COVID-19 Prevalence

April 2020

Report

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Summary

In presenting this study, Statistics Austria provides a valid assessment of the population affected by COVID-19 in Austria as of mid-April 2020. The population of this sample survey includes people aged 16 or older living in private households. People in hospitals or institutions such as care homes, institutional households etc. are not included. The results are based on interviews of 1,577 individuals, 1,432 of whom also received a PCR (polymerase chain reaction) test using nose-throat swabs.

Based on these tests, it is assumed that the number of acute COVID-19 infections was below some 11,000 individuals, or 0.15% of the target population (i.e. the upper 95% confidence interval), between 21 and 24 April 2020.

Moreover, the study investigated the following five sociological issues: acceptance of the protective measures taken by the Austrian government; expected consequences of the coronavirus pandemic; people's personal well-being during the coronavirus crisis; changes affecting their work situation as well as subjective prevalence.

The results of the interviews suggest that most of the Austrian federal government’s measures in place at the time of the survey were largely considered appropriate (>80%). Shop shutdowns and restrictions on outdoor activities were met with least acceptance (69% and 56%, respectively). It is worth noting that the majority of people with pre-school children in the household defined restrictions on outdoor activities as not appropriate. In contrast, people with serious underlying medical conditions regarded these measures as appropriate above average.

During the 14 days preceding the interviews, almost two thirds of the statistical population were constantly, or at least most of the time, calm, relaxed and in good spirits. On the other hand, the personal well-being of people with critical underlying conditions was significantly reduced. In the two weeks preceding the interviews, only about one third of these individuals was at least most of the time calm, relaxed and in good spirits.

The consequence most frequently expected for the coming months was not infection with the coronavirus itself but financial problems. Consequences in this regard were considered probable by about 10% of the target population. By comparison, 7% expected
to be infected in the months ahead. At approximately 2%, the proportion of those considering a severe course as probable is very low.

Compared to the average, almost twice as many people with pre-school children expected financial consequences. In addition, this group expected a significant rise in conflicts within the family and in their relationship.

As opposed to the above, it is particularly people with serious underlying conditions who expect a severe course of the disease. Nevertheless, the proportion did not exceed 12% even in this group.

This sample also reflects massive crisis-related shifts in the labour market. Not even three quarters of those considering themselves employed in the middle of March continued to be employed in the middle of April. About one quarter was either working short-time or no longer working. More than a third of those who included themselves in the group of employed in the middle of April were working from home. For a grossed-up roughly 8% of the entire working population, work volumes had increased with the crisis.

Approximately 3% of the target population assume that they have already been exposed to the coronavirus.
1 Introduction

Data on current infections as provided by the Austrian Epidemiological Reporting System (EMS)\(^1\) provide insight into the prevalence of the disease and form the basis for determining the effective reproduction number of the COVID-19 virus in Austria\(^2\). However, these data might underestimate the number of persons who are infected without presenting any particular symptoms (so there is no reason for testing). To fill this data gap, the Federal Ministry of Education, Science and Research (BMBWF) commissioned Statistics Austria to study the prevalence of COVID-19 in Austria in mid-April 2020.

The study was conducted by Statistics Austria. For this purpose, a representative random sample was drawn based on the Austrian central register of residents (ZMR), inviting addressed persons to participate.

The respondents completed a questionnaire on the presence of any symptoms, on their general health status, their personal well-being and subjective assessment of the coronavirus pandemic and its consequences. From those who consented to being tested a nose-throat swab sample was taken and analysed for coronavirus by means of a PCR test. These swab samples were taken by the Austrian Red Cross. PCR tests were analysed by the Medical University of Vienna.

When the swab sample was taken, the respondents received another questionnaire requesting them to note any symptoms occurring precisely at that moment.

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\(^1\) [https://info.gesundheitsministerium.at/dashboard_Epidem.html?l=en](https://info.gesundheitsministerium.at/dashboard_Epidem.html?l=en)

2 Study Design

In a first step, a two-stage stratified sample of 2,800 individuals (gross sample) was drawn from the central register of residents. This population is made up of people aged 16 or older living in a private household in Austria.

All sampled persons were sent a letter inviting them to participate. People who agreed to participate and answered the questionnaire (online or by phone) were subsequently tested for infection using PCR analysis. The different steps taken are described in detail below.

Sampling

Sampling based on the central population register affords the advantage that all people of the defined age group who are registered as main resident in Austria have roughly the same chance of being included in the sample. Thus, the selection does not depend on whether a person has a phone number, for example, as it would be the case if samples are drawn from telephone directories. In this regard, the option of directly selecting people for the sample improves the accuracy of the sample considerably.

The population targeted by this study included people aged 16 or older whose main residence was in Austria, i.e. approximately 7.3 million people. The sample is a stratified two stage sample. Among other factors, consideration was given to the resources of the Austrian Red Cross (travelling times, distances etc.) when drawing the sample.

The target population was partitioned into two parts (A and B). The gross sample of 2,800 subjects was drawn in proportion to the population of these two parts. The sample sizes for the federal states of Tyrol and Vorarlberg were increased. Sampling is described separately for these two parts as follows:
**Subsample A**

This population represents subjects living in cities or within a 20-minute-by-car radius of travelling time around (known) Red Cross drive-in stations (approx. 4 million people). Part A was treated as a primary sampling unit (PSU) with a probability of inclusion of 1. Accordingly, no further description of the first stage of sampling is required for this subsample.

Sampling for the second stage of part A was as follows: A stratified sample of people was selected through slightly increasing the sampling probability for educationally less privileged people (completed or not completed compulsory school) and for people living in regions with higher tested COVID-19 prevalence.

1,540 subjects were sampled at random. Stratification reflected the following variables:

- Federal state
- Risk category of district based on share of infected, as of 6 April 2020:
  - Low: 0-61.5 cases of coronavirus infection per 100,000 inhabitants (up to 25% quantile of Austrian districts)
  - Medium: 61.5-167.1 cases per 100,000 inhabitants (25%-75% quantile)
  - High: > 167.1 cases per 100,000 inhabitants (75% quantile and over)
  - Risk categories were combined in five states; two of them combined all three strata, i.e. no actual stratification by risk category was made.
- Education
  - Compulsory school/no compulsory school
  - All others

**Subsample B**

This population is made up of all other subjects not included in part A, i.e. all persons living in rather thinly populated areas (approx. 3.3 million people). In the first sampling stage, statistical enumeration districts (SED) were drawn to facilitate the work of the Austrian Red Cross (minimising travelling and time needed for changing protective gear) and to reach all subjects foreseen for testing, if at all possible. The SEDs in subsample B

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3 The DEGURBA classification defines communities according to population density: densely populated, intermediate and thinly populated. For further information see the following website: https://ec.europa.eu/eurostat/web/degree-of-urbanisation/background (as of May 2020).
were stratified and their sampling probability was defined in rough proportion to the size of the SED within the stratum.

The second stage of subsample B was sampled as follows: A stratified sample of 20 subjects was drawn for each SED. The sampling probability was again slightly increased for educationally less privileged population strata.

63 SEDs were sampled (20 subjects each, i.e. a total of 1,260 persons). Stratification reflected the following variables:

- Federal state (eight states as Vienna is fully included in subsample A)
- Risk category of the district based on the share of infected, as of 6 April 2020 (see Subsample A)
- Degree of urbanisation according to the European Commission (EC_DEGURBA\(^4\); only feasible in Lower Austria and Styria):
  - Code 2 Area with intermediate population density (cities and suburbs)
  - Code 3 Thinly populated area (rural area)

The number of SEDs sampled for each stratum was defined in proportion to the population.

20 persons were sampled within each SED (fixed take). As SEDs were previously selected in rough proportion to size, the design resulting within a stratum of the SED is approximately self-weighting. Except for very small SEDs, the sample is usually stratified according to “compulsory school/no compulsory school” and all others, with sampling probability slightly increased for the educationally less privileged.

A concrete example from an SED is as follows: educationally less privileged stratum of 366, all others being 719 individuals. While proportionally, this would result in a sample size of six to seven people in the educationally less privileged stratum, 8 persons were actually sampled due to the increased set (and 12 people from among all others).

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\(^4\) The DEGURBA classification defines communities according to population density: densely populated, intermediate and thinly populated. For further information see the following website: https://ec.europa.eu/eurostat/web/degree-of-urbanisation/background (as of May 2020).
Sample illustration on a map

Graph 1 Distribution of the total sample across Austria

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020

Graph 2 Distribution of the sample by statistical enumeration district (subsample B)

Invitation to take part in the study; participation

On April 14, 2020, a letter was sent to all sampled persons inviting them to participate in the study. In addition to the letter, detailed information on the different stages of the study was provided online\(^5\). The letter was accompanied by an extensive data privacy sheet which elaborates on the way the data is further processed and transferred in accordance with applicable legal provisions.

This invitation requested respondents to complete the questionnaire online if at all possible. Those without access to the Internet or refusing to complete the web questionnaire were requested to send a text message showing their willingness to participate. They were subsequently contacted by Statistics Austria and interviewed on the phone. Whenever the respondent had not yet started the questionnaire but a phone number was available, the respondent was contacted by phone and motivated to take part. In many of these cases, the letter of invitation had not yet even arrived (though sent via Priority mail).

Survey method

Online
To be able to log in to the secure Statistics Austria portal to fill in the questionnaire online, respondents were first required to register using the access codes (personal user name and password) they had previously been assigned in the mailed letter of invitation.

Many items of the questionnaire displayed help texts (through clicking a help button in the questionnaire). In addition, an e-mail address and a phone number were provided in case of queries. However, the fact that we only received very few questions concerning the questionnaire shows that it was obviously easy to handle and self-explanatory.

By phone
To take part in the telephone interview, respondents had to send a text message to a contact number stating their sequential ID (xxx; FID) and name. These persons were

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\(^5\) [http://www.statistik.at/web_de/frageboegen/private_haushalte/covid19/index.html](http://www.statistik.at/web_de/frageboegen/private_haushalte/covid19/index.html)
contacted and subsequently interviewed by our staff who are specifically trained for conducting these telephone interviews.

In cases where interviewers managed to contact a respondent through a motivation call, it was possible to conduct the interview immediately on the phone upon the contacted person’s request.

The difference between the telephone questionnaire and the online version was minimal. In the first place, an effort was made to formulate questions in such a way that they would equally be applicable to any of the two interviewing modes. This approach largely prevented bias in answers to questions as a result of mixed-mode effects.

**Questionnaires**

The study relied on two different questionnaires: The first and principal questionnaire of this COVID-19 Prevalence Study had to be completed online or by phone before the swab sample was taken. However, in order to detect any symptom, present at the time the swab was taken, another written questionnaire was filled in at that moment.

In drawing up the questionnaires, we relied on internationally proven scales whenever possible (WHO questionnaire for coronavirus, WHO-5 well-being scale, Labour Force Survey questions on employment and education). In doing so, experts from Statistics Austria’s questionnaire lab paid special attention to ensuring that all questions were easy to understand, simple and short. The cognitive effort required to answer these questions was minimised both on the phone and in the online questionnaire. The aim was to render the response process interesting and simple even when it came to difficult or sensitive questions (illness, health symptoms etc.).

As in all other online interviews conducted by Statistics Austria, this study also provided an open text field for any comment respondents might wish to add. All the comments we received concerning the questionnaire were positive. Some comments mentioned further proposals for specific aspects which should receive more attention in certain questions. These proposals will be considered for integration in the next study.
We also received quite a number of comments on the substance of the matter, which shows that many people are particularly affected by certain measures or concerned about the onset of disease.

**Informed consent**

The questionnaire started out by providing exact information on the procedure and seeking respondents’ consent to all different stages of the process (survey participation, transfer of contact data to the Austrian Red Cross, swab sampling by the Red Cross, testing for coronavirus, swab sample analysis by the Medical University of Vienna, reporting to the relevant authority if tested positive). Respondents were unable to continue the questionnaire without consenting to all these aspects. Informed consent was a major factor contributing to the low survey drop-out rate.

**COVID-19 Prevalence Study: principal questionnaire**

The principal questionnaire of the COVID-19 Prevalence Study includes the following variables:

- Informed consent

- Socio-demographic variables:
  Gender, age (date of birth), nationality and country of birth, highest completed education (educational attainment), number and age (year of birth) of people living in the household.

- Work situation:
  Activity status as stated by the respondent (before and after the coronavirus pandemic), workplace (home office, employer’s offices etc.), changes in working hours.

- Health factors:
  General health status, well-being, health risk factors, chronic illness, potential COVID-19 symptoms, COVID-19 diagnosis or case nearby (family, friends).

- Subjective assessment:
  Social contacts, subjective risk perception, subjective assessment of protective measures taken to contain the coronavirus pandemic.
Questionnaire on symptoms present when PCR swab sample was taken

In this questionnaire, respondents answered questions about the presence of any current symptoms. This ensured specific information on whether any existing infection was symptomatic.

PCR testing

PCR tests were carried out on those subjects who had submitted the questionnaire and consented to swab sampling by the Red Cross. The swab samples for the PCR tests were taken Austria-wide by specifically trained Austrian Red Cross health personnel in the period between 21 and 24 April, 2020. Some Austrian districts enabled visits to so-called drive-in stations where nose-throat swabs were taken. Those who were unable to visit such a drive-in station (mobility problems etc.) or had no such option (for example, there was not a single drive-in all over Lower Austria at the time of the survey) were visited at home, where the swab sample was taken.

This analysis of swabs only confirmed the presence of a SARS-CoV-2 infection at that very moment of time. When the swab was taken, the Austrian Red Cross submitted a declaration of Informed consent for signature by the person being tested. The sample was taken upon receipt of the person’s signature. Again, the focus was on making the process as transparent as possible.

The sample was kept in a separate tube for each tested person. A bar code ensuring the identification of the person (FID) was affixed to it. The questionnaire about any current symptoms was filled out by the tested persons and subsequently sent to the Vienna Medical University for analysis together with the sample. To ensure a timely and save transport of the samples a daily delivery with several cars from all over Austria to the lab was implemented.

Response rate

The deadline for answering the questionnaire ended on Friday, April 24, 2020. Overall, 1,577 persons answered the questionnaire and their contact data were transmitted to the Austrian Red Cross for swab sample scheduling on a daily basis. The Austrian Red Cross received hand-outs explaining the exact procedure and outlining the importance of
contacting the test subjects with prior notice. Based on all these efforts, we managed to actually take 1,432 valid samples from these 1,577 sampled individuals.

**Measures to improve response rate**

It was imperative that the entire survey was finalised within ten days (from the time of mailing to the last swab sample). For this reason, the survey procedure was optimised to achieve an optimal response rate despite the limitations in time. Simultaneously, we took all possible measures to increase respondents’ safety. All in all, we received few complaints about the survey.

Statistics Austria’s sampling is based on the central register of residents. This practice allows addressing all people personally and facilitates communication. Scientific evidence has shown, for example, that letters directly addressed to a person are more likely to be read (cf. Dillmann et al 2014).

The letter of invitation emphasised the importance of taking part in the study and highlighted the opportunity to be tested for coronavirus. The letter outlined the entire procedure in order to diminish respondents’ uneasiness about the study. Respondents also had the option of receiving the letter in the form of an official postal document (“RSb” letter). The respondents were also informed about ways of verifying whether the Austrian Red Cross had actually been authorised by Statistics Austria to take swab samples.

Five days after the survey was launched, a motivating postcard was sent to people who had not yet participated. Moreover, four days were spent motivating people to participate by phone. Phone calls were only possible if a phone number was found in Herold’s telephone directory (Austrian yellow pages). We managed to increase the response rate thanks to all these measures.

**Non-response**

While the overall response rate was 56%, some groups scored rather differently. To give an example, the group of people whose highest level of education was compulsory school scored a response rate of 41%, compared to 63% among those graduating from higher education. This effect had already been anticipated and therefore taken into account in the sampling design. Response rates in the states also varied:
At 63%, participation was highest in rural communities as defined by the DEGURBA classification and declined with increasing population density. While 58% took part in communities with a medium population density, the response rate was 48% in urban communities.

**Participation according to mode**

Participants were given the option of answering the questionnaire online on their own or participating by telephone.

The respondents preferred the online questionnaire (84% of all completed questionnaires). 16% answered the principal questionnaire on the phone with support from an interviewer. The online mode is evidently preferred, in particular because of its flexibility (in terms of place and time) and immediate availability. The alternative method of telephone interviewing proved its worth as some people lacked Internet access or were unable or unwilling to answer the online questionnaire on their own without the support of interviewers.

**Analysis**

**PCR analysis**

The PCR analyses of the 1,432 swab samples were performed on the fully automated Roche cobas® 6800 test system using the Roche cobas® SARS-CoV-2 Test (CE/IVD). Detection of two target genes of the virus (so-called dual target PCR; target regions: orf1 for SARS-CoV-2; E-gene for pan-Sarbecovirus) and simultaneous internal monitoring
ensure maximum sensitivity (detection limit 0.009 TCID50* for SARS-CoV-2 and 0.003 TCID50* for pan-Sarbecovirus) and specificity. Potential pre-analytical factors (e.g. poor sample quality or inconvenient timing of the sample in relation to the course of the disease – e.g. swab sample taken during the incubation period) which obviously result in a negative PCR test cannot be reliably assessed and quantified.

The results of the analyses were transmitted to Statistics Austria in fully anonymised form. In case of a positive test the procedures prescribed by applicable laws on reporting notifiable diseases were followed.

**Weighting**

Weighting was conducted in three steps as follows:

1. Calculating the design weights of the gross sample
2. Compensating non-response
3. Calibrating to known parameters of the target population

The first step is an immediate result of the sampling design. Design weights are the inverse of the inclusion probabilities. For the two-staged part of the sample, the inclusion probability of a person is the product of the inclusion probability of the statistical enumeration district (SED) and the inclusion probability of the person within the SED.

In accordance with the above, non-response within the strata of subsample A was adjusted within the state, the risk category and education, while it was adjusted by education in part B. In this step, we decided to go ahead without further modelling of non-response as the next step already calibrates to a wide range of variables which are also very important in relation to non-response.

The sample was calibrated using iterative proportional fitting (R function ipf from R package surveysd). The extreme values of the weights were given upper and lower limits (1,200 and 18,000, respectively) and the relative distance to the design weight (frequently referred to as g weights) was limited by the factor 4. We calibrated to the following parameters (number of groups in this variable in brackets):

- Age class (6) x Gender (2) x Degree of urbanisation (3)
- Household size (4) x Degree of urbanisation (3)
- State (9) x Degree of urbanisation (3)
- Risk category (3) x Degree of urbanisation (3)
- Nationality (2) x Degree of urbanisation (3)
- Education (2) x Degree of urbanisation (3)

As PCR tests could not be run for all people, the above weighting was repeated separately for the PCR-tested subsample; these weights were then used for calculating prevalence.

**Error calculation**

Sampling error and confidence intervals were estimated using a bootstrap procedure (rescaled bootstrap for stratified multistage sampling, R functions `draw_bootstrap` and `recalib` from R package `surveySD`). We drew 5,000 bootstrap samples which were calibrated to the same parameters as the original sample.

The 95% confidence intervals are calculated as a 2.5% percentile for the lower limit and a 97.5% percentile for the upper limit of the 5,000 bootstrapping samples of the estimator.

The standard deviation of the 5,000 bootstrap estimators can be used for estimating sampling errors.

The coverage probability of this bootstrap procedure might be overestimated for very small proportions. Thus, given a nominal 95%, simulation procedures estimate that for proportions less than or equal to 0.27% only a 90-95% coverage probability is achieved. Provided that the complex sampling design is taken into consideration, similar estimates are possible with the Clopper-Pearson confidence interval, which is frequently used for small proportions.

**Design effect**

The design effect describes the quotient of realised sample variance divided by sample variance given a sample of the same size selected completely at random. A design effect larger than one thus implies loss of accuracy. The sample size would have to be increased accordingly to compensate for such loss of accuracy. This way the design effect allows assessment of the so-called effective sample size, which is required to compare surveys with different numbers of observations.
For the design weight (and non-response-adjusted weight), the kish factor as a simple measure of the design effect due to weighting is 1.16. This factor rises to 1.25 for the final calibrated weight of the study. For direct selection of respondents from the central register of residents, this factor is much lower than for determining one respondent each from a household sample, for example. This approach eliminates the loss of accuracy associated with such increase in the distribution of weights (because people in large households must receive extra weight).

The overall design effect must also provide for clustering and stratification of the sample. These effects differ from one variable to the other. The point is the homogeneity of a variable within a cluster. It follows that a concrete variable must be used to be able to estimate this design effect. For this purpose, we choose the criterion of whether a person has already been tested by means of PCR (outside of this study). The estimated design effect for this variable is 1.26, convertible into an effective sample size of 1,246 individuals. This is practically identical with the design effect expected from weighting.
3 Results

How many people in Austria tested positive for coronavirus between April 21 and 24, 2020?

While successful PCR tests were obtained from 1,432 sampled persons, one of them tested positive, i.e. was going through a coronavirus infection at time of testing. The weights of the 1,432 individuals were re-calibrated to the parameters described in the chapter on Weighting to enable computing another estimate for the whole of Austria.

The estimator for the number of infected is 3,420 individuals or 0.05% of the target population. Given the size of the sample, this result has a large random error and therefore is quite uncertain. The confidence interval ranges between 72 and 10,823 persons, or 0.001% and 0.148%, respectively. This confidence interval was computed using the bootstrap method described above. It is worth noting in this context that the confidence interval is also a sample estimator too, which means that it also suffers from random errors. Due to the large variation of the estimator the focus is on the upper limit of the confidence interval.

The person who had been tested positive reported an asymptomatic course of the disease (i.e. sneezes were the only symptom present in the two weeks immediately preceding the test) and considered the probability of coronavirus infection rather low.
What is the general opinion about the protective measures taken by the Austrian government?

The coronavirus pandemic has considerably changed people’s lives. The Government’s laws on protective measures to be taken against COVID-19 called for quarantine in some regions and set new social standards such as physical distancing or wearing mouth-nose masks. The question is how people experience these measures and what their acceptance might depend on. People’s opinion was surveyed between April 15 and 24, 2020. During that period, all of the measures listed in Graph 3 were in place, despite a general sense that some measures (e.g. shop shutdowns) would be eased.

Asked about their personal opinion on the appropriateness of measures at the time of the interview, most people generally accepted most of these measures.

Graph 3 What do people generally think about the measures – percentage considering measure as appropriate

![Graph showing percentages of people's opinion on appropriateness of measures]

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020. Results for people 16 or older in private households. Percentages refer to valid cases.

Considerably more than 90% of the respondents consider measures such as quarantine in exposed regions (98%), physical distancing (97%), bans on public gatherings/events (97%), wearing a mouth-nose mask (97%) or restricted entry into Austria (94%) as appropriate.
Most respondents also consider home-schooling (89%), opening kindergartens only if necessary (88%), banning consumption in cafés or restaurants (86%) or closing sports grounds (83%) as appropriate.

There are two measures whose acceptance is significantly lower: on the one hand, general shutdown of most shops (except for essential or small enterprises selling goods or small-scale crafts businesses), which was considered appropriate by 69% of the respondents. On the other hand, merely 56% considered the directive of limiting outdoor activities to exceptional cases only as appropriate.

If we take a closer look at two specific groups, we see significant differences: those with serious underlying medical conditions and those with pre-school children.

People with serious underlying conditions are those with moderately to very poor subjective health, accompanied by at least one of the following chronic conditions: coronary heart disease, high blood pressure, chronic pulmonary disease, chronic kidney disease, chronic liver disease, diabetes requiring medication, treatment for cancer, a weak immune system or adipose patients.

The second group includes people living in a household with at least one child born 2015 or later (i.e. pre-school children).
For most measures, acceptance by people with pre-school children differs minimally from people’s general perception about these measures. However, this group considered especially one measure as inappropriate: Only 44% of the respondents with small children considered the requirement of staying outdoors only in exceptional cases as appropriate. On the other hand, they considered the following measures as rather appropriate: quarantine in exposed regions (97%), physical distancing (97%), ban on public gatherings/events (96%), wearing a mouth-nose mask (94%), restricted entry into Austria (97%), home-schooling (84%), kindergarten only open if necessary (87%), no food or drinks in cafés or restaurants (86%), closed sports grounds (82%) or general shop shutdown (61%).

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020. - 1) Youngest household member born 2015 or later. Percentages relate to valid cases.
Acceptance of the measures by people with serious underlying conditions is even higher than among the average. Within this group, more than 89% perceive nearly all measures as appropriate: quarantine in crisis regions (100%), physical distancing (96%), ban on public gatherings/events (98%), wearing mouth-nose mask (98%), restricted entry into Austria (96%), home-schooling (94%), opening kindergartens only if necessary (89%), no food or drinks in cafés or restaurants (89%), closed sports grounds (94%). Only the shop shutdowns (80%) and permitting outdoor activities only in exceptional cases (72%) were seen with a more differentiated view but are generally accepted as appropriate.

To sum up, the measures are widely accepted, even if the “lockdown”, which has recently received broad media coverage, was indeed perceived in a more discerning manner.
What is the level of well-being during the coronavirus pandemic?

Well-being is a good indicator of the welfare of the population. It was assessed based on two questions from the internationally used WHO-5 Well-Being Index (cf. Bech, 2004). One question asked how often in the past 14 days a person had been calm and relaxed. The second question referred to how often during that period the person had been in good spirits.

If we combine the answers to these two questions, it can be assumed that almost two thirds of the target population (64%) had always or usually been calm, relaxed and in good spirits.

This case applied slightly less often to people with pre-school children, although the difference can be considered minimal (i.e. not significant): 58% of this group were at least predominantly in good spirits, calm and relaxed. Especially people with serious underlying conditions reported a low level of well-being. In that group only somewhat less than a third (33%) were at least frequently in good spirits, calm and relaxed.

Graph 6 Well-being – percentage at least predominantly calm, relaxed and in good spirits

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020. - 1) Results for people aged 16 or older in private households. - 2) People in moderately to very poor subjective health condition with selected chronic conditions. - 3) Youngest household member born 2015 or later.

Other studies suggest that people’s overall well-being is generally less good in the current situation. We cannot comment on this because of the cross-sectional nature of this study.
What strikes the eye, however, is the fact that especially people with serious underlying conditions are not only at risk because of their physical condition but also because of their psychological state of mind.
What consequences of the COVID-19 pandemic do people expect in Austria?

The coronavirus and its consequences (rising unemployment, economic consequences etc.) have changed the pattern of anxiety prevailing among Austria’s resident population.

Asked about possible subjective consequences of the coronavirus pandemic in the six months ahead, the following four are projected to be the most frequent: financial problems (10% consider these problems as very probable or probable), infection with the coronavirus (7%), losing a family member to the COVID-19 disease (6%) and a rise in conflicts within the family or one’s relationship (5%). Concerns about seriously falling ill of coronavirus to the extent of requiring hospitalisation are considered probable by merely 2% of the respondents.

According to this study’s findings, job loss is considered secondary (1%). However, only people in employment were asked this question. The fact is that already in March, Statistics Austria’s data show a significant rise in unemployment over the previous month. By mid-April, i.e. the date of the survey, the peak in job losses had already been exceeded. This means that many people had already lost their jobs. It can be concluded that precisely those most vulnerable were not asked about expected loss in the next six months.

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Graph 7 Subjective consequences of the COVID-19 pandemic – which consequences are (very) probable?

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020. - Results for people aged 16 or older in private households. - 1) Due to coronavirus disease. - 2) Question addressed only to employed.

People with pre-school children predominantly expect financial problems (19%) and a rise in conflicts in family and relationship (14%), followed by concerns about infection with the coronavirus (9%) and losing a family member due to infection with the coronavirus (4%). Concerns about falling seriously ill of the coronavirus or losing the job (1% in each case) are rare.

In contrast, people with serious underlying conditions most often expect a severe course in case of infection with the coronavirus (12%), followed by concerns about losing a family member due to the coronavirus (9%), financial problems (7%), and concerns about becoming infected with the coronavirus (5%). There are no concerns about a rise in conflicts in the family or the relationship (2%) or about job loss (1%).
Graph 8 Subjective consequences of the COVID-19 pandemic for people with serious underlying conditions and those with pre-school children – which consequences are (very) probable?

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020. - 1) People in moderately to very poor subjective health condition with selected chronic conditions. - 2) Youngest household member born 2015 or later. - 3) Due to coronavirus disease. - 4) Question addressed only to employed.

Generally speaking, it can be said that the percentage of people expecting to be affected in the next six months is not particularly high for any of these possible consequences.
How has the Covid-19 pandemic changed the work situation?

By definition of their own, approximately 3.9 million people were still in employment in March 2020 (until the beginning of restrictions on March 15, 2020). By the interview date, this figure had dropped by approximately 8%. On the interview date 19% of those in employment before the coronavirus crisis were working short time. 73% continued in employment without any change.

Graph 9 What is today’s status of those in employment before the COVID-19 pandemic?

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020. – Results for people classifying themselves as employed between March 9 and 15, 2020. This group comprises a total of 3,893,000 individuals.

How much do those currently in employment work today?

Among those approximately 3.1 million people who continue to be in employment on the date of the interviews in mid-April 2020 who were not affected by shutdowns, holidays etc., more than 37% work less than before the coronavirus crisis, 55% work about the same amount of time und 8% work more than before.

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7 Including seasonal withdrawals and retirement cases, which are not directly affected by the COVID-19 pandemic.
Graph 10 How much do those in employment during the crisis work in comparison to before the COVID-19 pandemic?

Source: STATISTICS AUSTRIA, COVID-19 Prevalence Study April 2020: Results for people classifying themselves as employed before 15th March, 2020 as well as between April 16th and 24th, 2020 who are not affected by shutdown, holidays etc.

Who works at home?
The coronavirus crisis has also changed the places of work. While 45% of the employed work at the employer’s workplace or site (in-house), 33% work from home and 9% off location (e.g. in field services or on building sites). Another 13% are affected by shutdowns, holidays etc. and cannot specify a place of work.

People who work from home are significantly less connected (25% with at least one personal contact in the last 14 days) than those working in-house (54%).

People with a higher level of education are more likely to work from home. While 70% of all people with completed tertiary education specify working from home, only 27% of those with intermediate vocational education (BMS) do so. People with lower levels of education are also more likely to be affected by the requirement to use up holiday entitlements or by shutdowns.
How many people living in Austria think they have been exposed to coronavirus?

Compared to the figures for currently infected/diseased persons, a significant number of people consider it likely or even very likely to have been infected with the coronavirus: Some 3% of those aged 16 or older who live in private households share the subjective opinion that they have certainly or probably been infected. Even if a subjectively perceived previous infection is not an indication of current infection (which can only be checked through antibody tests, which are not addressed by this study), it shows that people’s awareness of personal exposure is rather high in Austria. The strong presence of the topic in the media, fuelled by the overlap of the COVID-19 pandemic and the flu season, might as well have contributed to people’s perception.

On the other hand, the percentage of people who self-reported a probable or certain exposure to individuals testing positive for coronavirus was only half the percentage of those subjectively considering themselves infected.

Who thinks they have been infected?
Generally speaking, reported differences are minor and not significant. In their opinion, especially young people and women think they have been exposed: While 4% of women specify certainly or probably having gone through a coronavirus infection, this rate is 3% among men. While it is 4% among the 16 to 24-year old, and even 5% for the 25 to 34-year old, this rate only accounts for 2% among those above 75. These differences are in contrast to the numbers of positively tested individuals, where men and older persons predominate; however, these differences are negligible and not significant.

Who has been exposed to coronavirus-positive persons?
Some 2% stated probably or certainly having been exposed to people tested positive for coronavirus: At 4%, this percentage is elevated especially among the 25 to 34-year old. Gender differences are negligible.

How many sampled persons have tested positive?
24 sampled individuals specified having been tested for coronavirus (before this study): Among these, no positive test result has been reported.
4 Dataset Notes

Data on the Prevalence Study April 2020 are available free of charge from AUSSDA, The Austrian Social Science Data Archive. For further information see AUSSDA Dataverse.\(^8\)

The dataset includes all questionnaire variables and the symptoms specified on the occasion of swab sample taking for the PCR test. In addition, another dataset is available for the bootstrap weights. Statistics Austria’s Safe Centre is available for analysis of PCR results.

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\(^8\) [https://aussda.at/](https://aussda.at/)
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http://eurofound.link/covid19data
### Abbreviations

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<th>Full Form</th>
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<tbody>
<tr>
<td>BMBWF</td>
<td>Austrian Federal Ministry of Education, Science and Research</td>
</tr>
<tr>
<td>PCR</td>
<td>Polymerase chain reaction</td>
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<tr>
<td>SED</td>
<td>Statistical enumeration district</td>
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