The Journal of Political Philosophy: Volume 15, Number 4, 2007, pp. 385–403, which suggests (p.390) that “fine-grained” classes are always, \textit{ceteris paribus}, preferable for policy-making.} However, this response is problematic: the same individual can be a member of two equally narrow reference classes (say, men born at noon on 1st March 1979 and men who like Brussels sprouts for breakfast), but can, \textit{qua} member of the different classes, be at different risks. As such, “narrowness” itself is of questionable significance.\footnote{See Hajek, “The reference class problem”} Furthermore, the narrower the reference classes employed by policy-makers, typically, the less useful those classes will be for policy-making: the class of white, right-handed men born on noon on 1st March 1979, for example, may be extremely narrow, but, also, of extremely limited use in policy-making. A second possible option might be to say that we should employ those reference classes which are used in our best science.\footnote{Following the lead here of Norman Daniels in his \textit{Just Health} (Cambridge, Cambridge University Press, 2008), Chap.2, who hopes to avoid a similar sort of problem about the definition of health by appeal to naturalist considerations.} Unfortunately, this response flounders because there are many different sciences, which often employ different
classification schemes. Social epidemiologists and genetic epidemiologists are all scientists, but, typically, use different reference classes in their work.\textsuperscript{39} Furthermore, even if we could show that a certain reference class corresponds to a “natural kind”, there is no reason to think that that kind would be narrow (or, indeed, general) enough to play a useful role in policy-making.

When discussing the perspectivalism problem as it arises for the epistemic interpretation of probability, I suggested that we cannot simply hope for some quasi-technical solution to that problem. The same seems true of the perspectivalism problem as it arises for frequentism. I suggest, then, that normative arguments should be used to identify which reference classes policy-makers should use. Although unfamiliar, the claim that normative considerations can provide objective grounds to favour certain ways of categorising people is plausible. For example, in France, official statistics are not divided on religious grounds because, it is claimed, a secular state should not endorse such categories; in the US, for many years, political ideology led to a refusal to categorise mortality data by social class.\textsuperscript{40} My claim is not that the French or Americans are right (or wrong) but that such decisions are intelligible in light of the political values of those nations, and we can debate the rightness of these

\textsuperscript{39} This is a very specific of the more general “pluralist” themes in philosophy of science stated, for example, by John Dupré in his \textit{The disunity of science} (Cambridge, Mass: Harvard University Press, 1993).

\textsuperscript{40} On France, see Cecile Laborde \textit{Critical Republicanism} (Oxford: Oxford University Press, 2008), on the US case, see Vicente Navarro “Race or class \textit{versus} race and class” in Thomas Beuchamp and Bonnie Steinbock (eds.) \textit{New ethics for the public’s health} (Oxford: Oxford University Press, 1999).
judgments just as we can the rightness of the values. Normative political argument can justify treating certain classes as permissible in policy at all.

Once we allow that very general reference classes (such as those of ethnicity or social class) may be open to debate, it also seems more plausible to think that further choices within the set of permissible reference classes can be assessed through asking whether use of those reference classes is reasonably rejectable. Of course, such debate will include epistemic questions about the accuracy of the predictions we can make relative to some reference class, but they will also include less obviously epistemic considerations about, for example, the costs of using certain classes or their possible knock-on effects. In effect, we might construct an account of when reference classes are “apt” for use in policy by appeal to contractualist considerations of reasonable rejectability. In turn, once we have identified “apt” reference classes for use in policy-making, we can identify “proper risk estimates” as those estimates about individuals which are correct conditional on their membership in normatively apt reference classes.41

More formally: for purposes of ex-ante contractualist assessment, acting on some principle avoidably leaves some patient of justice at risk of harm in a way which grounds a possible complaint against that principle when, relative to the reference classes which it is reasonable to expect the agent of justice to employ, we would

41 For a more fully developed account of this process, see reference omitted for blind reviewing)
assign different probabilities to the claim that the agent will survive if we do and if we do not act on that principle. It is reasonable to expect an agent of justice to use a reference class when some individual has a complaint against not using that class, and where no other individual has a stronger complaint against using that class. More informally: if “being a white, middle-class male with gene A” is a normatively apt reference class, then Alex’s risk *qua* membership in this class grounds a complaint against policies proportional to 0.5, say; if, by contrast, “being a vegetarian” is not an apt reference class, because collecting dietary data might be understood as involving some form of state involvement in private life, then even if it is true that Alex’s risk *qua* vegetarian is very low, this fact does not ground any complaint against policies.

Again, these remarks raise important issues about what to do when actual estimates are not based on apt categories, whether different social actors might use different categories, and so on. However, rather than address these issues here, I shall suggest that these problems are not particular to *ex-ante* contractualism, but, rather, relate to the core contractualist commitment that complaints should be conceptualised in generic terms. In turn, the contractualist must either rely on an independent account of how best to group individuals, or, more plausibly, hold that the contractualist machinery can be used recursively to justify certain ways of grouping people as normatively apt. More generally, the same holds true, I suggest, for any broadly Kantian non-consequentialist theory. Therefore, the normative solution to the
reference class problem is not an add-on to, but rather inherent in, non-consequentialist thought.⁴²

Again, it is clear that the reference classes which policy-makers ought to use are not necessarily the classes which individuals themselves will think relevant to assessing their own risk, suggesting a potential problem for my proposals. However, I suggest that if the system of developing categorisations is working well, then the categorisations which public agencies use will be categorisations which reflect how reasonable agents are willing to, and sometimes do, think about themselves, at least for purposes of making political claims. Therefore, there will be some fit between how agents view themselves when planning, and therefore the kind of risk information which they should require when planning, and the categories which public bodies use when generating risk estimates, such that reasonable agents should be willing to endorse use of those risk estimates as capturing (at least some of) their own concerns.⁴³ Again, this may be too optimistic an assumption, but I suggest that a certain amount of (what may seem like) mis-representation of our concerns may be a price we have to pay for living together.

---

⁴² I take this to be an extension of Rahul Kumar’s claim in his “Reasonable reasons” op.cit. that whether some putative complaint against principles is, in fact, reasonable is itself a matter to be decided recursively.

⁴³ That is to say, I claim that such measures meet the “endorsement constraint” on any objective measure to be used for assessing how well-off individuals are for political purposes.
On both the epistemic and the frequentist readings of probability claims about individuals, we can identify and defend treating a certain class of conditional risk estimates as proper for policy purposes. In both cases, even if there are no unconditional risk estimates, we can offer practical reasons to treat certain sorts of conditional estimates as proper for policy. The proper answer to the question, “what risks does this agent suffer?”, when asked in a political context, cannot be answered independently of normative considerations.

In the Introduction, I suggested that one reason to study the prevention paradox is because it seems appealing to think that the greater the risk an agent suffers then, ceteris paribus, the stronger the demand that we help her. This thought seems central to our response to prevention paradox cases: intuitively, choosing population over high-risk strategies is problematic because they do less for each individual they benefit. One way to spell out this thought is by saying that risks matter because they create fear, anxiety and so on. However, as I rather brusquely noted at the start of this section, that seems an unappealing strategy, because fears can float free of risks. On the other hand, however, adopting an objectivist version of the thought that the greater an individuals’ risk then the stronger her demand for help seems open to the “perspectivalism problem”. In this section, I hope to have established that contractualism has the resources to respond to this problem. Therefore, I hope not only to have defended the theoretical coherency of ex-ante contractualism against the perspectivalism problem, but also to have suggested that if we are tempted by the
thought that risks of harm can, themselves, be morally salient, then we have good reason to frame our concerns in *ex-ante* contractualist terms.

§4: Must we always save the greatest number?

*Ex-ante* contractualism captures some of our intuitions, and can be rendered theoretically coherent, but is it morally appealing? Imagine the following scenario: on island A, there are 50 people, all of whom are bound to die without help; on island B, there are 100 people, all of whom are bound to die without help. You could save those on A or those on B, but not both. You have no special obligations towards either group, neither group is responsible for its plight, and neither differs in any other possibly morally relevant respects (such as age). Many philosophers assume that, in such a case, you should save those on island B, and that a decent moral theory should justify the underlying SGN principle (assumed in §1): if you must choose between saving more or fewer lives and all other morally relevant factors are equal you should save the greater number. As §2 noted, Scanlon thinks that contractualists can justify this principle using the tie-break argument. Other philosophers deny the

---

44 This example is adapted from that in John Taurek, “Should the numbers count?” *Philosophy and Public Affairs* 6 (4):293-316
intuition or that a decent moral theory must justify the SGN principle.\footnote{Taurek himself denies that we must justify the SGN principle; see Veronique Munoz-Dardé “The distribution of numbers and the comprehensiveness of reasons”, *Proceedings of the Aristotelian Society* 105 (2):207–233, for the claim that a decent moral theory need not justify the claim that we must save the greatest number.} However, even when the SGN principle is challenged as part of interpersonal morality, it may still seem compelling when thinking about social policy.\footnote{For example, this is the conclusion reached by Munoz-Dardé, ibid.} I agree with what I take to be the consensus: a decent normative theory of public policy should justify the SGN principle. This section considers a possible objection to *ex-ante* contractualism: that it conflicts with various important intuitions about the moral relevance of numbers, suggesting that, even if the position is theoretically coherent, it is morally repellent.

*Ex-ante* contractualism tells us that, in some prevention paradox cases, we should choose policies which will not save the greatest number: we should save 50,000, not 100,000 (or, strictly, we should prefer policies which we reasonably expect will have that outcome). Strictly, this is compatible with the SGN principle, because *ex-ante* contractualism holds that when our choice involves individuals at different risks of harm, then all other moral factors are not equal. However, *ex-ante* contractualism may still seem problematic to a proponent of the SGN principle. Most decisions faced by state agencies are not as stark as choosing which islanders to help, but involve deciding between helping different at-risk groups. In many cases it may seem
intuitively plausible that state agencies should save the greatest number, suggesting that differences in *ex-ante* risk are not morally salient.

First, consider cases where the risk-differential between members of different groups is very small, but there is a big difference in the numbers of lives we might save. For example:

Case 2: there are 100,000 people at a 0.5 ten-year risk, and 10 million people at a 0.45 ten-year risk, of a fatal heart attack. We could either ensure that everyone in the first group takes a pill every day which will eliminate their risk at the cost of minor nausea, or ensure that everyone in the second group takes a pill every day which will eliminate their risk at the cost of minor nausea.

Second, consider cases where there is a large risk-differential, but where there is also a large difference in the numbers of lives we might save. For example:

Case 3: there are 100,000 people at a 0.5 ten-year risk, and 100 million people at a 0.01 ten-year risk, of a fatal heart attack. We could either ensure that everyone in the first group takes a pill every day which will eliminate their risk at the cost of minor nausea, or that everyone in the second group takes a pill every day which will eliminate their risk at the cost of minor nausea.
(In both of these cases, I assume that these risk estimates meet the conditions outlined in §3 above). I presume that those who find it intuitive that in simple cases involving islanders and lifeboats we ought to save the greater number will also find it intuitive that we should do so in Cases 2 and 3. However, ex-ante contractualism seems to conflict with these intuitions; in these cases, one group is at greater ex-ante risk than the other, and the arguments of §2 seem to imply that we should then save the most at risk, regardless of how many lives are at stake. Even if ex-ante contractualism is compatible with both the SGN principle and the intuitions normally used to motivate it, it may still conflict with other intuitions which, arguably, underlie the appeal of the SGN principle. The rest of this section considers some possible responses to this challenge.

One option in defence of ex-ante contractualism is to deny that it is intuitive that we must save the greatest number in cases such as 2 and 3. We might note that in real-life cases which resemble those cases, actual policies do not always aim at saving the greatest number. For example, in the distribution of influenza vaccines, which resembles Case 2, priority is often given to “high-risk” groups, such as the elderly, 47

---

47 These can be seen as specific versions of problems which arise for any attempt to apply moral reasoning to ex-ante, rather than expected outcomes perspectives. See, for example, Otsuka and Voorhoeve’s discussion of “ex-ante prioritarianism” in their “Why it matters” op.cit. and the discussion of problems with ex-ante egalitarianism in Marc Fleurbaey, “Assessing risky social situations”. CPNSS working paper, 5(9), 2009. The Centre for Philosophy of Natural and Social Science, London School of Economics)
despite evidence that this is unlikely to have the greatest effect on overall mortality.\textsuperscript{48} Given that such policies are not treated as morally repulsive, the alleged counter-intuitiveness of \textit{ex-ante} contractualism might seem over-stated. However, although interesting, this strategy seems to me problematic. When cases are as stark as 2 and 3, it does seem intuitive that we should save the greater number; maybe real-life cases involve other moral considerations. Furthermore, intuitions in favour of helping the most vulnerable can be explained away as the result of a misfiring heuristic, which leads us to assume that helping the most vulnerable is likely to save the greatest number of lives.\textsuperscript{49} Therefore, I shall now explore a second response to the challenge posed by Cases 2 and 3: to argue that \textit{ex-ante} contractualism does not necessarily conflict with our intuitions, even if it does not justify those intuitions as a simple application of the SGN principle.

First, consider what the \textit{ex-ante} contractualist might say about Case 2. There is an obvious difference between Cases 1 and 2: the gap between the risks suffered by both groups in the first case (0.01 and 0.5) is far greater than in the latter (0.45 and 0.5). In turn, we might argue that although there is a difference between being at 0.45 and 0.5 risk of harm, these levels of risk are “roughly comparable”, in terms of the kinds of

\textsuperscript{48} See, for example, Alison Galvani, Timothy Reluga and Gretchen Chapman “Long-standing influenza vaccination policy is in accord with individual self-interest but not with the utilitarian optimum” \textit{Proceedings of the National Academy of Sciences} March 27, 2007 vol. 104 no. 13 5692-5697

\textsuperscript{49} See Sunstein, \textit{Risk and Reason} op. cit.
objections to principles they ground. More colloquially, although someone at a 0.5 risk of harm faces slightly greater danger than does someone at a 0.45 risk, they both face serious danger. By contrast, a 0.5 risk of harm and a 0.01 risk of harm do not seem even “roughly comparable”; someone at 0.5 risk faces greater danger than does someone at 0.01 risk of harm. Furthermore, note that probability estimates are often themselves subject to further uncertainty, such that we should be more confident that someone judged to be at a 0.5 risk of harm is at greater risk than someone judged to be at a 0.01 risk of harm than that someone judged to be at a 0.5 risk of harm is at greater risk than someone judged to be at a 0.45 risk of harm.

We can then retain the *ex-ante* perspective while both denying that we should *always* save the greatest number in prevention paradox cases and respecting our intuitions in Case 2 by saying that when the risks faced by agents are “roughly comparable”, the objections which individuals can make against principles are, for normative purposes, equal. If risks of 0.45 and of 0.5 are roughly comparable, then a “tie-breaking” argument can be used to decide whom to help, implying that we should eliminate the risk suffered by the greater number. This way of reconciling *ex-ante* contractualism with the intuition that in some prevention paradox cases we should still save the greatest number, is, in turn, not simply an *ad hoc* addition to contractualism. Rather, Scanlon himself stresses that agents’ complaints should be assessed in a rough-, rather than fine-grained manner, and uses the idea of roughly comparable harms to
capture this thought. Of course, this response faces various challenges: for example, that it might be unclear when risks are roughly comparable; or that the arguments might lead to a sorites paradox; or that it depends on the (still-controversial) “tie-break” argument. However, although these are all serious problems, they are (at least potentially) problems for contractualism in general, perhaps for non-consequentialist theory in general, not its *ex-ante* variant. Therefore, although I do not wish to downplay the importance of such problems, they do not provide a knockdown objection to the arguments above specifically.

What about Case 3? I have just said that risks of 0.01 and 0.5 are not roughly comparable. Therefore, *ex-ante* contractualism seems to imply that we should knowingly allow 1 million people to die for the sake of saving 50,000 lives! I agree that if *ex-ante* contractualism necessitated this conclusion, then it should be rejected. Furthermore, I am not certain that there is a fully satisfying response to this challenge. However, I do suggest that, given some plausible assumptions, *ex-ante* contractualism does not necessarily imply that we should save the lesser number in Case 3. In cases such as 3 we can often be certain that failing to help the greater number will not only leave those individuals at avoidable risk of harm, but, also, is to create a near-certainty of significant and widespread social disruption. Under nearly

---

50 Scanlon, *What we owe*, 239-240.

51 See Derek Parfit, “Justifiability to Each person” *Ratio* 16(4), 2003 for worries about rough comparability
all plausible real-world scenarios, allowing the unnecessary deaths of 1 million people would lead to a social catastrophe, whereas allowing 50,000 people to die would not. Typically, deontologists have claimed that when we face a catastrophe, consequentialist considerations can outweigh other considerations.\textsuperscript{52} The \textit{ex-ante} contractualist might seek to defend her general theoretical position by arguing that when catastrophe threatens, we should not save the most at risk. However, although such a manoeuvre would blunt the claim that \textit{ex-ante} contractualism is intuitively unappealing as applied to Case 3, it might also seem worryingly \textit{ad hoc}.

However, I suggest that \textit{ex-ante} contractualism can provide a principled justification for not saving the most at risk when doing so would lead to catastrophic outcomes. When a course-of-action would lead to an outcome such as 1 million avoidable deaths, typically we know that there will be far-reaching consequences for many other members of the population. If so, when assessing principles in such cases, we should compare not only 0.01 against 0.5 risks of death, but, also, 0.5 risks of death against other agents’ complaints that not treating the 100 million will be avoidably to leave them at a near-certainty of serious loss as a result of ensuing problems. For example, imagine that the deaths of 1 million people would almost certainly lead to widespread and significant poverty; if so, then the complaints of those who will (almost certainly) be destitute provide one consideration against a principle of not

\textsuperscript{52} For insightful discussion, see Tom Sorell, “Morality and Emergency” \textit{Proceedings of the Aristotelian Society} 103 (1):21–37
treating the 100 million. I suggest that such complaints could outweigh the complaints which those at 0.5 risk of harm would have against helping the 100 million, justifying the population over the high-risk strategy. Therefore, *ex-ante* contractualism can, given plausible empirical assumptions, capture the intuition that in Case 3 we should save the greatest number.

One key aim of this paper has been to undermine an assumption we might make when we come to assess public health policy from a normative standpoint: that such policy can be conceptualised as involving (some kind of) consequentialist aggregation, but should be subject to certain sorts of deontological constraints. My strategy has been to show that we can use a broadly Kantian non-consequentialist theory, which I call *ex-ante* contractualism, to answer what might seem like distinctively “consequentialist” concerns. That is to say, rather than ask which distributions of benefits would be best, we can, instead, ask which distributions are ones which reasonable agents would agree to. I take it that a key challenge to any such theory is to show how what might seem to be consequentialist intuitions – many more lives better than many fewer lives – can be justified in such terms. I cannot claim that I find either of the two arguments I have offered here conclusive, but, I hope, they show how such an argument might work.

*Conclusion*
The term “the prevention paradox” is typically used to refer to cases such as 1, 2 and 3 above. In this paper, I have argued for thinking about such cases in ex-ante contractualist terms. Of course, for any actual case, we will typically have to consider many more moral issues than discussed above, but I hope that my comments can help us gain some purchase on aspects of real-world cases. Furthermore, I hope to have clarified how ex-ante contractualism relates to the inherently perspectival character of risk and to arguments about saving the greatest number. Of course, my arguments have raised new issues – how to decide when risks are roughly comparable, what to do when available evidence does not allow us to form “proper risk estimates” – but I hope to have shown grounds for optimism that these problems about the ethics of risk may (at least partially) be answered by further work on the structure of contractualism, or non-consequentialist theory, more generally.

In conclusion, then, I shall focus on the relationship between my arguments and a second phenomenon, also identified by Rose, and also sometimes (rather confusingly) called “the prevention paradox”. One of Rose’s important insights is, as my Introduction explained, the mathematical point that “high-risk strategies” will not necessarily have the greatest impact on population health outcomes. However, Rose also suggests a second, more sociological objection to “high-risk” strategies.53 Many behaviours which increase risk of disease are normally distributed across the

---

53 Rose, *Strategy*, Chap 6
population; for example, most people who drink alcohol will drink “moderately”, with a much smaller group of “heavy drinkers” (and of “light drinkers”). Rose also suggests that very often “high-risk” behaviours vary with mean behaviour, such that the most effective way in which to change the behaviour of high-risk individuals will be to change the habits of the majority (whether by changing their behaviour or altering the environment more generally). According to Rose, attempts to reduce the alcohol consumption of heavy drinkers while making no change to moderate drinkers are likely to fail; rather, the most effective strategy for changing “high-risk” heavy-drinking will be by changing “normal” consumption patterns. Although these insights apply most clearly when behaviour and risk are strongly related – for example, alcohol consumption and risk of cirrhosis, or salt consumption and cardiovascular risk – they can be generalised to think about “high-risk strategies” generally: high-risk people may, for example, be more likely to take a daily pill if this is considered normal behaviour in the population.54

In §4, I considered the demand that we save the greatest number and ex-ante contractualism’s apparent demand that we save the most at risk. One important implication of Rose’s sociological claims is that not only are the normative issues more complex than they might initially appear (as §4 argued), but, also that, in practice, saving the greatest number and saving the most at risk inter-relate in complex ways. I also suggest that there is a second, more surprising, conclusion we

54 Ibid. Chap 8
might draw from Rose’s claims, of particular relevance to readers who remain unconvinced that *ex-ante* contractualism is an attractive normative theory.

As the Introduction noted, population policies are controversial, and difficult to implement. One reason is that it is difficult to motivate people to change their behaviour when the expected individual benefit seems so tiny, and, as such, difficult to build political will in favour of the structural changes which would encourage healthier behaviour across the population. How, then, might we seek to motivate “average” people to (accept structural changes which would) change their behaviour, given that appeals to self-interest are likely to fail? One option is to appeal to Rose’s mathematical argument that such policies would, predictably, save many more lives than tinkering at the edges of the distribution. A second option is to appeal to Rose’s sociological argument that such policies would benefit those members of the community who are currently most vulnerable. I doubt that either strategy would be particularly successful. However, as Rose acknowledges, the latter seems more likely to succeed in virtue of its appeal to a social value, solidarity with the least well-off, which is thicker and richer than the thin, technocratic claim that more lives are better than fewer. Furthermore, appeal to solidarity with the least well-off seems particularly appropriate as a tool for public health policy, given the moral foundations of most developed (and many developing) nations’ healthcare systems. Therefore, Rose’s own sociological arguments not only imply that *ex-ante* contractualists might sometimes have strategic reasons to prefer “population” to “high-risk” strategies, but
that staunch defenders of population policies as normatively preferable might have strategic reasons to frame their concerns, at least in public, in terms which mirror the *ex-ante* contractualist’s claim that the greater the risk we suffer, the stronger our complaint against policies which avoidably fail to reduce that risk.