

OBSERVATORY OF THE IMPACTS OF THE HEALTH CRISIS RELATED TO COVID-19

April 2022

Note: This Observatory aims to measure the health and economic consequences of the Covid-19 epidemic in the Principality. It has been set up to complement the reports produced by Monaco Statistics in November 2020 and January 2021.

Thus, this publication presents a monthly analysis of health, mortality and birth data and is enriched quarterly with data on the economy and employment in the Principality.

For this edition:

The health data are stopped at the end of March 2022;

Mortality and birth rate data are updated to March 2022.

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KEY DATES

| | March | April |
|---|--|---|
| Monaco  | <p>-On the 5th: End of the obligation to use telework 3 days a week. However, its application remains recommended.</p> <p>-On the 7th: End of the mask at school for pupils and teachers. Reopening of nightclubs. Modification of the isolation protocol for family contacts for vaccinated persons. Removal of the obligation of the health pass for the personnel working on building sites. Lifting of the obligation to wear a mask during indoor sports.</p> <p>-On the 14th: End of the health pass for users, clients and employees in all sectors except in health establishments and collective accommodation structures for the elderly. However, staff covered by the Act of 20 September 2021 remain subject to compulsory vaccination. Removal of the obligation to wear a mask in all outdoor locations.</p> <p>-On the 21th: Screening in schools after the February holidays.</p> <p>-On the 22th: New vaccine (Nuvaxovid from the NOVAVAX laboratory) against COVID-19 available in the Principality.</p> <p>-On the 25th: 10,490 confirmed cases of COVID-19 including 54 deaths.</p> <p>-On the 31st: The Total Temporary Layoff and the Partial Exemption from Employer Charges, which had been temporarily reactivated in mid-January, came to an end. Remote working is maintained until 31 May.</p> | <p>-On the 11th: 11 194 confirmed cases of COVID-19 including 56 deaths.</p> |
| France  | <p>-On the 14th: Application of the vaccination pass suspended in all places where it was required. However, the health pass will remain in force in health establishments, retirement homes and establishments for people with disabilities. Wearing a mask will no longer be compulsory. All places are concerned, except for public transport and health establishments.</p> <p>-On the 21th: Non-vaccinated contact cases no longer need to isolate themselves.</p> <p>-On the 25th: 23,903,547 confirmed cases of COVID-19 including 138,273 deaths.</p> | <p>-On the 11th: 26 175 546 confirmed cases of COVID-19 including 140 080 deaths.</p> |
| Italy  | <p>-On the 25th: 14 153 098 confirmed cases of COVID-19 including 158 436 deaths.</p> | <p>-On the 11th: 15 292 048 confirmed cases of COVID-19 including 160 748 deaths.</p> |
| World  | <p>-On the 25th: 476 374 234 confirmed cases of COVID-19 including 6 108 976 deaths.</p> <p>-On the 27th: 11 054 362 790 doses of vaccine were administered.</p> | <p>-On the 5th: 11 250 782 214 doses of vaccine were administered.</p> <p>-On the 11th: 497 057 239 confirmed cases of COVID-19 including 6 179 104 deaths.</p> |

1 Health data

1.1 Covid-19 health monitoring indicators

The health monitoring data for Covid-19 are as of 31 March 2022. They come from the Ministry of Health and Social Affairs, which groups together data from the Department of Health Affairs, the Centre Hospitalier Princesse Grace, the Epidemiological Investigation Unit, the Home Monitoring Unit, town doctors, pharmacies, the Monaco Scientific Center and medical analysis laboratories.

Table 1. Covid-19 monitoring indicators for Monaco residents as of 31 March 2022

| | |
|---|--------|
| No. of cumulative cases | 10,757 |
| <i>of which no. of recontaminations</i> | 573 |
| Share of infected residents | 26.6% |
| Cumulative no. of hospitalisations | 472 |
| Share of hospitalisations on the no. of cumulative cases | 4.4% |
| Cumulative no. of cases in intensive care | 61 |
| Share of cases in intensive care out of the no. of hospitalisations | 12.9% |
| Share of cases in intensive care out of the no. of cumulative cases | 0.6% |
| Cumulative no. of deaths | 54 |
| Share of deaths out of the no. of cumulative cases | 0.5% |

Sources: Ministry of Health and Social Affairs, Monaco Statistics

As of 31 March 2022, the cumulative number of cases since the beginning of the epidemic reached 10,757, including 573 recontaminations. Thus, the proportion of infected residents is 26.6%¹.

4.4% of cases required hospitalization, i.e. 472 cases in total, including 61 in intensive care. The average length of hospital stay² was 12.7 days overall and 11.5 days for patients who did not stay in intensive care.

The 54 deaths (26 men and 28 women) represent 0.5% of the cumulative cases. The mean age at death was 84.3 years old overall (82.8 years for men and 85.7 years for women). More than two thirds of the deceased residents were 80 years old and over. 13 deaths concerned people of Monegasque nationality.

¹ Based on the most recent resident population estimate (as of 31 December 2020) of 38,350 inhabitants.

² The lengths of stay include those of patients in the Covid unit as well as those for other reasons.

1.1.1 Situation in February 2022

Table 2. Monthly number of Covid-19 cases for Monaco residents

| | February 2022 | Share | March 2022 | Share |
|--|---------------|-------------|--------------|-------------|
| No. of unvaccinated cases | 488 | 46.3% | 503 | 37.4% |
| No. of cases with Shareial vaccination scheme | 16 | 1.5% | 11 | 0.8% |
| No. of cases with full vaccination scheme | 215 | 20.4% | 240 | 17.8% |
| No. of cases with additional dose vaccination scheme | 334 | 31.7% | 591 | 43.9% |
| No. of cases | 1,053 | 100% | 1,345 | 100% |
| <i>of which no. of recontaminations</i> | 89 | 8.5% | 163 | 12.1% |

Sources: Ministry of Health and Social Affairs, Monaco Statistics

1,345 new cases of Covid-19 were recorded among residents of Monaco in March 2022. 37.4% of cases (503) concerned unvaccinated residents, which is significantly lower than in February (46.3% for 1,053 cases).

17.8% of cases (240 patients) involved people with a complete vaccination scheme³, compared to one in five in February (215 cases). More than four cases in ten (591) have an additional dose scheme⁴ in March, compared to 31.7% (334 cases) in February. It should be noted that the increase in the number of vaccinated people in the population has resulted in a mechanical increase in the number of vaccinated Covid-19 cases.

The number of recontaminations is increasing with 12.1% of cases in March after 8.5% in February 2022.

Table 3. Monthly number of Covid-19-related hospitalizations and resuscitations for residents of Monaco

| | February 2022 | March 2022 |
|--|---------------|------------|
| No. of hospital admissions | 29 | 30 |
| No. of hospital admissions not fully vaccinated | 9 | 5 |
| No. of hospital admissions with full vaccination schedule | 6 | 7 |
| No. of hospital admissions with additional dose vaccination scheme | 14 | 18 |
| No. of cases in intensive care | 0 | 1 |
| No. of deaths | 4 | 3 |

Sources: Ministry of Health and Social Affairs, Monaco Statistics

There were 30 Covid-19-related hospitalizations of residents in March 2022 compared to 29 in the previous month. Of these 30 hospitalizations, 5 were in people who were not fully vaccinated⁵, 7 were in residents with a full vaccination scheme⁶ and 18 were in patients with an additional dose vaccination scheme⁷.

In March 2022, there were 3 Covid-19-related deaths.

³ Vaccination with two injections of a two-dose protocol or one injection of a single-dose protocol.

⁴ Vaccination with three injections of a two-dose protocol or a second injection of a single-dose protocol.

⁵ Unvaccinated or partially vaccinated (one injection of a two-dose protocol).

Table 4. Covid-19 monitoring indicators for Monaco residents per year (as at 31 March 2022)

| | 2020 | 2021 | 2022 |
|----------------------------|-------------|-------------|-------------|
| Number of cases | 875 | 4,292 | 5,590 |
| Number of hospitalisations | 81 | 241 | 150 |
| Number of resuscitations | 19 | 39 | 3 |
| Number of deaths | 3 | 35 | 16 |
| Mean age | 46 | 40 | 38 |

Sources: Ministry of Health and Social Affairs, Monaco Statistics

In the first quarter of 2022, 5,590 people were infected with Covid-19, more than in 2020 and 2021 combined in just 3 months.

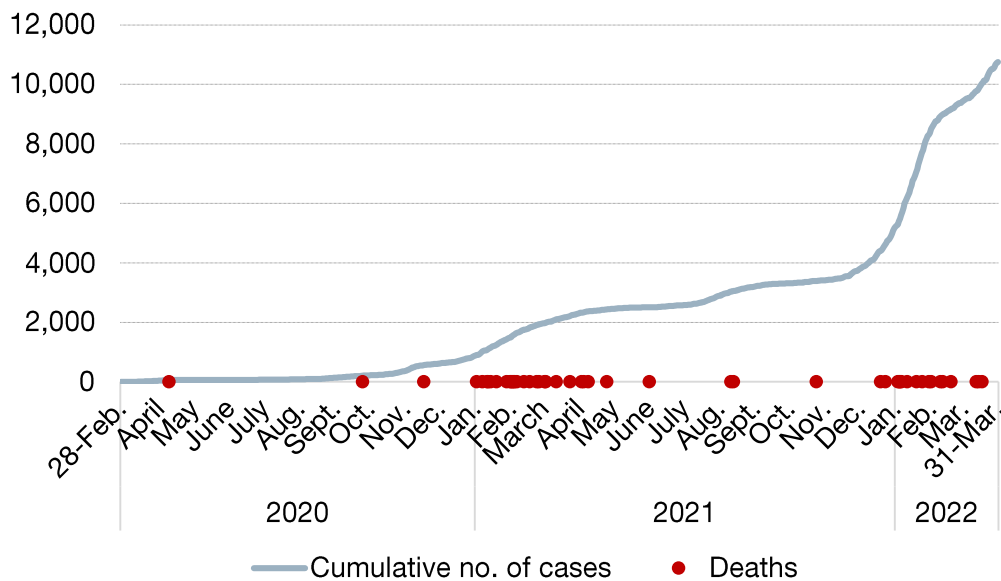
By the end of March 2022, the number of hospital admissions is 150, almost double the number for the whole of 2020, compared to 241 for the whole of 2021.

The number of deaths in 2022 also remains significantly lower than in 2021 at this stage with 16 deaths compared to 35.

Each year the mean age of those infected is falling, from 46.2 years old in 2020 to 39.7 years old in 2021 and 37.6 years old in 2022.

1.1.2 Evolution of the epidemic

Figure 1. Evolution of the number of cumulative cases and deaths linked to Covid-19 for residents of Monaco



Sources: Ministry of Health and Social Affairs, Monaco Statistics

As of 31 March 2022, the cumulative number of cases since the start of the pandemic has reached 10,757, more than half of them in 2022.

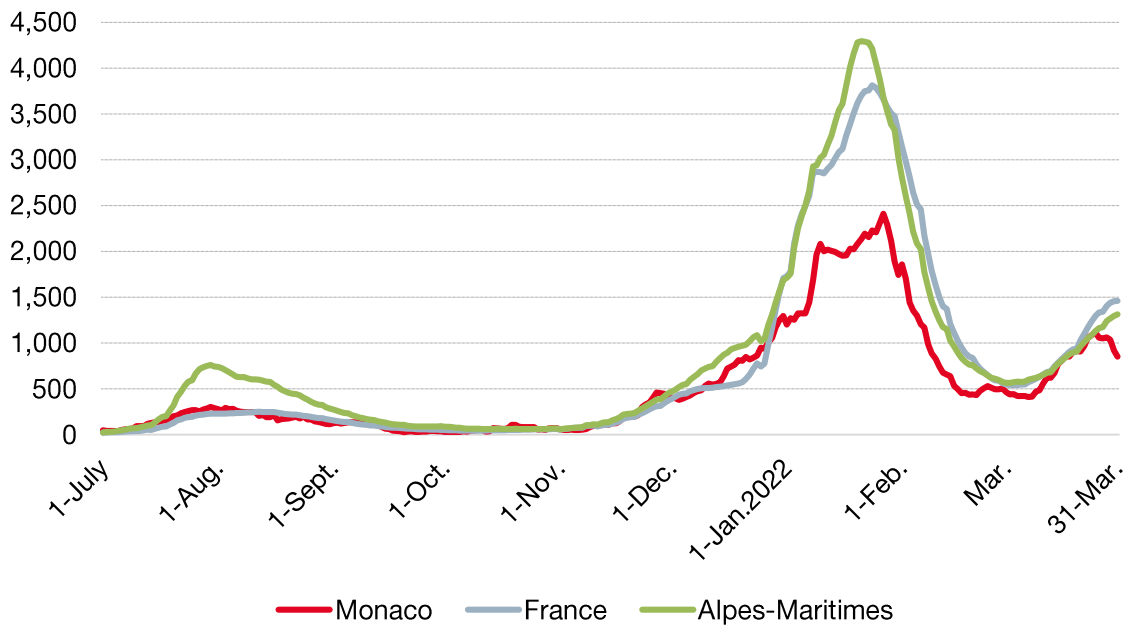
Figure 2. Evolution of the daily incidence rate of Covid-19 for residents of Monaco



Sources: Ministry of Health and Social Affairs, Monaco Statistics

After reaching an all-time high of 2,409 at the end of January 2022, and then falling sharply in February, the incidence rate rose again and stood at 850 on 31 March.

Figure 3. Changes in the daily incidence rate of Covid-19 in Monaco, France and the Alpes-Maritimes

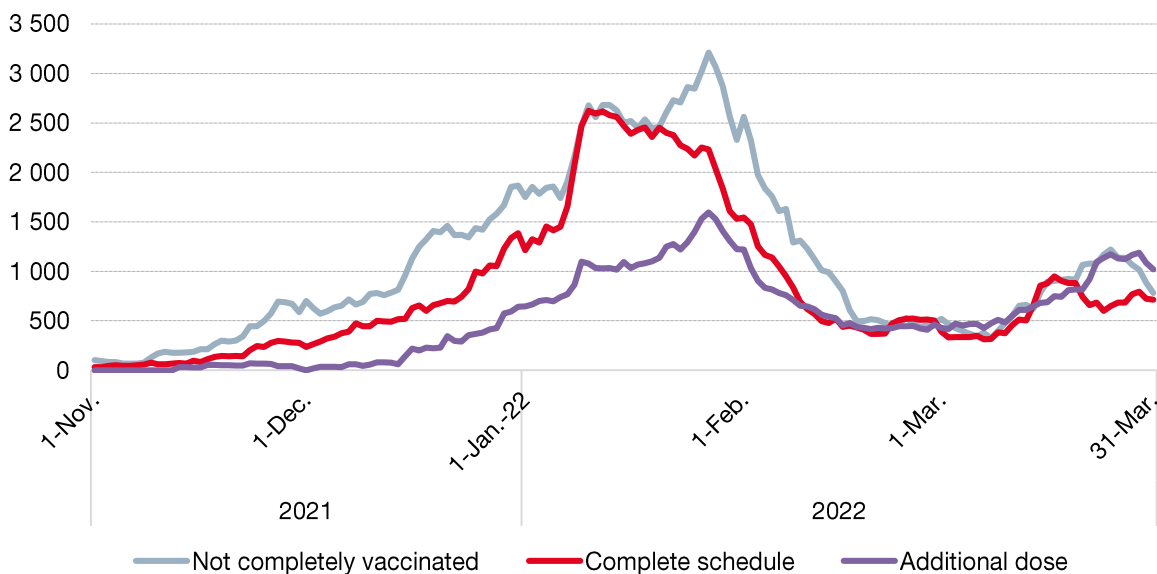


Sources: Ministry of Health and Social Affairs, Santé publique France, Monaco Statistics

In March 2022, the 6th epidemic wave emerged in most European countries, less than 2 months after the previous one.

As of 31 March, the Monegasque incidence rate, at 850, was lower than the rates in the Marais and France (1,312 and 1,460 respectively).

Figure 4. Changes in the daily incidence rate of Covid-19 for residents of Monaco of 12 years old and over according to vaccination status*



Note: In this graph, three vaccination statuses are distinguished for residents:

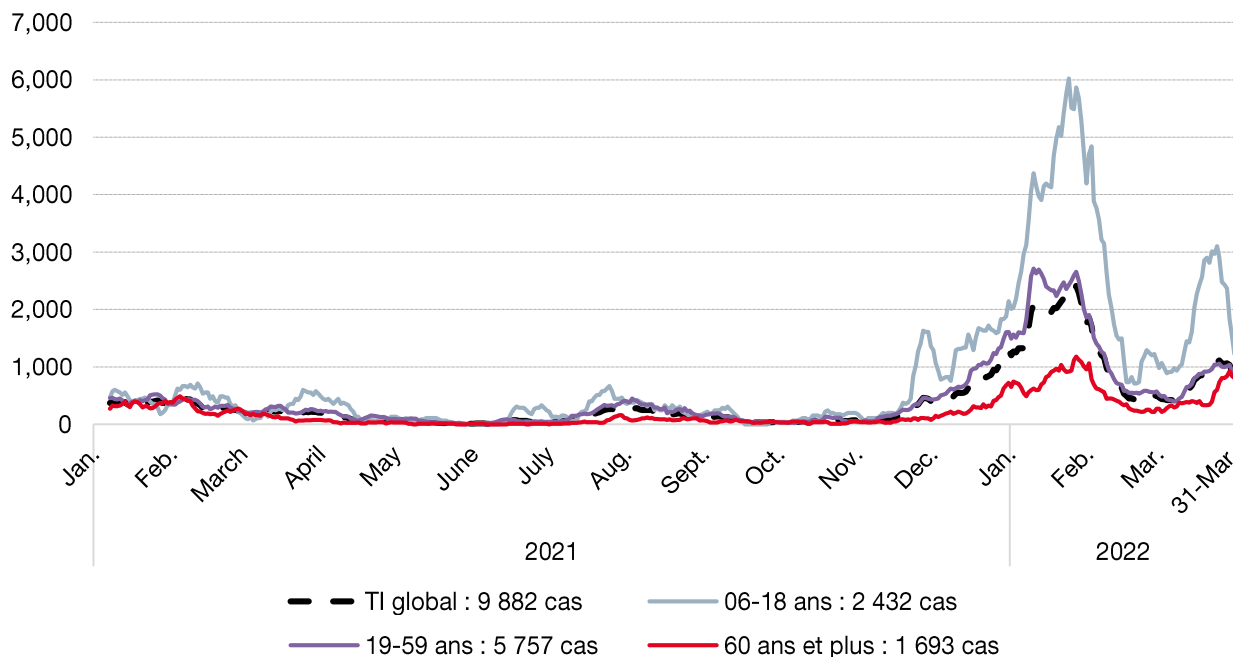
- Not completely vaccinated which includes those who are not vaccinated or are only partially vaccinated (one injection of a two-dose protocol);
- Complete schedule which includes residents with a 2nd injection of a two-dose protocol or an injection of a single dose protocol;
- Additional dose which is a 3rd injection of a two-dose protocol or a 2nd injection of a single-dose protocol.

Sources: Ministry of Health and Social Affairs, Digital Services Department, Monaco Statistics

From November 2021 until the end of February, the incidence rate of residents not fully vaccinated is higher than that of residents vaccinated with a full regimen, which in turn is higher than that of residents vaccinated with an additional dose.

From the end of February onwards, the gap narrows and the three rates are quite close.

Figure 5. Comparison of incidence rates by age group of Covid-19 of residents



As children under 6 years old are not systematically tested, they are not represented on this graph.

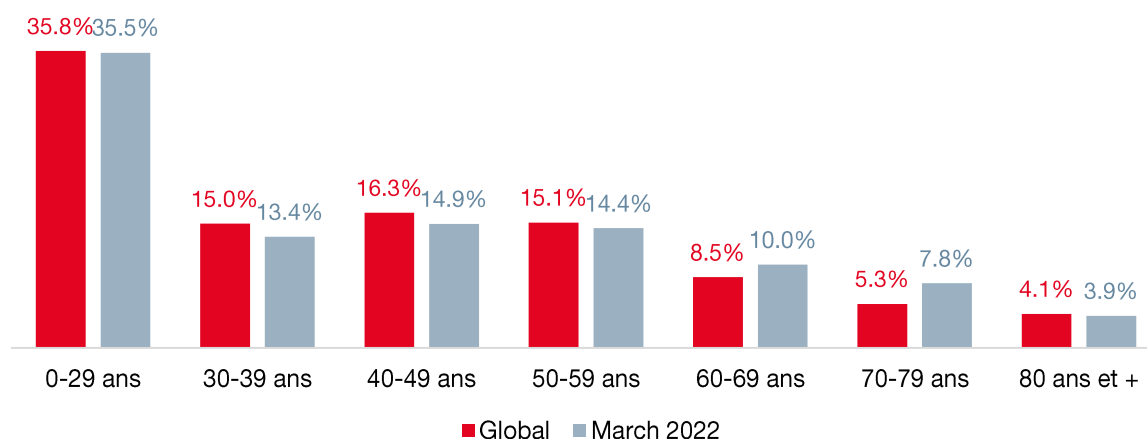
Sources: Ministry of Health and Social Affairs, Monaco Statistics

The evolution of the incidence rates of minors (6-18 years old) and over-60s differs from that of the rest of the population:

- From November 2021 onwards, the incidence rate for 6-18 years olds rises dramatically. It peaks at 6,024 on 24 January, compared to 178 on 1 November. The gap with the global rate had never been so high since the beginning of the pandemic. The incidence rate then fell back to around 700 in mid-February. It then rose again to reach a peak of 3,101 on 24 March and has been falling ever since, although it remains higher than the global rate.
- - The number of people aged 60 and over, which was comparable to the overall number until July 2021, has remained significantly lower since then. It stands at 808 on 31 March 2022.

The incidence rate for 19-59 years olds, which is relatively close to the overall rate, reaches a maximum of 2,713.1 on 10 January 2022. It was 570.6 on 28 February.

Figure 6. Comparison of the age distribution of Covid-19 cases



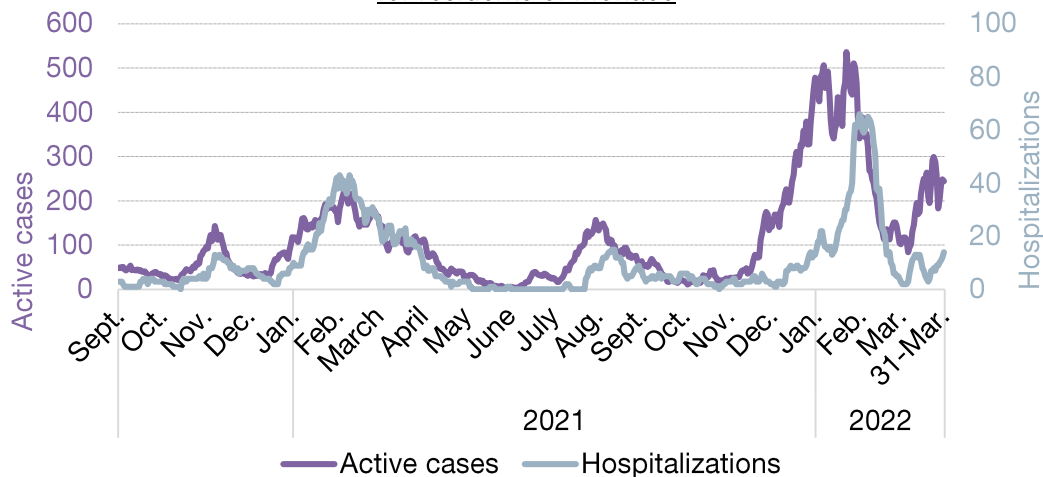
Sources: Ministry of Health and Social Affairs, Monaco Statistics

The age distribution of cases in March 2022 is relatively close to that observed since the beginning of the epidemic.

The largest difference is between those between 70 and 79 years old, who account 7.8% of cases in March compared to 5.3% overall.

1.1.3 Characteristics of Covid-19-related hospital admissions of Monaco residents

Figure 7. Evolution of active cases and hospitalizations linked to Covid-19 for residents of Monaco

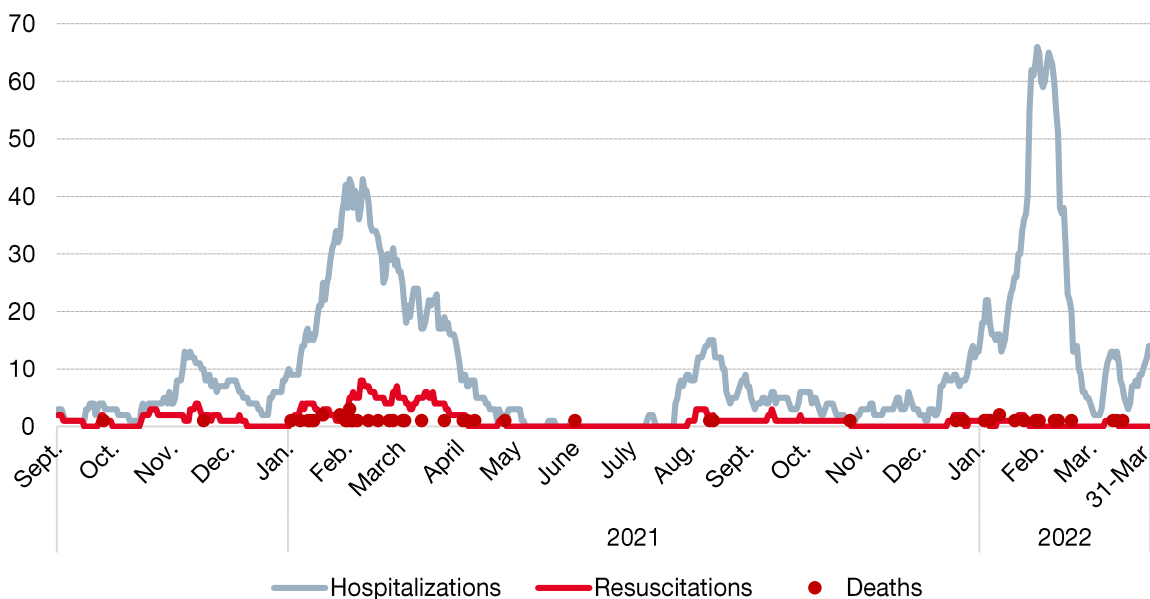


Sources: Ministry of Health and Social Affairs, Monaco Statistics

Since September 2020, the number of cases and the number of hospitalizations have been correlated, with a slight lag in the 5th wave (winter 2022).

In March 2022, while active cases are again on the rise, hospitalizations remain moderate for the moment. As of 31 March, there are 14 hospitalizations of residents for 244 active cases.

Figure 8. Trends in Covid-19-related hospitalizations, resuscitations and deaths for residents of Monaco



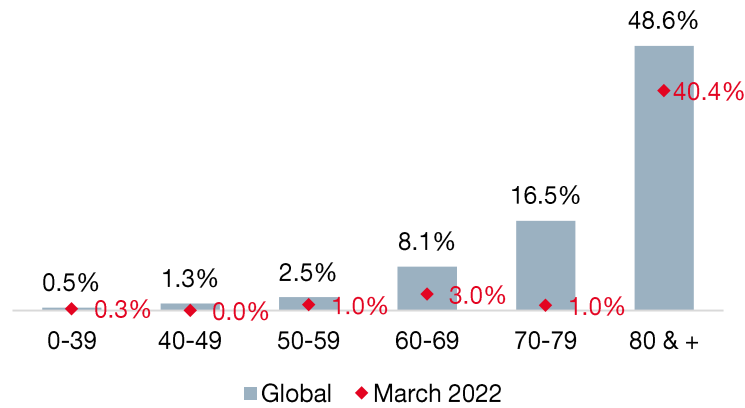
Note: Cases in intensive care are also counted as inpatients.

Sources: Ministry of Health and Social Affairs, Monaco Statistics

Since mid-December 2021, the wave of hospitalizations (the maximum 66 was reached on 1 February 2022) has not led to an increase in the number of resuscitations (maximum 2 people between 21 and 24 January).

Between December 2021 and March 2022, there were 18 Covid-19-related deaths, 3 of which occurred in March.

Figure 9. Share of Covid-19-related hospitalizations by age group



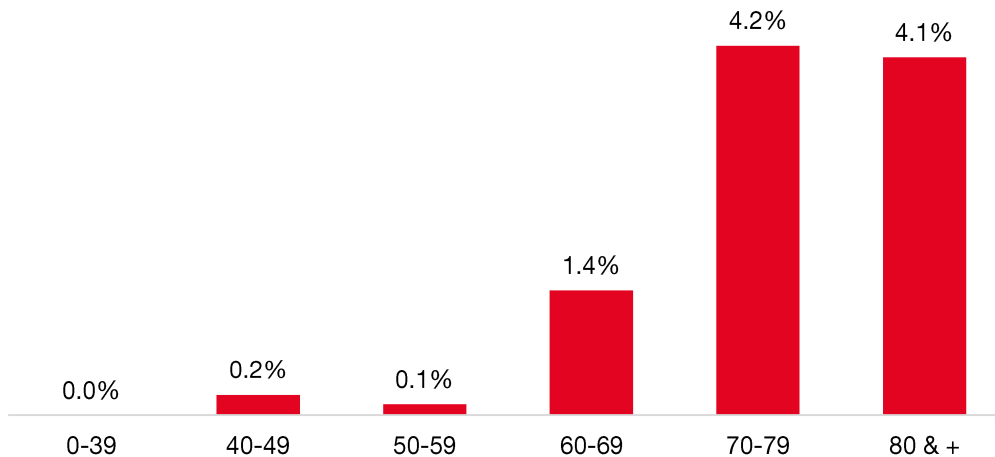
Interpretation: in March 2022, 40.4% of people over 80 years of age who contracted covid-19 required hospitalization, compared to 48.6% since the beginning of the epidemic.

Sources: Ministry of Health and Social Affairs, Monaco Statistics

The proportion of hospitalizations increases with age. Since the beginning of the epidemic, 0.5% of cases under 40 years of age have been hospitalized compared to 8.1% between 60-69 years of age, 16.5% between 70-79 years of age and almost half after 80 years of age.

In March 2022, the proportion of people hospitalized is lower than the overall figure for each age group.

Figure 10. Share of Covid-19-related ICU hospitalizations by age group



Sources: Ministry of Health and Social Affairs, Monaco Statistics

Hospitalizations in intensive care units exclusively concern people over 40 years old. Since the beginning of the epidemic, they represent 1.4% of cases between 60 and 69 years old, 4.2% of cases between 70 and 79 years old and 4.1% for residents over 80 years old.

1.2 Vaccination

The vaccination campaign started on 31 December 2020 in the Principality⁶ with the Pfizer/BioNTech's Comirnaty (messenger RNA-based vaccine), which requires the injection of two doses 21 days apart for people who have not previously been infected by the disease and a single dose for those who have already had Covid-19.

Since 10 June 2021, vaccination has been open to any person aged 12 and over and subsequently to non-residents working in the Principality. At the beginning of January 2022, children aged between 5 and 11 years, resident or attending school in the Principality, at risk of contracting severe forms of Covid-19 or living in the environment of an immunocompromised person could also begin to be vaccinated at the National Immunisation Centre.

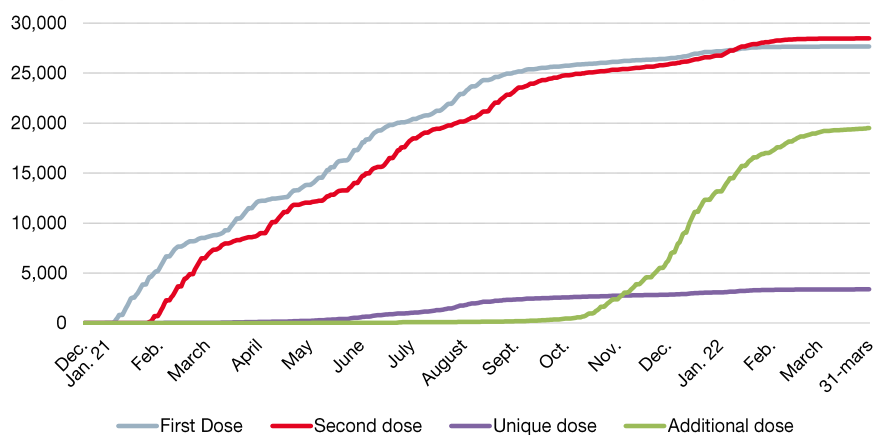
In addition, an additional booster dose can also be given to people aged 18 years and over, provided that it has been more than four months since the last dose of Covid-19 vaccine was given.

Since 22 March 2022, Novavax's Nuvaxovid vaccine (a so-called "subunit" vaccine) is also available. The primary vaccination schedule for this vaccine requires 2 doses, 3 weeks apart.

Vaccination data is as of 31 March 2022.

1.2.1 Evolution of vaccination

Figure 11. Evolution of the number of vaccine shots by type of dose



Sources: Ministry of Health and Social Affairs, Digital Services Department, Monaco Statistics

As of 31 March 2022, 78,995 vaccine shots have been administered to people aged 12 years and older. This includes almost 27,700 first doses and almost 28,500 second doses. The number of single doses⁷ is almost 3,400 and the number of additional doses is close to 19,500.

Vaccination is gender-equal. Indeed, 50.6% of shots were given to women.

Table 5. Distribution of shots by country of residence as of 31 March 2022

| | Type of doses | | | | Total |
|----------------|---------------|---------------|--------------|---------------|---------------|
| | First | Second | Unique | Additional | |
| Monaco | 22,011 | 22,623 | 2,064 | 16,286 | 62,984 |
| France | 5,447 | 5,645 | 1,283 | 3,125 | 15,500 |
| Italy | 141 | 139 | 16 | 58 | 354 |
| Others* | 63 | 61 | 5 | 28 | 157 |
| Total | 27,662 | 28,468 | 3,368 | 19,497 | 78,995 |

*Others including not filled in

Sources: Ministry of Health and Social Affairs, Digital Services Department, Monaco Statistics

Of the 78,995 doses administered in total, 15,500 were given to people living in France and 354 to Italian residents.

⁶ Source : <https://covid19.mc/>

⁷ Single doses: People previously infected with Covid-19 are offered a single dose of vaccine, as they retain an immune memory. This single dose of vaccine thus acts as a booster after infection.

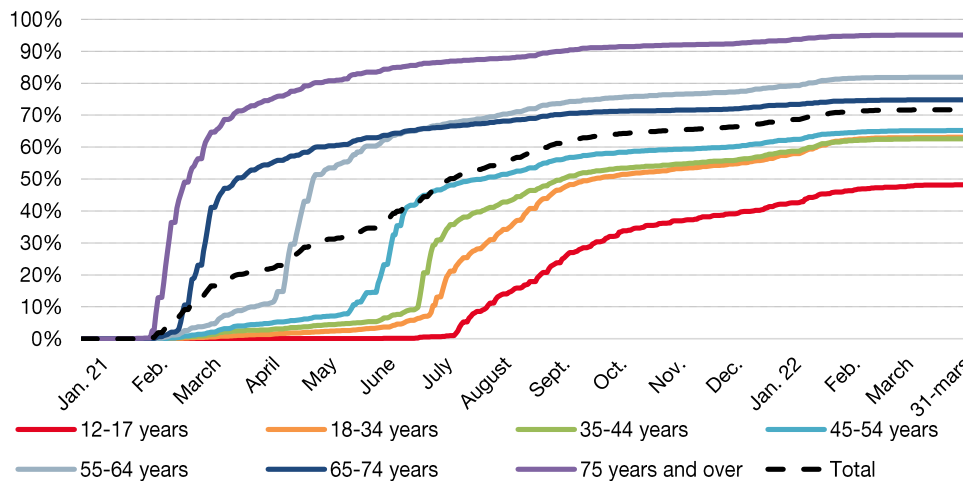
1.2.2 Vaccination coverage

The vaccination coverage presented below concerns the resident population of Monaco. It includes:

- All injections given in the Principality to residents;
- Part of the injections given abroad to residents: on the one hand, cases where the first dose was given abroad and then declared to the Vaccination Centre in order to be able to give the second dose in the Principality and, on the other hand, cases where the 2 doses were given abroad and then declared to the Vaccination Centre in order to request a health pass or to have recourse to serological monitoring.

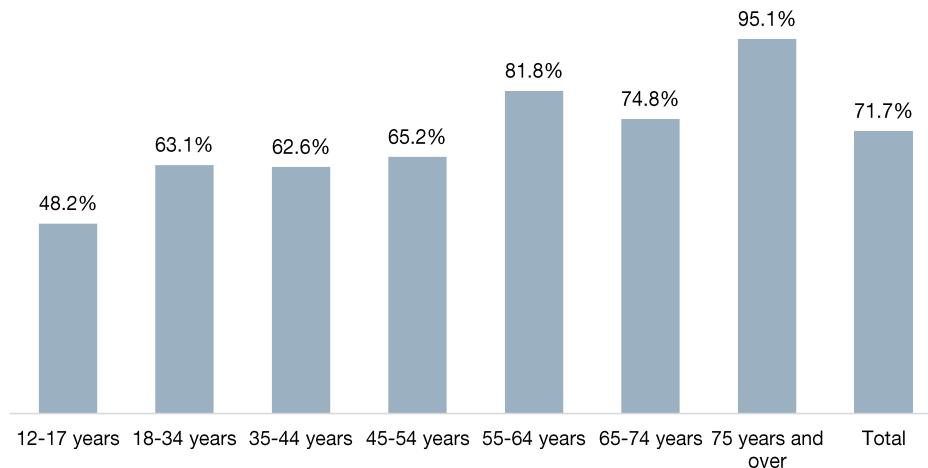
However, it is not possible to know which residents were vaccinated abroad and did not report to the vaccination centre. Thus, the vaccination coverage of residents remains underestimated by this unquantifiable part of residents vaccinated abroad and not declared.

Figure 12. Evolution of the vaccination coverage rate - complete schedule⁸ for residents by age group



Sources: Ministry of Health and Social Affairs, Digital Services Department, Monaco Statistics

Figure 13. Vaccination coverage rate - complete scheme for residents by age group as of 31 March 2022



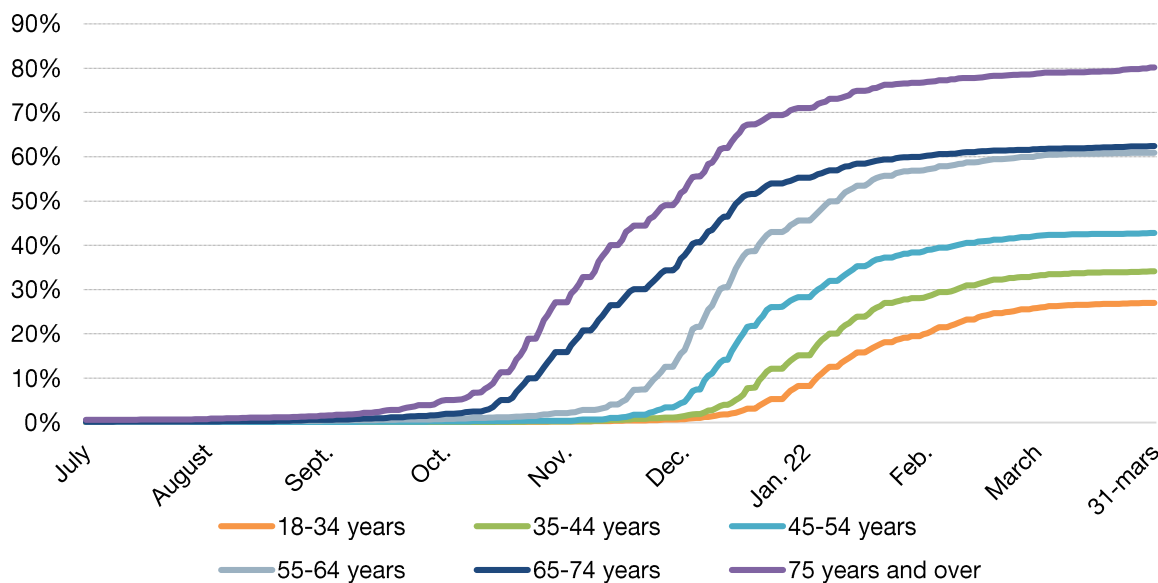
Sources: Ministry of Health and Social Affairs, Digital Services Department, Monaco Statistics

The vaccination coverage rate - complete schedule for the resident population increases with age. As of 31 March 2022, the vaccination coverage rate - complete schedule is 71.7% for the resident population of 12 years old and over.

It is above 62% for all age groups from 18 years onwards. It is close to 82% among 55-64 years olds and over 95% among those of 75 years old and over. Nearly one resident in two of 12-17 years old has a complete vaccination schedule.

⁸ Vaccination coverage - complete schedule: Share of the population vaccinated with a second shot of a two-dose schedule or one shot of a single-dose schedule.

Figure 14. Evolution of the vaccination coverage rate - additional dose of residents by age group



Note: As the additional dose mainly concerns people aged 18 and over, only these age groups are presented.

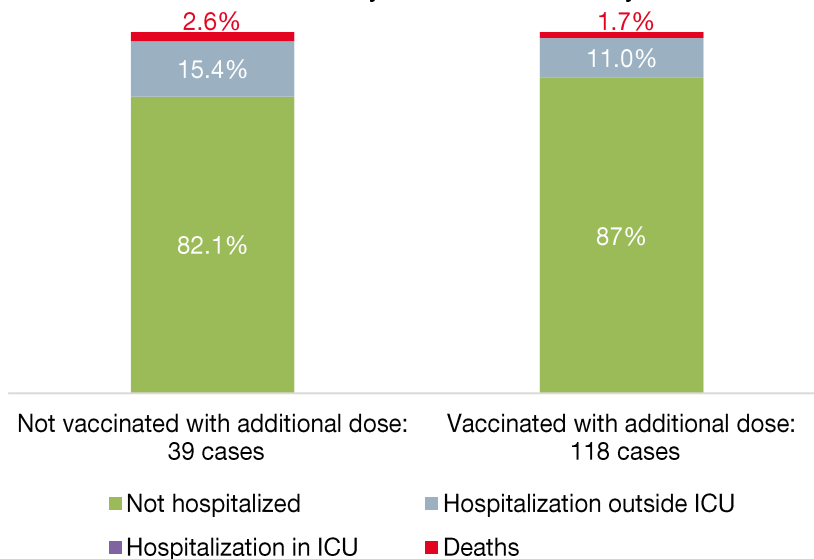
Sources: Ministry of Health and Social Affairs, Digital Services Department, Monaco Statistics

As of 31 March 2022, the vaccination coverage rate - additional dose is over 80% for residents of 75 years old and over, and is above 60% for all age groups above 55 years.

1.2.3 Impact of vaccination on positive cases

In this section, residents who received three injections of a two-dose protocol or a second injection of a single-dose protocol are considered vaccinated with an additional dose.

Figure 15. Distribution of Covid-19 cases of 70 years old and over by vaccination status in March 2022

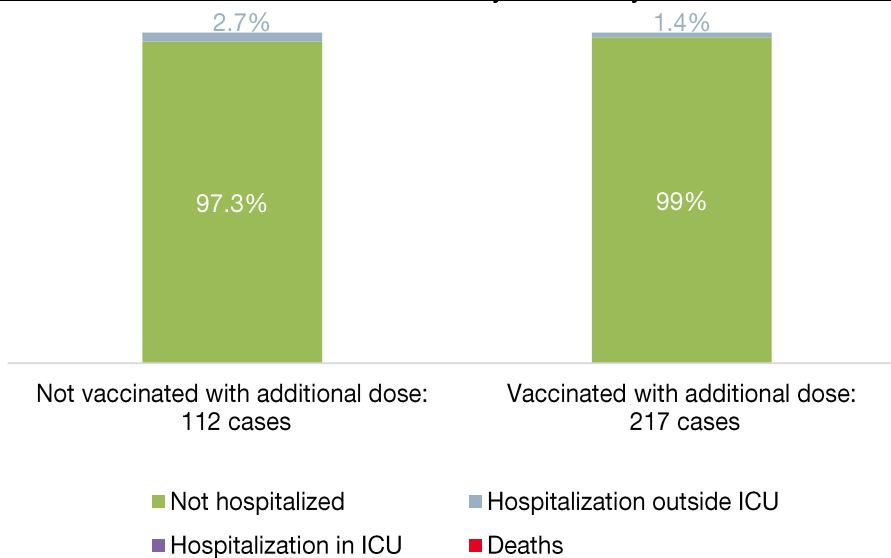


Sources: Ministry of Health and Social Affairs, Monaco Statistics

In March 2022, more than eight out of ten residents over 70 years of age who were not vaccinated with an additional dose did not require hospitalization as a result of their infection. 15.4% were hospitalized and one person died.

Of the 118 cases over 70 years of age who were vaccinated with an additional dose, almost nine out of ten were not hospitalized, while 11.0% were hospitalized outside the intensive care unit and two died.

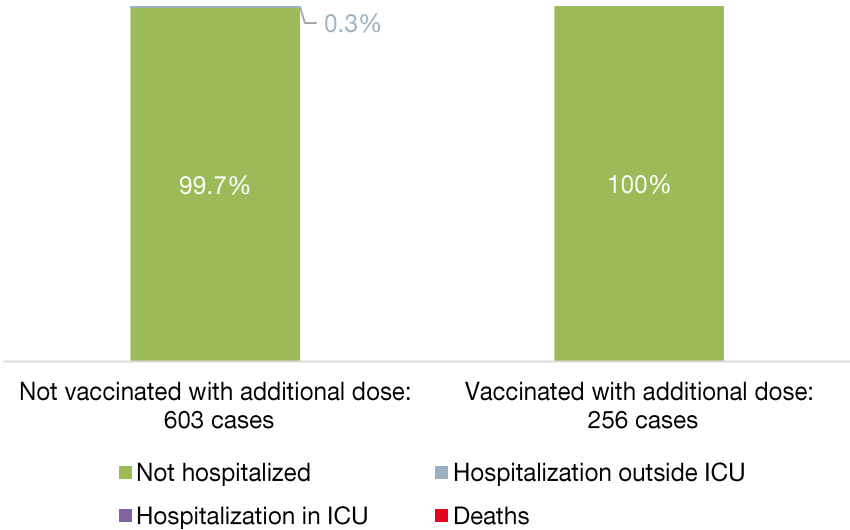
Figure 16. Distribution of Covid-19 cases of 50-70 years old by vaccination status in March 2022



Sources: Ministry of Health and Social Affairs, Monaco Statistics

Among cases of 50-69 years old in March 2022, the share of hospitalization is 2.7% for those not vaccinated with an additional dose compared to 1.4% for others.

Figure 17. Distribution of Covid-19 cases under 50 years old by vaccination status in March 2022



Sources: Ministry of Health and Social Affairs, Monaco Statistics

Of the 859 cases under 50 years of age in March 2022, only 2 people, not vaccinated with the extra dose, required hospitalization.

2 Mortality and birth rate

It is important to note that the deaths and births presented here are in the sense of the actual date of the event: a birth or death occurring at the end of the month but registered by the Town Hall at the beginning of the following month will be considered in the month in which the event occurred.

The data presented in this Observatory are therefore consolidated from one month to the next, which explains the slight differences that may appear in relation to previously published statistics.

The results presented should be interpreted with caution given the small size of the numbers studied.

2.1 Analysis of deaths

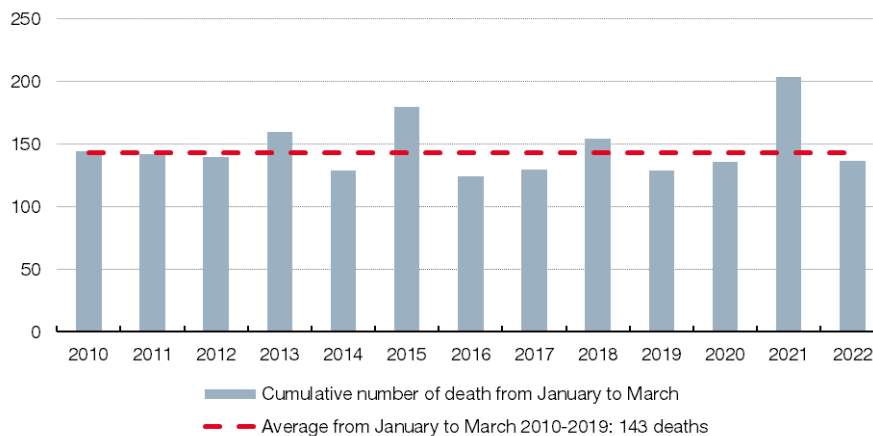
As a reminder, the cause of death is not available in the Civil Registry data.

The over/under-mortality corresponds to a two-sided confidence interval of the 2010-2019 average of deaths at the 99% threshold following a Student's law. By comparing it with the mortality observed between 2020 and 2022, it makes it possible to represent a significant excess or deficit of deaths compared with the normal.

2.1.1 Deaths in Monaco, all places of residence combined

These are all deaths registered in Monaco, regardless of place of residence.

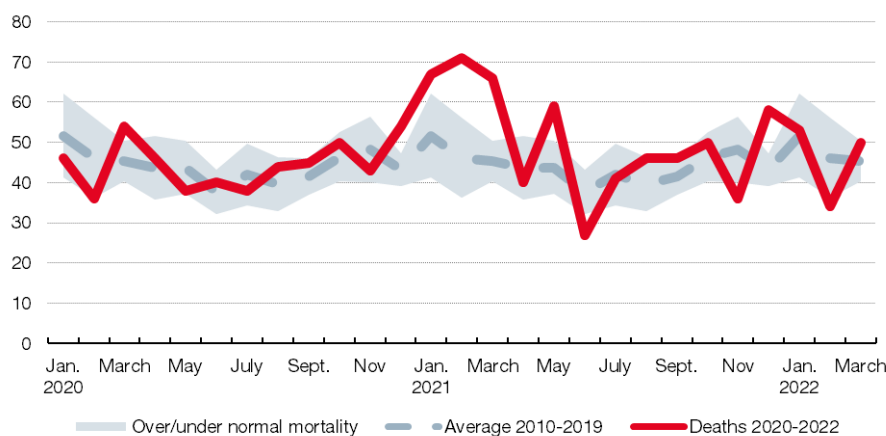
Figure 18. Cumulative number of death from January to March in Monaco



Sources: Town Hall, Monaco Statistics

In the first quarter of 2022, 137 deaths were recorded in Monaco, lower than the 2010-2019 average of 143 and a 33% decrease from the same period in 2021, which had 204.

Figure 19. Number of deaths per month in Monaco



Reading: in March 2022, 50 deaths were recorded in Monaco compared with an average of 45 between 2010 and 2019, for a normal over/under mortality of between 40 and 50 deaths.

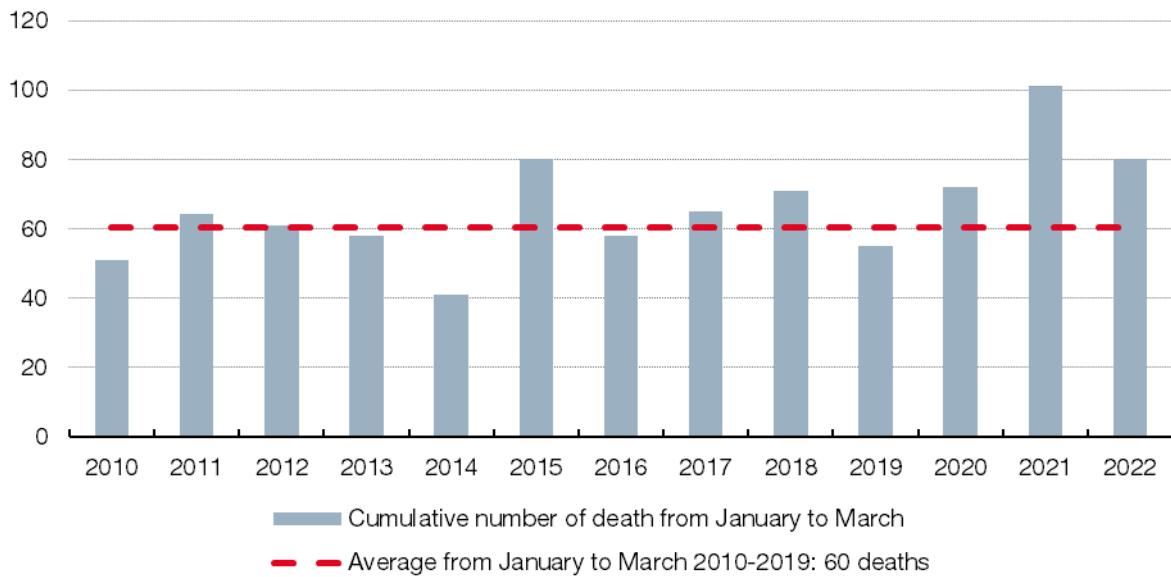
Sources: Town Hall, Monaco Statistics

With 50 deaths, March 2022 is at the normal 2010-2019 excess mortality threshold.

2.1.2 Deaths of residents in Monaco

These are only deaths of residents in Monaco. Deaths of residents outside Monaco are therefore not included.

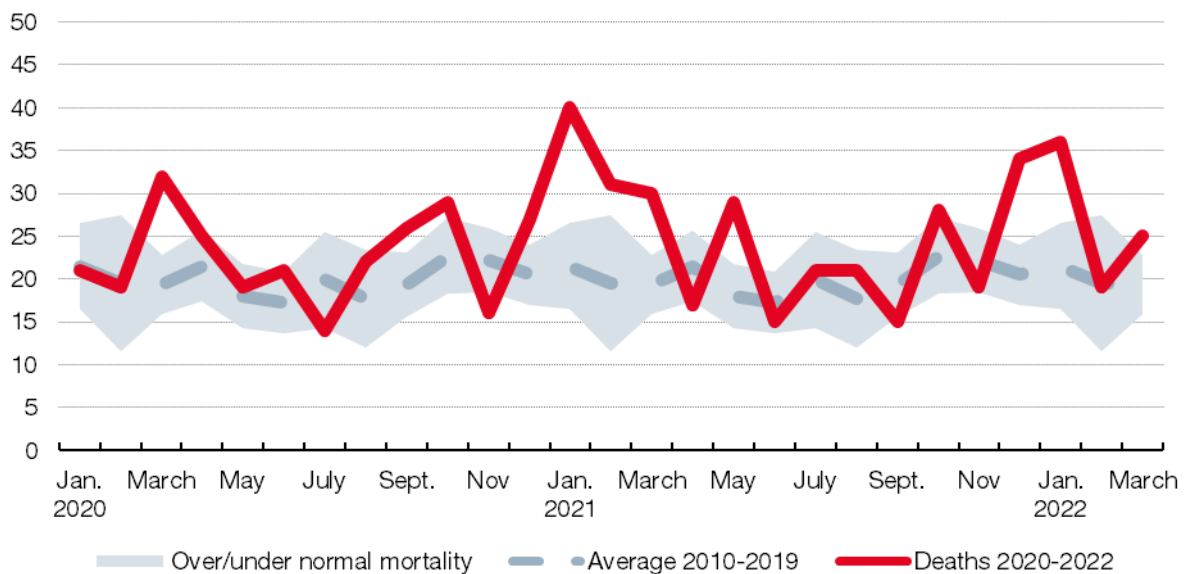
Figure 20. Cumulative number of death of residents from January to March in Monaco



Sources: Town Hall, Monaco Statistics

In the first quarter of 2022, there were 80 resident deaths, 20 more than the 2010-2019 average. This is the second deadliest start of year since 2005, after 1Q 2021 and tied with 2015.

Figure 21. Monthly number of deaths of residents in Monaco



Reading: in March 2022, 25 resident deaths were recorded in Monaco compared to an average of 19 between 2010 and 2019, for a normal over/under mortality of between 16 and 23 deaths.

Sources: Town Hall, Monaco Statistics

In March 2022, 25 residents died, a number higher than the normal excess mortality but lower than March 2021 (which had 30) and 2020 (with 32).

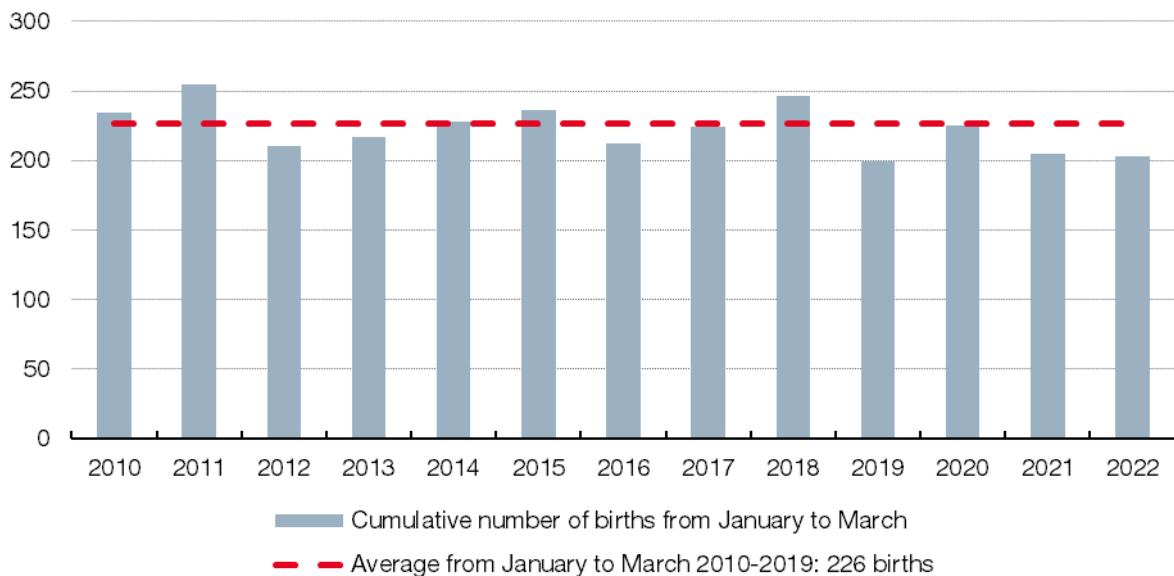
2.3 Analysis of births

The over/under birth rate is a two-sided confidence interval of the average 2010-2019 birth rate at the 99% threshold following a Student's law. By comparing it to the observed birth rate between 2020 and 2022, it allows a significant surplus or deficit of births to be represented in relation to the normal.

2.3.1 Births in Monaco, all places of residence combined

These are all births registered in Monaco, regardless of place of residence.

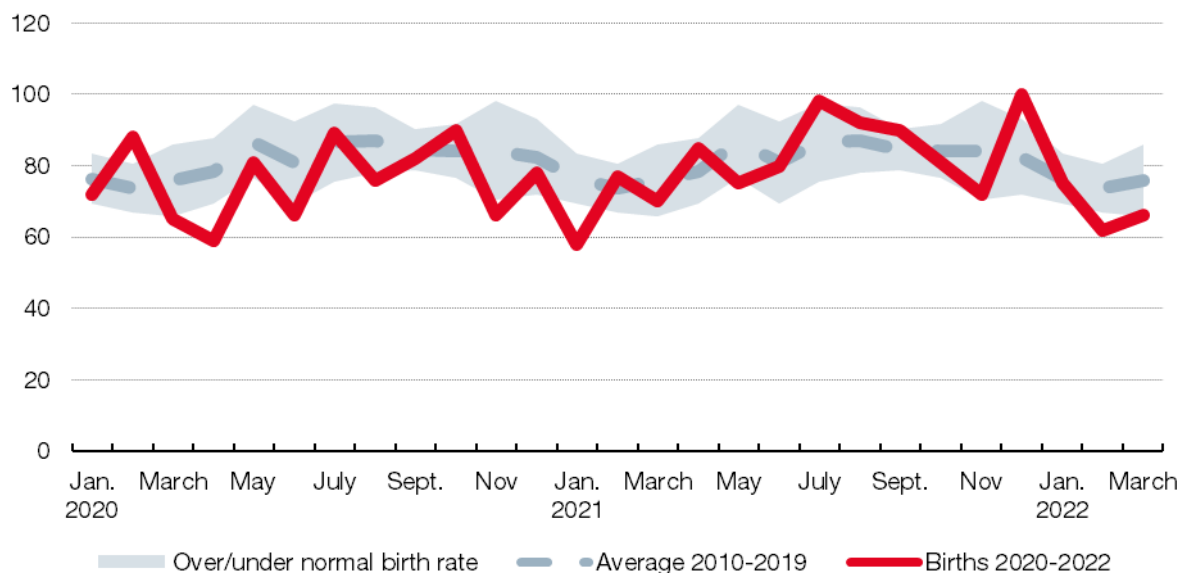
Figure 22. Cumulative number of births from January to March in Monaco



Sources: Town Hall, Monaco Statistics

As in 2021, the number of births registered in Monaco in the first quarter of 2022 is significantly lower than the 2010-2019 average (203 versus 226).

Figure 23. Number of monthly births in Monaco



Reading: in March 2022, 66 births were registered in Monaco against an average of 76 between 2010 and 2019, for a normal over/under birth rate between 66 and 86 births.

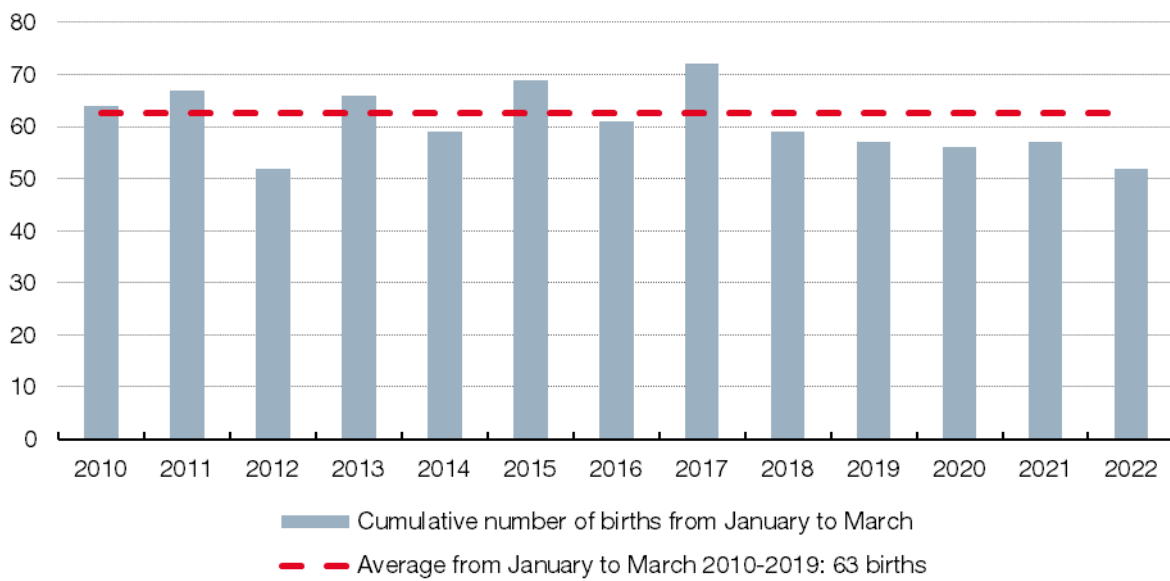
Sources: Town Hall, Monaco Statistics

The number of births (66) in March 2022 corresponds to the normal subnatal threshold.

2.3.2 Births of residents in Monaco

These are only births to residents of Monaco (resident father and/or mother).

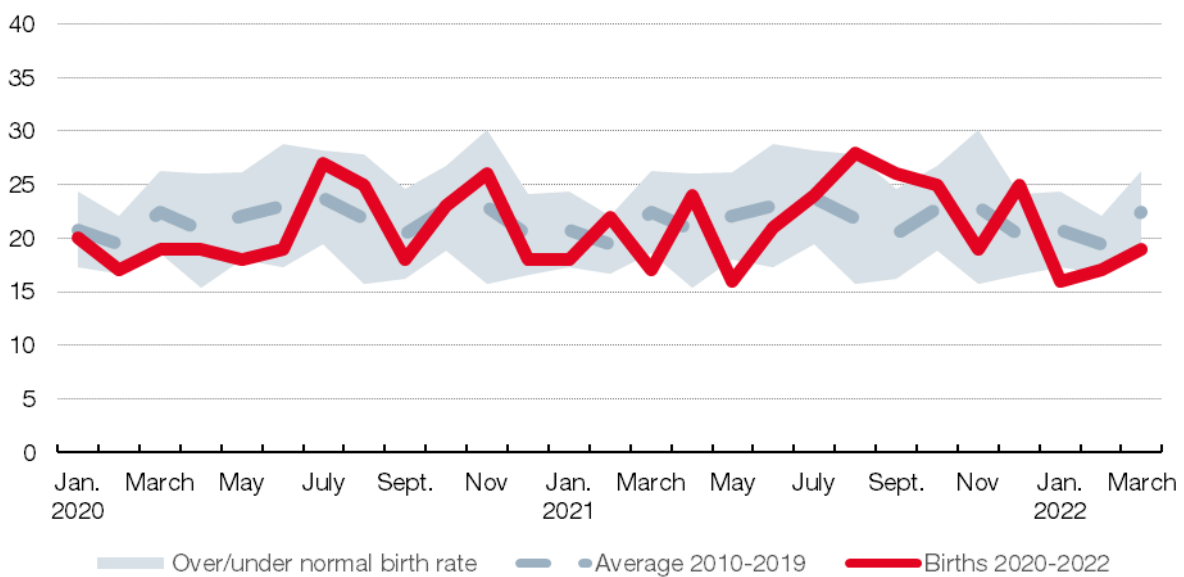
Figure 24. Cumulative number of births of residents from January to March in Monaco



Sources: Town Hall, Monaco Statistics

For 5 consecutive years, the number of resident births during the first quarter has been below the 2010-2019 average.

Figure 25. Number of monthly births to residents in Monaco



Reading: in March 2022, 19 resident births were registered in Monaco against an average of 22 between 2010 and 2019, for a normal over/under birth rate of between 19 and 26 births.

Sources: Town Hall, Monaco Statistics

Like the previous 3 months, the number of resident births in March 2022 (conceived in June 2021 if born at term) is at the normal 2010-2019 subnatal threshold.

Observatory of the impacts of the COVID-19 health crisis

March 2022

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