

HEATWAVES AND HEALTH

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INTRODUCTION

As part of the interministerial directive concerning the management of health during heatwaves, which comes into play every year between 1 June and 15 September, Santé publique France (the French public health agency) works in partnership with the weather service Météo France to anticipate the occurrence of heatwaves that require increased preventive measures (orange and red warning levels), and monitors the health data on use of emergency care and mortality (general population and workers) in order to assess the impact of these episodes. Santé publique France also implements preventive actions for the general population: broadcasting announcements on the warning signs of health risks and appropriate actions via leaflets, posters, TV and radio spots, digital communications and text messaging. The messages are also repeated on social media and in the form of information updates published on the Santé publique France website.

The summer 2022 monitoring period occurred in a unique context, both in terms of the health situation, with the resurgence of COVID-19, and the climate situation. Météo France has confirmed that the summer of 2022 was the second hottest since 1900. The season was also marked by multiple extreme weather phenomena such as drought, forest fires, storms and a heatwave affecting the Mediterranean sea.

This public health bulletin provides an overview of the summer 2022 monitoring period in terms of the meteorological characteristics and health impacts related to the heatwaves, and describes the prevention/communication actions carried out by the national health agency. In addition, a bulletin specific to each region in metropolitan France is available on the Santé publique France website.

Procedural information concerning the indicators monitored, surveillance methods and the prevention measures implemented by Santé publique France are set out in [a supplementary document](#) (French only).

KEY POINTS

- According to Météo France, summer 2022 was the second hottest summer in France since the start of the 20th century. The summer 2022 monitoring period included three heatwaves, two of which triggered red warnings in the Atlantic coast regions, and there were two successive episodes of around 12 days in the regions of Occitania, Provence-Alpes-Côte d'Azur and Auvergne-Rhône-Alpes.
- The summer monitoring period featured the highest excess mortality since the French national heatwave plan was implemented in 2004:
 - 2,816 excess deaths (+16.7%) were observed during the three heatwaves in affected departments.
 - The over-75 age group was the most severely affected (2,272 excess deaths; +20.2%).
 - The relative excess mortality observed in the departments issued with red warnings (+19.9%) was higher than that seen in other departments.
 - Over 20,000 uses of care ascribed to the composite health indicator iCanicule (hyperthermia, dehydration and hyponatremia) were recorded during the surveillance period. Compared to non-heatwave periods, emergency department visits doubled and consultations with physicians in the SOS Médecins network tripled for these conditions during the heatwaves.
- During the summer heatwaves (in the affected areas and at the same times), 894 deaths due to the COVID-19 pandemic were recorded. COVID-19 may have increased sensitivity to the heat for certain groups, and vice versa.
- Seven fatal accidents at work with a possible link to the hot weather were reported by the Direction générale du Travail [General Directorate for Work]. These fatal accidents at work mainly occurred during occupational activities conducted outdoors, including three deaths in the construction sector.
- Over the whole summer monitoring period, there were an estimated 10,420 excess deaths from all causes (+6.1%) in metropolitan France. Part of the summer excess mortality can probably be attributed to exposure of the population to temperatures that did not reach the heatwave alert threshold. Santé Publique France is currently working on an estimate for the imputable proportion.
- Summer 2022 followed the trend observed over the past few years, which have seen an escalation of exposure to heatwaves in summer, translating into a rise in the associated impacts on health. In the context of climate change, the implementation of prevention measures during the whole summer period will be formally considered and this report emphasises the need to strengthen the strategy for adapting to climate change, nationally and regionally.

EXPOSURE OF THE POPULATION TO HEATWAVES

Heatwave exposure varies across the country

Heatwaves are identified at departmental level and are defined as a period of intense heat lasting at least 3 days. When the average high and low temperatures over 3 days exceed the alert thresholds, a department is deemed to be in a heatwave for the whole period that the threshold is exceeded. These departmental alert thresholds for maximum-high (day) and maximum-low (night) temperatures have been set by Santé publique France in partnership with Météo France. It is important to emphasise that temperatures below these thresholds can still carry a risk of mortality.

In France, heatwaves have the greatest impact on health of all extreme events. The risk of heat-related death affects all ages, although it is higher among people aged 75 and over. This risk increases rapidly when temperatures become much higher than the usual climate.

According to Météo France, summer 2022 was the second hottest summer seen in France since the start of the 20th century. It was punctuated by three intense and notable heatwaves.

Table 1 contains details of these three events with a few regional differences.

Over the whole summer, 69 departments experienced at least one heatwave, or 77.8% of the French population. These departments saw an average of 8.4 days of temperatures exceeding the alert thresholds.

Table 1. Characteristics of the main heatwaves in summer 2022

Dates	Regions affected	Number of departments	Mean duration per department (days) [Min; Max]	% of French population affected
14/06/22 to 22/06/22	Auvergne-Rhône-Alpes, Bourgogne-Franche-Comté, Centre-Val de Loire, Grand Est, Nouvelle Aquitaine, Occitania, Pays de la Loire, Provence-Alpes-Côte d'Azur	30	3.8 [3; 6]	26.0 %
09/07/22 to 27/07/22	All regions	52	5.0 [3; 14]	65.7 %
29/07/22 to 14/08/22	All regions of metropolitan France except for Ile-de-France	39	5.3 [3; 14]	40.6 %

The first heatwave affected over one-quarter of the population living in metropolitan France in June 2022. This heatwave was the earliest seen since records began in 1947 and consisted of red warnings being triggered in 14 departments of Nouvelle Aquitaine, Occitania and Pays de la Loire. For most of the departments, this meant extreme heat concentrated over just a few days with record temperatures being beaten, including a high of 42.9 °C in Biarritz on 18 June.

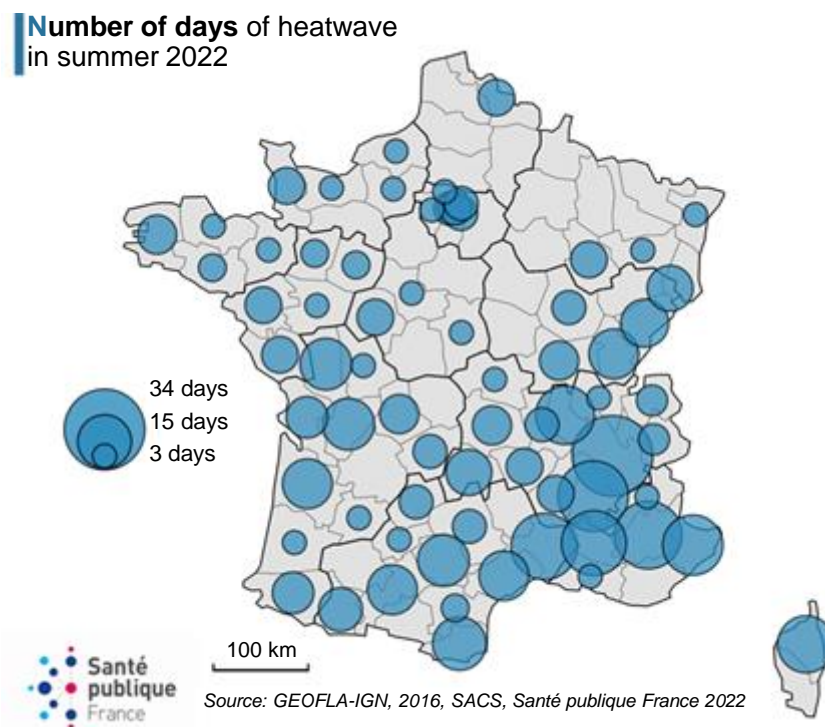
The second, longer heatwave, in July 2022, affected two-thirds of the population of metropolitan France and concerned all regions. This episode was notable for further red warnings being triggered in 15 departments across Brittany, Nouvelle Aquitaine, Occitania and Pays de la Loire, and new records set for high temperatures, in most cases exceeding 40 °C.

The third heatwave took place in the first half of August 2022, beginning just shortly after the one in late July ended, and it affected over one-third of the population. This heatwave affected almost all regions, but was mainly concentrated in the southern half of France, and lasted particularly long in the south-east, although it was less severe than the previous two episodes.

Five departments in the south-east experienced more than 20 heatwave days over the whole summer: Vaucluse (22 days), Gard (23 days), Alpes de Haute Provence (24 days), Drôme (26 days) and Isère (34 days) (Figure 1).

There were also several instances of the public information threshold for ozone pollution being persistently exceeded, concomitantly with these heatwaves, particularly in the regions of Auvergne-Rhône-Alpes, Grand Est, Hauts-de-France, Île-de-France, Normandy, Nouvelle Aquitaine, Occitania and Provence-Alpes-Côte-D'Azur. More information on the links between ozone, heat and health are available on [the Santé publique France website](#). The region of Nouvelle Aquitaine also saw the alert threshold for ozone and fine particulate matter being exceeded, due to forest fires.

Figure 1. Number of heatwave days per department in summer 2022



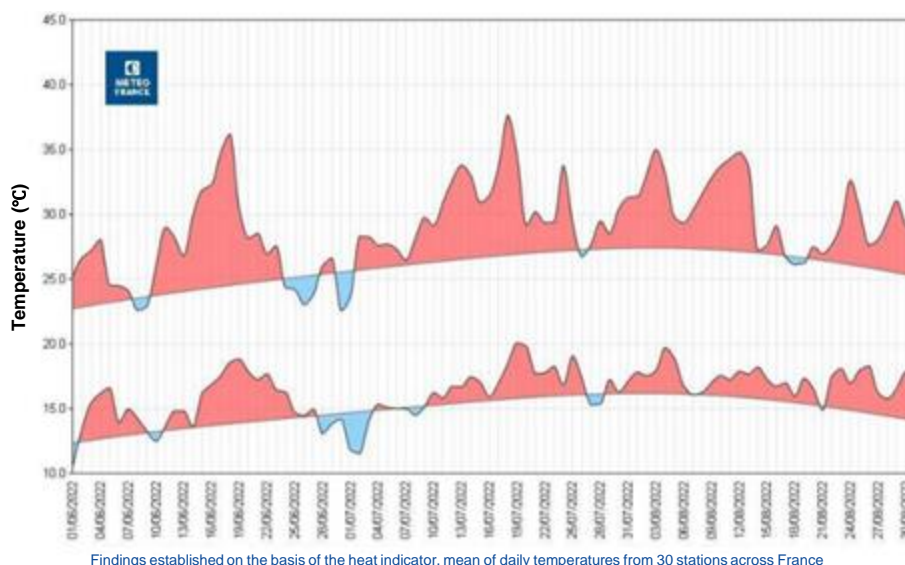
An escalation of heatwave exposure

Summer 2022, in line with the trend observed since 2015, was characterised across France by an escalation of heatwave exposure. Temperatures were above normal for almost the entire summer, punctuated by short periods of extreme heat, especially on the Atlantic coast (Figure 2).

In terms of severity (cumulative daily intensity during periods of heatwave), the exposure of the population nationally in 2022 remained below that of the summers of 2019 and 2020. However, greater severity was seen in the regions of the southern half of France, due to repeated and long-lasting episodes, with heatwaves of unprecedented duration exceeding those seen in 2003. Aside from heatwaves as traditionally defined, summer 2022 was marked by episodes of heat exposure that were atypical, including very short periods of unprecedented and extreme peak temperatures across the Atlantic coast, and persistent successive heat episodes, especially in the regions of Occitania, Provence-Alpes-Côte d'Azur and Auvergne-Rhône-Alpes.

Other weather phenomena occurred alongside the summer 2022 heatwaves: intense and severe drought across the whole country and forest fires affecting some regions for the first time. These kinds of phenomena could increase with climate change.

Figure 2. Daily minimum and maximum temperatures in France compared to normal daily temperature from 1 June to 31 August, 2022 (source Météo France).



HEALTH SUMMARY

Morbidity

• Use of emergency care due to hot weather throughout the summer

Between 1 June and 15 September 2022, there were over 17,000 emergency department visits and 3,500 consultations with SOS Médecins ascribed to the iCanicule composite indicator (hyperthermia/heatstroke, dehydration and hyponatremia) recorded in metropolitan France (Table 2 and Figure 3).

During the heatwaves, 2,060 emergency department visits and 680 consultations with SOS Médecins were ascribed to the iCanicule indicator in the affected departments, which is double the number of emergency department visits and triple the number of SOS Médecins consultations seen during the non-heatwave periods.

In emergency departments, the most common reasons for attendance according to iCanicule were hyponatremia and dehydration (45% and 37% of the emergency department visits ascribed to iCanicule, respectively). Half (51%) of the emergency department visits ascribed to iCanicule were made by people aged 75 and over. During the summer, over 10,000 hospital admissions following an emergency department visit ascribed to iCanicule were recorded.

As for SOS Médecins, consultations made by those under the age of 65 were usually due to hyperthermia, whereas people over the age of 65 mainly consulted due to dehydration. 29% of these consultations were made by people aged 75 years and over.

It is not possible to predict the impact of the heat on mortality on the basis of these uses of emergency care.

Table 2. Summary of uses of care ascribed to iCanicule by age group during the monitoring period (1 June–15 September 2022).

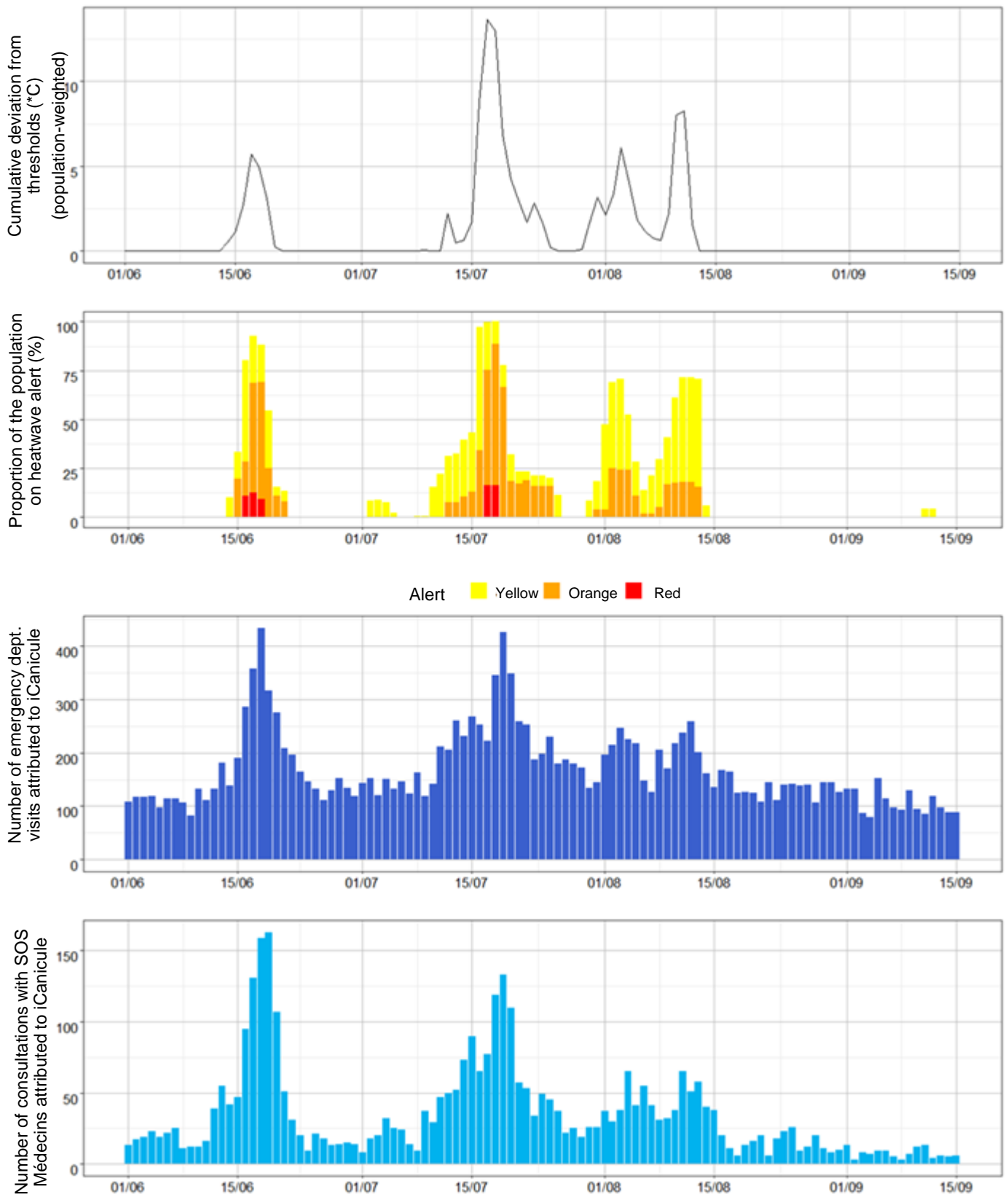
	Number and share (%) of total activity coded						
	All ages	Under 15	15–24 years	25–44 years	45–64 years	65–74 years	75 and over
Emergency department visits ascribed to iCanicule	17,840 0.4%	1,974 0.2%	703 0.1%	1,106 0.1%	2,261 0.2%	2,526 0.6%	9,269 1.3%
Hospital admissions following emergency department visit ascribed to iCanicule	11,540 1.3%	841 0.9%	96 0.2%	350 0.3%	1,368 0.8%	1,798 1.3%	7,087 2.2%
Consultations with SOS médecins ascribed to iCanicule	3,655 0.3%	999 0.3%	514 0.3%	607 0.2%	289 0.2%	152 0.3%	1,079 1.2%

Mortality in workers

The impact of heatwaves on the health of the workforce is monitored through notifications passed to Santé publique France by the Direction générale du travail [General Directorate for Work] of fatal accidents at work potentially caused by hot weather.

During the monitoring period, seven notifications reporting potentially heat-related fatal accidents at work were submitted to Santé publique France, one of which was issued during an active red warning for a heatwave. The fatalities concerned men aged between 39 and 54, with a median age of 44 years. These fatal accidents at work mainly occurred during occupational activities conducted outdoors, including three deaths in the construction sector.

Figure 3. Population exposure to heatwaves in metropolitan France and number of uses of emergency care in summer 2022 (sources: Météo France, SurSaUD)



Mortality in the general population: 2,816 excess deaths during the heatwaves

• One death in six an excess death in people aged 75 and over

The impact of heatwaves on mortality is estimated by comparing the number of deaths seen during the episodes to the number of deaths that would have occurred in the absence of a heatwave. The estimates calculated reflect the excess deaths noted during heatwaves in the departments affected, but they cannot be directly attributed to the heatwaves.

The excess mortality during the heatwaves was calculated by department, for periods when the alert threshold was exceeded, plus a 3-day extension in order to take into account any delayed effects of the heat on mortality.

In 2022, during the heatwave periods and in the affected departments +2,816 excess deaths were recorded, which equates to a relative excess mortality of +16.7% (share of excess deaths compared to expected deaths) (Table 3). The great majority of these excess deaths are accounted for by people aged 75 and over, and this group also present a high relative excess mortality of +20.2%, meaning one death in six is an excess death. The highest excess mortality was seen during the second heatwave, in the month of July, which affected two-thirds of the population and was the most intense (+1,901 excess deaths, +22.7%).

During the same periods and in the same departments, 894 deaths due to the COVID-19 pandemic were recorded in hospitals and in residential care facilities. People aged 75 years and over were again worst affected, accounting for three-quarters of these deaths. Deaths due to COVID-19 cannot be subtracted from the figures for excess mortality during the heatwaves: COVID-19 could have increased susceptibility to the heat in some people, while exposure to the heat could also have worsened the health of some COVID-19 patients.

Table 3. Excess mortality in summer 2022 by age - during the periods of heatwave in the departments where the threshold temperature was exceeded. *Note: the rounding-up of numbers may result in some sums not corresponding exactly.

Age	Excess mortality						
	Numbers*		Relative %		Detail by heatwave (Number and % relative means)		
	Estimated mean	[Minimum; Maximum]	Estimated mean	[Minimum; Maximum]	1st heatwave	2nd heatwave	3rd heatwave
Under 15	-10	[-51; 22]	-7.0%	[-27.9; 19.4]	8 (42.6%)	-15 (-18.5%)	-3 (-6.7%)
15–44 years	47	[-47; 128]	10.9%	[-9.1; 36.9]	3 (5.3%)	30 (13.0%)	14 (9.7%)
45–64 years	134	[-105; 372]	6.2%	[-4.4; 19.3]	13 (3.5%)	102 (9.3%)	20 (2.8%)
65–74 years	373	[57; 667]	13.0%	[1.8; 26]	49 (10.0%)	213 (14.6%)	110 (12.2%)
75 and over	2,272	[1,621; 2,846]	20.2%	[13.6; 26.6]	152 (7.8%)	1,571 (28.6%)	549 (14.4%)
All ages	2,816	[1,989; 3,502]	16.7%	[11.2; 21.7]	225 (7.8%)	1,901 (22.7%)	690 (12.3%)

Note that the number of excess deaths is estimated by extrapolating on the basis of a sample from residential areas providing computerised data to INSEE. The numbers obtained based on total, non-extrapolated mortality data may be different, especially in the departments where extreme heat may have been extremely localised.

• Several areas severely impacted

– At regional level

Four regions cumulatively account for almost two-thirds of the national excess: Auvergne-Rhône-Alpes (+473 deaths), Nouvelle Aquitaine (+436 deaths), Occitania (+509 deaths) and Provence-Alpes-Côte d'Azur (+316 deaths). These were the regions most affected by heatwaves, which occurred with a greater intensity in the south-west and at repeated, extended intervals in the south-east.

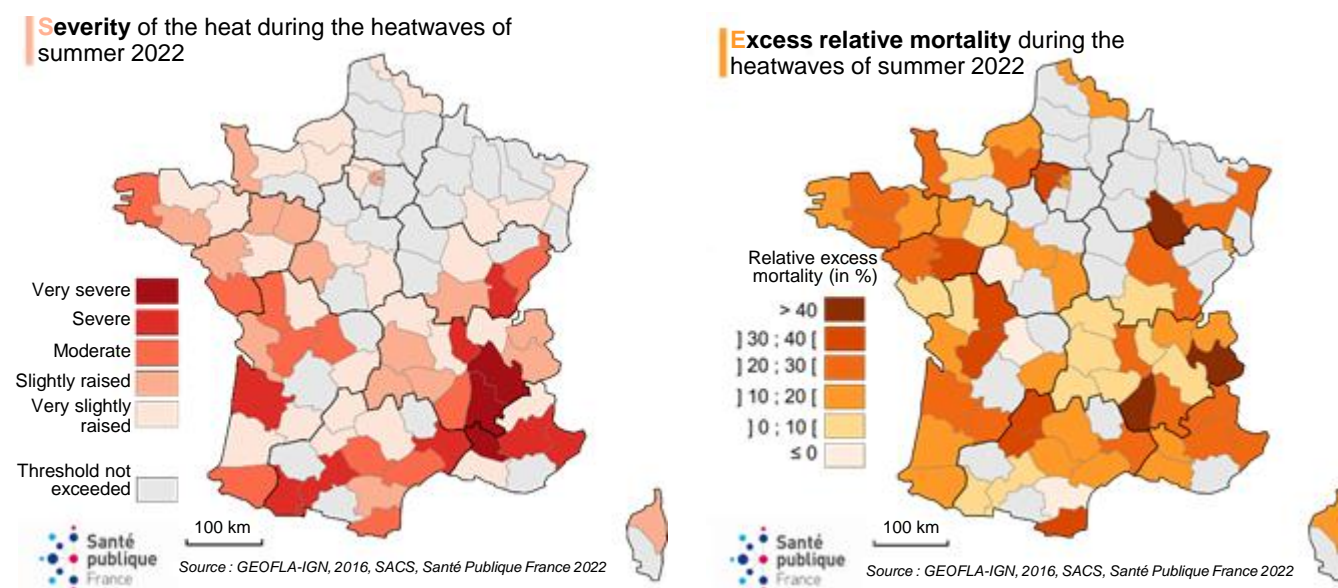
Brittany (+19.9%), Grand Est (+25.7%) and Île-de-France (+20.8%) had the lowest rates of relative excess deaths. Brittany, with its coastal climate and location, had relatively little experience of heatwaves prior to 2022, meaning that its residents are less accustomed to them. The region had an episode of red-level warning in July, which was very intense but short. This is consistent with the significant relative impact but low number of deaths accumulated in total (168 excess deaths). The high relative excess mortality observed in the Grand Est region only affected three departments, with low numbers that are hard to interpret (61 excess deaths). The July heatwave in Île-de-France contributed over 10% of the national figures with 325 excess deaths. This episode in a densely populated and urbanised region (urban heat islands) was notable for intermittent extremes of both maximum (> 40°C) and minimum temperatures (between 20 and 25°C).

– At departmental level

Of the 69 departments that experienced at least one heatwave during summer 2022, four (Doubs, Haute-Vienne, Indre-et-Loire and Aude) showed no excess mortality during the heatwaves (Figure 4). Twenty-nine departments recorded a relative excess death rate higher than +20%, and for 12 departments it was higher than +30%. Savoie and Ardèche were the two departments with the highest relative excess mortality, at +53.0% and +52.3%, respectively. Gironde and Alpes-Maritimes were the departments whose excess mortality made the greatest contribution to the national figures, with over 150 excess deaths each, and a relative excess mortality exceeding +20%.

In the departments where a red warnings for heatwaves were issued, relative excess mortality reached +19.9% and accounted for around one-fifth of the national figures, with 557 excess deaths.

Figure 4. Severity of heatwaves and relative excess mortality (% of deaths that are beyond expected) by department for the days that the alert threshold was exceeded in summer 2022.



• Comparison with preceding years

The excess mortality observed during the heatwaves of 2022 was the highest since 2003, while remaining below the 15,000 deaths seen that year (Table 4). Since each heatwave is different in terms of duration, intensity and population exposed, it is complex to draw comparisons with preceding years. However, we note that since 2015 very long-lasting heatwaves that are atypical in terms of intensity, and time and place of occurrence have all resulted in excess mortality. Over the past 8 years, heatwaves have caused more than 10,500 excess deaths.

Table 4. Excess mortality during heatwaves over the past 8 years - during the periods of heatwave in the departments where the threshold was exceeded.

	Heatwaves		Excess mortality			
	Number of departments	Mean duration over summer	Numbers		Relative % [*]	
			Estimated mean	[minimum; maximum]	Estimated mean	[minimum; maximum]
2022	69	8.4	2,816	[1,989; 3,502]	16.7%	[11.2; 21.7]
2021	9	4.0	239	[199; 296]	20.3%	[16.4; 26.4]
2020	73	6	1,924	[1,484; 2,387]	18.3%	[13.5; 23.7]
2019	85	7.5	1,462	[548; 2,221]	9.2%	[3.2; 14.6]
2018	67	6.3	1,641	[1,071; 2,164]	14.9%	[9.2; 20.6]
2017	63	4.6	474	[286; 698]	5.4%	[3.2; 8.2]
2016	23	3.9	378	[327; 441]	13.0%	[11.5; 15.5]
2015	54	8.6	1,739	[1,620; 1,832]	17.6%	[16.2; 18.7]

* Excess deaths compared to expected deaths over the period and in the affected departments

PREVENTION SCHEME

The national prevention scheme concerning the effects of heatwaves, defined in the interministerial directive concerning the management of health during heatwaves, is based around two strands: the “non-heatwave” strand is activated prior to the start of the monitoring period, and the “heatwave” strand is only activated in the event of a heatwave. This summer, the new version of the emergency measures, revised in 2020, were widely distributed for the first time.

The aim of the prevention scheme is to raise awareness among the public about the health effects of exposure to extreme heat, which concern the whole population. Using various communication tools, it also identifies the populations most at risk (people at work or doing sports, children and older adults), describing the symptoms that indicate that the heat is having a direct effect on the body (cramps, unusual fatigue, headaches, fever greater than 38°C, nausea, dizzy spells, incoherent speech) and giving advice on appropriate action (stay in a cool place and drink water, keep the home cool, avoid going out during the hottest times, etc.).

“Non-heatwave” strand

The tool kit consists of paper documents including a poster, with an English translation available, and a new 4-page leaflet, which can be ordered by anyone involved in preventing the health risks of heatwaves.

Three documents in the collection “Pointers for your practice” (“*Repères pour votre pratique*”) are available to download from the Santé publique France website. They are intended for healthcare professionals and set out best practices in regard to the most vulnerable adults, young children and the elderly during the hot weather.

These documents are promoted in advance of the summer period through a paper and e-mail distribution campaign to inform the local and regional community and authorities (regional health agencies, local administrative authorities, networks for older adults/home carers, early years care networks, disability networks, healthcare workers’ associations, etc.) that they are available. This campaign led to **477,443 documents** being distributed before and during the summer, mainly the new leaflet (422,620 copies). Auvergne-Rhône-Alpes, Ile-de-France, Hauts-de-France and Occitania were the regions that ordered the most documents.

“Heatwave” strand

This tool kit consists of information broadcast on the radio, TV or social media and sent by text message.

One TV spot and two radio spots (in English and French) are broadcast if media channels are specifically requisitioned by decision of the Health Minister in the event of a nationwide heatwave alert.

Four digital announcements are broadcast on social media for a minimum of 5 days in the affected departments if there is a heatwave alert that is less geographically widespread, with space purchased instead of requisitioning media channels. The messages vary for three target audiences (adults aged 65 and over, pregnant women/parents of young children and adults aged 18 to 64).

For the first time, text messages were sent, as an experiment, to populations that are susceptible to the heat (adults aged 65 and over, pregnant women/parents of young children) during periods of yellow and orange warnings, with space purchased from various telecommunications companies. The messages changed slightly as the summer progressed, being adapted to the manner in which episodes were proceeding.

During the three heatwaves:

- When there was yellow or orange warnings were issued at departmental level, the text messages measure was triggered. In total, **4,233,636 text messages** were sent, with a split by heatwave of 2,614,603 texts, 305,896 texts and 1,313,137 texts.
- The digital announcements were triggered during all three heatwave episodes, generating **24.7 million impressions in total** (“impressions” = number of times that one of the messages is displayed on a screen).
- The TV spot, developed by Santé publique France, was broadcast with channels requisitioned by a ministerial decision during the heatwave of July 13 to 18, 2022.
- The radio spots, developed by Santé publique France, were broadcast on local radio channels requisitioned in the regions affected during all three heatwaves.

• **Digital announcements, adapted to specific populations, broadcast during orange warnings in departments affected by a localised heatwave**

Adults aged 18–64 years



HEAD ACHING IN THE HEAT?



DRIPPING WITH SWEAT IN THE HEAT?

Pregnant women
Parents of young children



CHILD LACKING ENERGY IN THE HEAT?

Adults aged 65 and over



FEELING NAUSEOUS IN THE HEAT?



HEAT AFFECTS EVERYONE
Especially if you have a chronic illness



IF YOU FEEL FAINT, DIAL 15
Or dial 114, the service for the deaf or hard of hearing.

• **Information updates published on the Santé publique France website**

- Update of May 10, 2022 - First hot days and UV exposure: simple measures for everyone to apply. [Premières chaleurs et exposition aux UV : des gestes simples à adopter par tous | Santé publique France \(santepubliquefrance.fr\)](https://www.santepubliquefrance.fr/premieres-chaleurs-et-exposition-aux-uv-des-gestes-simples-a-adopter-par-tous)
- Update of June 10, 2022 - Heatwaves and extreme heat: Launching monitoring and reminder of measures for everyone to apply. [Canicule et fortes chaleurs : lancement de la veille saisonnière et rappel des gestes à adopter par tous \(santepubliquefrance.fr\)](https://www.santepubliquefrance.fr/canicule-et-fortes-chaleurs-lancement-de-la-veille-saisonniere-et-rappel-des-gestes-a-adopter-par-tous)
- Update of July 11, 2022 - Intense and long-lasting heatwave across the country: reminder of precautions for everyone to take. [Vague de chaleur intense et durable sur le territoire : rappel des précautions à prendre par tous \(santepubliquefrance.fr\)](https://www.santepubliquefrance.fr/vague-de-chaaleur-intense-et-durable-sur-le-territoire-rappel-des-precautions-a-prendre-par-tous)

All of the communication documents are available on the Santé publique France website <https://www.santepubliquefrance.fr/determinants-de-sante/climat/fortes-chaleurs-canicule/outils/#tabs>

CONCLUSION

The climatic context in which the summer 2022 monitoring period unfolded was unusual, involving atypical profiles of population exposure. According to Météo France, summer 2022 was the second hottest since the start of the 20th century and was marked by three heatwaves. The Atlantic coast experienced two episodes at red warning level due to record temperatures, especially during the day, of very short duration. In parallel, the south-east saw moderately intense long-lasting and repeated episodes, especially in July and August. These heatwaves were accompanied by other weather phenomena that could increase with climate change such as droughts and forest fires.

The impacts seen on the use of care and mortality confirm that extreme heat remains a significant risk to health for the whole population. The regions making up the southern half of the country saw a particularly high excess death rate due to intense episodes in the south-west and long-lasting and repeated episodes in the south-east. The national estimated excess mortality of +2,816 deaths was the highest recorded since the French national heatwave plan was implemented in 2004. In the areas and during the times affected by heatwaves, 894 deaths due to the COVID-19 pandemic were recorded, which were for the vast majority people aged 70 and over. COVID-19 may have increased sensitivity to the heat, and vice versa.

Hot weather can have an impact on health even outside of periods classed as heatwaves, which is determined by average minimum and maximum temperatures exceeding the alert thresholds for the department over 3 days. Moreover, according to the data on use of emergency care, more than 80% of uses of care related to heat exposure took place outside heatwaves.

In a number of departments there was a persistent exposure to high temperatures that were close to the alert threshold but fell short of the heatwave classification. In addition, an excess of deaths was observed by Santé publique France over the whole monitoring period (30 May to 18 September 2022), using the European harmonised model [EuroMomo](#). This excess of deaths from all causes in metropolitan France was estimated at +10,420 deaths, or +6.1%. During the same period, 5,735 COVID-19 deaths were recorded in hospitals and in residential care facilities. A share of the summer excess mortality was due to temperatures that did not reach the heatwave alert threshold but, far from risk-free, are nonetheless associated with a high excess mortality (+100%, before the French national heatwave plan was implemented in 2004). To estimate the total share of mortality attributable to the heat requires suitable statistical modelling based on several decades of historical data. Santé publique France is working on applying such models to all the departments of metropolitan France and consequently estimating the share of mortality that can be attributed to the heat during the summer. The results will be available in early 2023.

The new prevention scheme aims to encourage the population to take steps that protect their health during very hot weather, and the communication tools were widely distributed for the first time this summer. Evaluations are underway to establish the extent of its reach and how effective it was. Depending on the results, changes can be considered. The weather conditions seen this year, characterised by frequent or long-lasting heatwaves, may also give cause to adjust the prevention scheme if we are to consider that heatwaves are no longer unusual weather events. A review will soon be launched regarding the implementation of a prevention scheme aimed at preparing the population for summer temperatures.

Finally, this report emphasises the importance of anticipating the impact of the hot weather in advance of heatwaves and in this respect supports the need to strengthen the strategy for adapting to climate change, nationally and regionally, in order to plan ahead for the very likely escalation of extreme weather phenomena.

DATA SOURCES

1) Meteorological data: Météo France

2) Health data:

- Uses of care: OSCOUR network (emergency departments) and SOS Médecins networks.
- Mortality: INSEE data from 3,000 residential areas that submit computerised data to Santé publique (all-cause mortality) and data from the Direction générale du travail (mortality in the workforce).

ACKNOWLEDGEMENTS

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EDITORIAL COMMITTEE

Santé publique France: Direction Santé-Environnement-Travail [Environmental and Occupational Health Department], Direction Prévention et Promotion de la Santé [Health Promotion and Prevention Department]; Météo France.