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The Independent Scientific Advisory Group for Emergencies (SAGE)

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## **The Independent SAGE Report 51**

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### **‘Covid Scores on the Doors’: An Approach to Ventilation/Fresh Air Information, Communication, and Certification**

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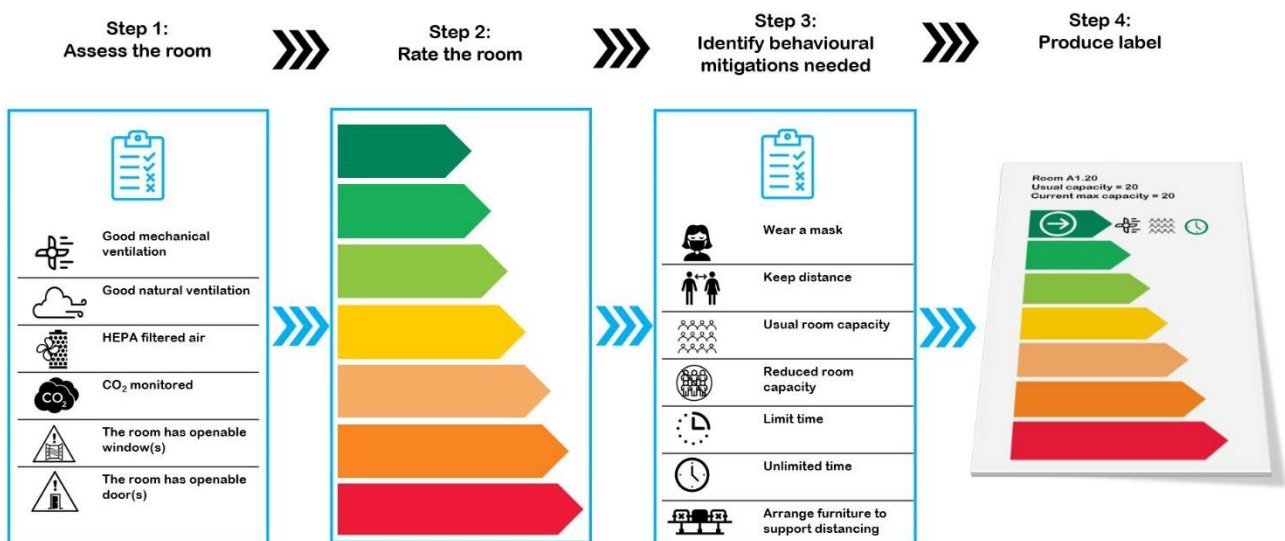
Submitted to The UK Government and the People of Great Britain  
& Northern Ireland by Sir David King, former Chief Scientific Adviser,  
UK Government, Chair of Independent SAGE

# Independent SAGE 'Covid Scores on the Doors'<sup>i</sup>: An Approach to Ventilation/Fresh Air Information, Communication, and Certification

## 1. Introduction

Ventilation and air filtration play a crucial role in mitigating the transmission of Covid-19. This document introduces a communication and information scheme designed to convey technical information about mechanical and natural ventilation, in indoor public spaces in buildings of all types, in a non-technical way. The proposed scheme brings together two familiar visual systems to maximize accessibility and remove language barriers: i) the [international energy labelling system](#) and ii) [icons](#)<sup>ii</sup>. It also builds on [previous proposed schemes](#). As the illustration below shows, the process involves taking the results from expert technical room assessments and translating them into colour-coded door/room labelling (green to red) using icons to represent the behavioural mitigations necessary to use spaces safely. Ventilation is complex, of course, and a simple scheme will be difficult to achieve. The process below, including making decisions about the mitigations needed following the assessment of any given space, requires consultation with experts. Nevertheless, it is important to communicate as much information as clearly as possible. Such a scheme would be useful not just during the current coronavirus pandemic but into the future, since good ventilation – mechanical or natural – is vital for public health.

### 'Scores on the doors' example process



## 2. The case for a simple Covid-safe ventilation messaging scheme

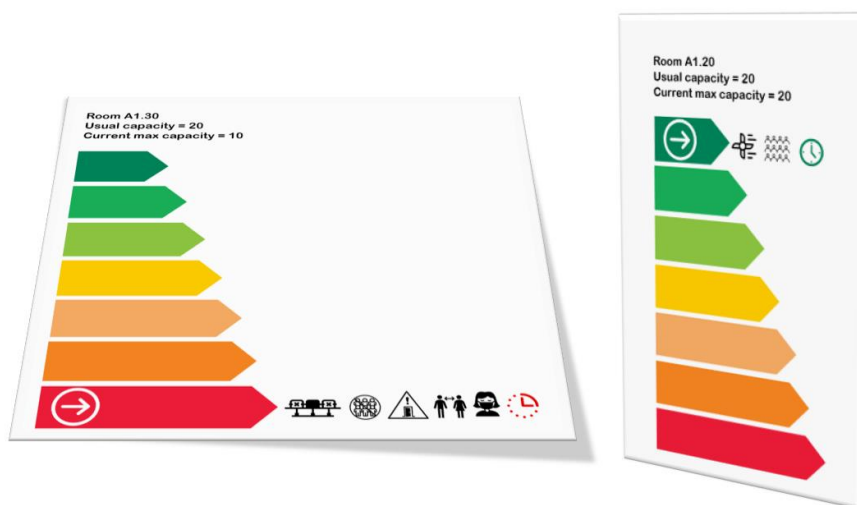
The Covid pandemic has revealed many problems with the UK government's public health [messaging](#), in terms of its clarity, consistency, and basic 'enact-ability' (i.e., translating into [behaviours](#)). The main mitigations against transmission that the UK government has focused on – handwashing, face coverings, and physical distancing, or 'hands face space' (alongside delays in adopting each and abandoning them early) have not been well understood. Despite much awareness raising, [science communication](#), and 'fresh air' [campaigning](#) (e.g., '[Hands Face Space Replace](#)'), an August 2021 [YouGov poll](#) found that people thought handwashing was more important than face-coverings. While "[hand hygiene is likely to be more effective than enhanced cleaning for reducing transmission via contaminated surfaces](#)", new (September 2021) UK Health Security Agency guidance for infection prevention and [control](#) in hospitals misses the opportunity to advise on ventilation which is mentioned only in passing.

This paper focuses specifically on the issue of [ventilation](#) and ‘fresh air’ as a fourth key mitigation, and possibly the most important. Scientists have recommended and called for investment in ventilation since the start of the pandemic and earlier, of course, since it is an established [public health tool](#). Standards for ventilation to mitigate against the spread of Covid are already established (e.g., [ASHRAE](#); [British Occupational Hygiene Society](#); [Royal Academy of Engineering](#); [SAGE Environment and Modelling Group](#); Health and Safety [Executive](#); [Hazards Campaign](#); [unions](#)). As the [science](#) about the airborne nature of Covid-19 emerged, the basic message of opening windows began to get traction via ‘[fresh air](#)’ campaigns towards the end of 2020 and was finally incorporated into the government messaging (‘hands face space fresh air’) in March 2021. Addressing the issue of poor ventilation is included in the UK government’s ‘[Autumn and Winter Plan 2021](#)’.

However, **simple and transparent communication about the ventilation (or lack) of indoor spaces is neither in place nor standardized**. More generally, “[w]e actually have very little data on how buildings are actually performing, what their ventilation levels are like.” Simple and non-technical information (e.g., “This room has no ventilation system”; “this room has not been assessed”; “this room has windows and a door that create sufficient fresh air”) is rarely provided. The public, including employers, does “[not understand how their ventilation systems work and neither do many commercial landlords](#).” Where ventilation assessments have been done, the results are often buried on organizational websites via hyperlinks or [too technical](#) for most people to assess and act to reduce their own risk. Furthermore, the criteria for what constitutes good ventilation and how it might be measured for different types of spaces is complex. Promotion of [evidence-based FAQs](#) and [recommendations in insufficient](#).

While more needs to be done in terms of basic investment in producing standards and making buildings properly ventilated, we call for a **public health messaging scheme**, including (as simple as possible) a rating and potential certification system, that can support behaviour and policy around the use of indoor spaces. We propose a campaign similar to [effective](#) schemes already in place for [food hygiene standards](#), [white goods energy labels](#) or ‘[Display Energy Certificate](#)’ on doorways – combined with icons to indicate behavioural mitigations needed (mocked-up printed examples below - “[text labelling](#)” may also be required). Ratings could be based on previous or new monitoring of the space. For some, this may be time-consuming and complex (e.g., for naturally ventilated spaces, where weather conditions affect performance). Furthermore, the move toward energy efficiency/fabric first in recent years has seen a focus on insulation (to prevent heat loss) at the expense of ventilation. However, [measuring carbon dioxide levels](#) will work [as a proxy](#) for many spaces if measured during a typical, fully occupied period, and could be one possible route to underpin a ‘[risk classification scheme](#)’.

### ‘Scores on the doors’ example labelling



Example labelling (1):  
Several mitigations needed

Example labelling (2):  
‘Normal’ use;  
no mitigations needed

### 3. Short and longer-term advantages of a scheme

- Since good ventilation – either mechanical or natural – is important for public health in general, the campaign and system would have [longevity and transferability](#), since “[c]ovid gives us a chance to fix indoor air pollution forever.”
- Air quality is, more generally, “[a social problem too... it’s really important that we think about how we enable people to get equal access to good air quality.](#)” Therefore, “a [ventilation revolution](#) may reduce preventable health and economic suffering from both air pollution and airborne illnesses simultaneously.”
- While some mechanical ventilation systems will mean it is difficult to produce simple ratings, many rooms and buildings have no such systems at all, and in such cases the message conveyed by the scheme will be at its most simple (e.g., if the room has no mechanical ventilation or windows, masks and distancing should be adhered to; the duration should be short). Ideally, such spaces should still be assessed in terms of air quality (e.g., via CO<sub>2</sub> monitors) and HEPA air filtration systems installed when needed.
- Such a scheme could enable other mitigations (e.g., if a room is ‘amber’, without mechanical ventilation but with windows, masks and distancing are needed, etc.).
- The scheme is cheaper/ easier to achieve while good [standards](#) of ventilation are put in place across all rooms, in all buildings, in all organisations.
- It would encourage organizations to take ventilation seriously, since CEOs, employers, etc., are unlikely to want their buildings and rooms rated ‘red.’
- It would help create trust among employers and employees.
- It makes explicit, transparent, and tangible the notion of people’s rights to safe workplaces and other spaces. Not all rooms carry the same level of risk, so as well as striving to improve ventilation for public health benefit, it also raises makes transparent ethical issues like consent and choice.

### 4. Awareness and the importance of clear communication

Awareness is the first step to enabling and promoting public health behaviours. When it comes to ventilation, a layperson with no technical expertise nevertheless should know what to look out for and what questions to ask regarding indoor settings, to enable simple risk assessments and come to a conclusion about the safety of the activity therein. Any campaign should provide answers to a series of questions, operating much like mnemonic-based health campaigns (e.g., [Dr ABC](#)) through which a person can move through a stage or questions and answers before moving to the next, in order of priority/importance. For instance: “*Before you enter this room, do you know if the ventilation is any good?*”

- Are there any openable windows?
- Where does the fresh air come from?
- Where does the stale air go?
- Does the air smell stale? Does it feel as if there is ventilation?
- Are there any systems installed to promote natural ventilation?
- Is it easy to find out if the ventilation is sufficient?
- Are other useful technologies in place to clean the air? (HEPA filters/UVC light)
- Will wearing a higher-grade mask (FFP2/FFP3) help filter shared air?
- Should I socially distance in this room?
- Could this be done outside?
- Could this be done online or by working from home?
- How long should I stay in this room?

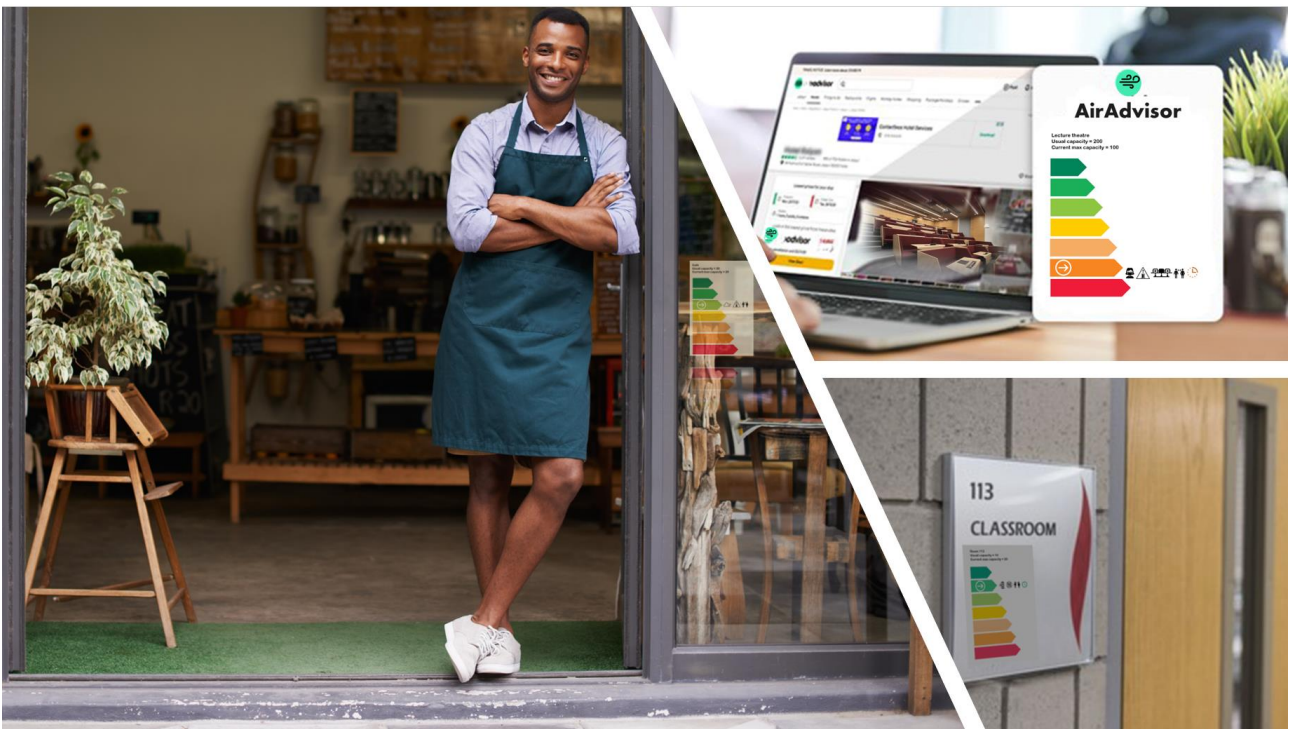
While the scheme aims to provide accessible and [non-technical guidance](#), the underpinning ventilation principles and technical terminology (e.g., ACH = ‘air changes per hour’) will become familiar over time, much like understanding the difference between ‘SPF 15’ and ‘SPF 50’ in sunscreens and moisturizers.

## 5. From 'scores on the doors' to certification

Once in place, the certification scheme should be formalised, and opening buildings and rooms should be contingent on certification. [Research](#) on displaying food hygiene certificates, and mandate thereof, shows that, “after mandating postings, hygiene levels improve”; “that with hygiene score posting restaurants that earn poor scores improve their hygiene and earn better scores”, but “that if posting isn’t mandated the poorly rated establishments do not post.”

If such a scheme became mandatory, local and national governments must support organisations and businesses to improve their ratings to ensure that small businesses and community facilities are able to participate. It is very likely that large sectors of the economy will find this scheme advantageous where visitor numbers have dropped due to trust and confidence issues around infection control in a venue, and that the scheme is a more palatable alternative to closing or limiting activities, should future public health crises resume. The campaign and certification scheme should be promoted and managed not only via door stickers, but also on a publicly available website, so that people can check places in their locality (like TripAdvisor – see examples below).

### Examples in situ



<sup>i</sup> We are grateful to [Dr Eilir Hughes](#) (GP and Fresh Air Wales), [Dr Pamela Karantonis](#) (Goldsmiths University of London), and [Dr Simon Williams](#) (Swansea University), for their input into this document. Any inaccuracies remain ours.

<sup>ii</sup> Icons used in the mock-up come from a combination of Microsoft Office and the [Noun Project](#).

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