Strategic Policy, Planning and Performance Report

Subject: **Essential worker serology testing survey results**
Date: **30 June 2020**

Introduction

As part of the Government of Jersey's response to the COVID-19 crisis, an essential worker antibody survey was conducted between 21-29 May and 1-7 June 2020. The voluntary survey tested people that were working through the Stay at Home period and worked away from home on 5 or more occasions between 20 March and 11 May 2020. The self-selection programme, that was designed to provide a snapshot of coronavirus infection in key groups which are considered to have been at higher risk of exposure than the general population, ***is not statistically representative*** of all essential workers in Jersey. The results of this programme should be considered alongside the analysis of the community antibody testing programme[1] which provides a statistically robust estimate of population seroprevalence.

Interpretation of findings in this report

This paper presents the results of this testing programme, however due to the self-selection convenience design of this programme, alongside the eligibility requirement to have been in work at least 5 times over the Stay at Home period, it is ***not advisable to extrapolate these results to provide a prevalence figure for all essential workers, nor a prevalence rate by sector***. Instead, the findings in this report should be used to provide general insights on the results for those workers who have attended for an antibody test.

Additional issues with data quality mean that results should be interpreted with caution. For further information, see the background notes section of this report.

Key findings

The results from the essential workers antibody testing programme show:

- A total of 8,170 tests were conducted for 7,850 individual essential workers, who declared having worked away from home on 5 or more occasions during the Stay at Home period, as part of the essential worker testing programme
- Around 300 essential workers, representing 4 per cent of individuals tested, returned a positive result for the presence of SARS-CoV-2 antibodies
- There were no differences in the proportions of male and female essential workers tested as part of this programme who had a positive antibody result
- The proportion of essential workers that had a positive result ranged from 3-4 per cent between each age group
- The proportion of positive results did not show a correlating pattern as number of days worked increased; the proportion by category of days worked ranged from 4 to 6 per cent
- Over half of those with a positive result reported no symptoms, adding to evidence found in the community antibody testing programme[2] that there is a high proportion of asymptomatic cases taking place in Jersey

[1] More information about this survey can be found on www.gov.je and in the Statistics Jersey report https://www.gov.je/SiteCollectionDocuments/Government%20and%20administration/R%20Prevalence%20of%20antibodies%20200609%20SJ.pdf

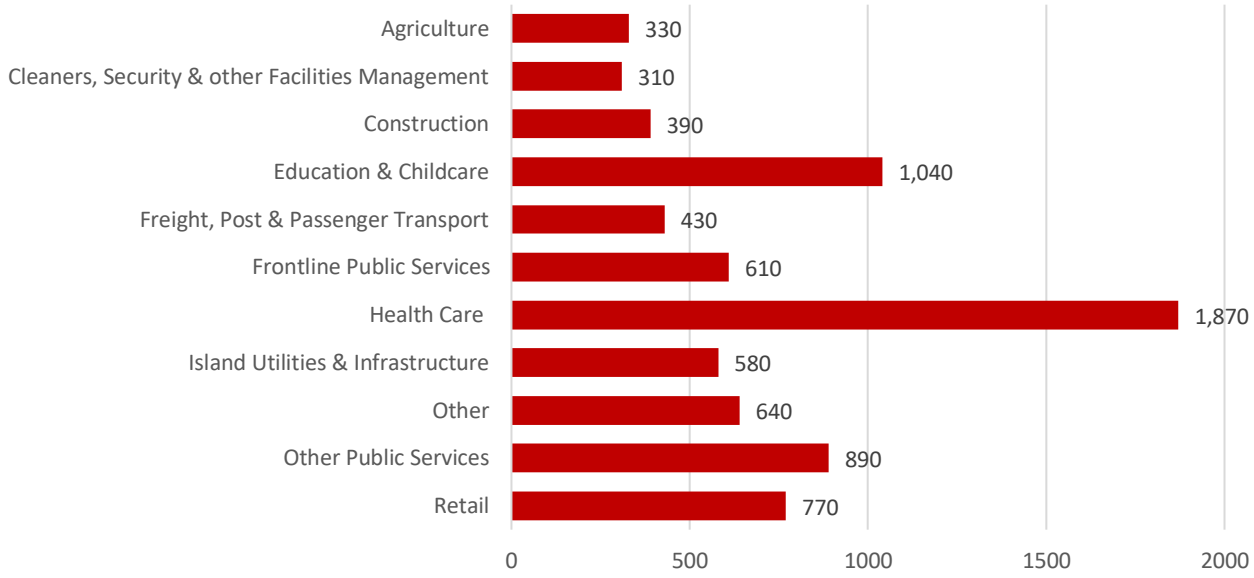
[2] Statistics Jersey https://www.gov.je/SiteCollectionDocuments/Government%20and%20administration/R%20Prevalence%20of%20antibodies%20200609%20SJ.pdf

Results

Results presented here are calculated for individuals rather than tests conducted. Where more than one test for an individual is contained in the dataset with the same test result, the first test has been considered for this analysis due to issues with data quality.[3] However, in a small number of cases where some individuals have had multiple tests with different results at the same appointment,[4] the positive test has been considered.

A total of 8,170 tests were conducted for 7,850 individual essential workers, who declared having worked away from home on 5 or more occasions during the Stay at Home period, as part of the essential worker testing programme.[5]

Figure 1: Number of individuals tested, by sector of essential worker



Note: Health care includes primary care and private care providers, other includes emergency accommodation and voluntary sector

Around 300 essential workers, representing 4 per cent of individuals tested, returned a positive result for the presence of SARS-CoV-2 antibodies.[6]

Gender

4,200 females were tested (53 per cent of the total) and 3,650 males attended for a test (47 per cent of total). The proportion of those testing positive was 4 per cent for both genders.

Age

Figure 2 shows the numbers of individuals tested by age of worker. Essential workers aged 45-54 years of age represented the largest number of individuals tested.

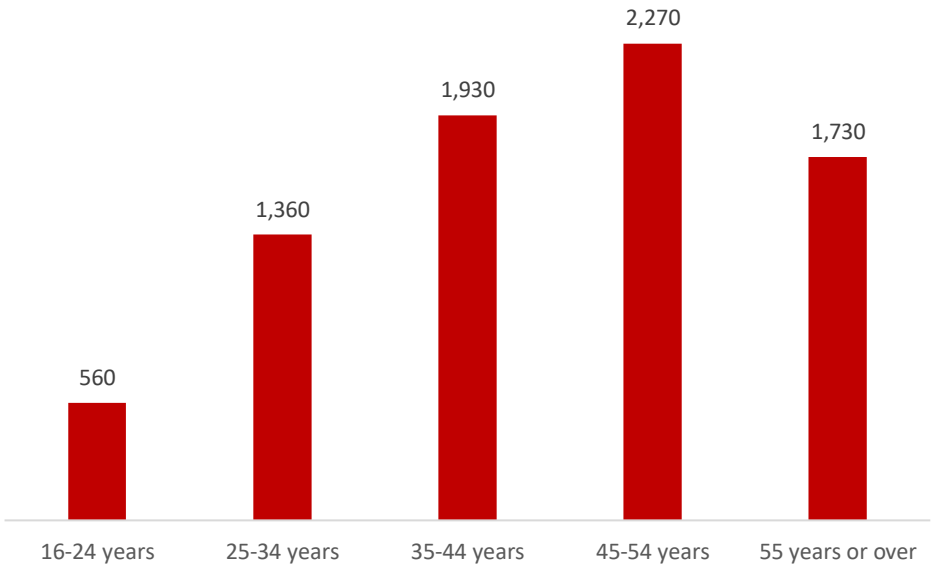
[3] For further details, see background notes

[4] Around 10 individuals had two or more tests administered on the same day with different results being recorded. In order to analyse data for individuals, where an individual had a positive and a negative result on the same day at the same site and with the same batch number, the positive result has been considered for this analysis due to the lower likelihood of a false positive compared to a false negative.

[5] Eligible essential workers who were tested as part of the community antibody testing programme were not included

[6] For the purposes of this report, a participant who tested positive for either IgG or IgM antibodies (or both) was regarded as testing positive for the presence of SARS-CoV-2 antibodies

Figure 2: Number of individuals tested, by age of essential worker



The proportion of essential workers that had a positive result varied from 3-4 per cent between each group.

Table 1: Results by age of essential worker

	Negative		Positive	
	Number	Percentage	Number	Percentage
16-24 years	540	96%	20	4%
25-34 years	1,320	97%	40	3%
35-44 years	1,860	96%	70	4%
45-54 years	2,180	96%	90	4%
55 years or over	1,660	96%	80	4%

All figures rounded independently to the nearest 10

Number of days worked

Those attending for testing were asked how many days they had worked during the Stay at Home period. These responses were grouped into three categories: those having worked 5 to 9 days, those working 10 to 14 days and those working over 14 days. The majority, 6,170 essential workers, who attended for a test worked over 14 days during the period between 20 March and 11 May 2020. The proportion of positive results did not show a correlating pattern as number of days worked increased; the proportion by category of days worked ranged from 4 to 6 per cent.

Table 2: Results by number of days worked

	Negative		Positive	
	Number	Percentage	Number	Percentage
5-9 days	1,020	95%	50	5%
10-14 days	570	94%	40	6%
Over 14 days	5,950	96%	220	4%

All figures rounded independently to the nearest 10

Sector

Due to changes made to the coding of essential worker roles during the course of the testing programme, results by sector should be treated with extreme caution. The results are not statistically representative of all essential workers working in those sectors due to the self-selection design of this programme, nor are the sectors themselves accurately capturing the roles of those workers tested. For example, cleaning staff working in the hospital may have been coded as working in health care.

Table 2: Results by sector of essential worker – use with extreme caution (see background notes)

	Negative		Positive	
	Number	Percentage	Number	Percentage
Agriculture	330	99%	<5	1%
Cleaners, Security & other Facilities Management	300	98%	10	2%
Construction	370	95%	20	5%
Education & Childcare	1,020	97%	30	3%
Freight, Post & Passenger Transport	410	96%	20	4%
Frontline Public Services	590	96%	20	4%
Health Care	1,800	96%	70	4%
Island Utilities & Infrastructure	560	96%	20	4%
Other	600	94%	40	6%
Other Public Services	840	95%	50	5%
Retail	740	96%	30	4%

Note: Health care includes primary care and private care providers, other includes emergency accommodation and voluntary sector
All figures rounded independently to the nearest 10

Reported symptoms for those testing positive

Around 300 essential workers tested through the essential workers testing programme returned a positive result. Participants were asked whether they had had any symptoms since March and the date of onset of these symptoms. Table 3 shows the symptom history for those essential workers who returned a positive test.

Table 3: Symptom history, for those essential workers tested who had a positive result

History	Percentage of positive tests	Number of positive tests
No reported symptoms	52%	160
Any reported symptoms	48%	150
Reported recognised symptoms*	39%	120

*Reporting a new or continuous cough and/or high temperature and/or loss of smell and taste

Over half of those with a positive result reported no symptoms, adding to evidence found in the community antibody testing programme[7] that there is a high proportion of asymptomatic cases taking place in Jersey.

[7] Statistics Jersey
https://www.gov.je/SiteCollectionDocuments/Government%20and%20administration/R%20Prevalence%20of%20antibodies%20200609%20SJ.pdf

Background Notes

Methodology

This programme is one part of a series of complementary surveys which have been used to generate a snapshot of coronavirus infection in key groups which are considered to have been at higher risk of exposure than the general population. Findings from this survey, alongside the airport passenger survey, were designed to complement the analysis of the community antibody testing programme which will continue to provide a statistically robust estimate of population seroprevalence.

The essential workers antibody testing programme used a self-selected (convenience) sample of respondents making this, therefore, a cross-sectional non-probability sample of the subpopulation of essential workers deemed most at risk of having been exposed to the virus.

Eligibility criteria

The essential worker antibody survey was open to people who were actively working throughout the Stay Home period and whose exposure to COVID-19 may be different to the general population. Anyone aged 16 years or over, who worked outside of their home for a minimum of five days between 30 March and 11 May 2020 was eligible to take part in the study, which took place 21-29 May and 1-7 June 2020.

The Government of Jersey encouraged people working in roles essential to the continued running of the Island, particularly those working in the following areas to be tested:

- agriculture
- cleaning, security or other facilities management services
- construction
- education or childcare
- emergency accommodation
- freight, post and passenger transport
- healthcare
- island utilities and infrastructure
- other active public services
- other frontline public services
- retail
- voluntary service

Potentially eligible essential workers who had already taken part in the community antibody testing programme were not eligible for testing as part of the essential worker testing programme as their information would already be represented in results for the Island.

How approached

Invitations to attend for a test were sent to public sector workers in the first week (21-29 May 2020) of the testing programme, inviting them to book for a test if they met the eligibility criteria. The second week (1-7 June 2020) of testing saw invites sent via email to applicable private sector employers encouraging their eligible staff to book a test via the online booking system. Proactive targeting of certain companies and industries was used to ensure that as many eligible workers received an invite to book a test as possible.

How recorded

Participants were asked to bring their social security number, photographic ID and confirmation of their place of work to the test centre, allowing participants to be identified in the Integrated Public Health Record database. The result of the antibody test was recorded alongside their personal information. This allowed demographic and occupation-related information about participants and their results to be obtained.

Data extracted from the Integrated Public Health Record database was anonymised before analysis and reporting.

Sensitivity of test devices

The tests used have been validated as sufficient for the purpose of population monitoring but are not used to diagnose people with COVID-19 as the test devices are not 100% accurate. To account for this, all data in this report has been rounded to the nearest 10.

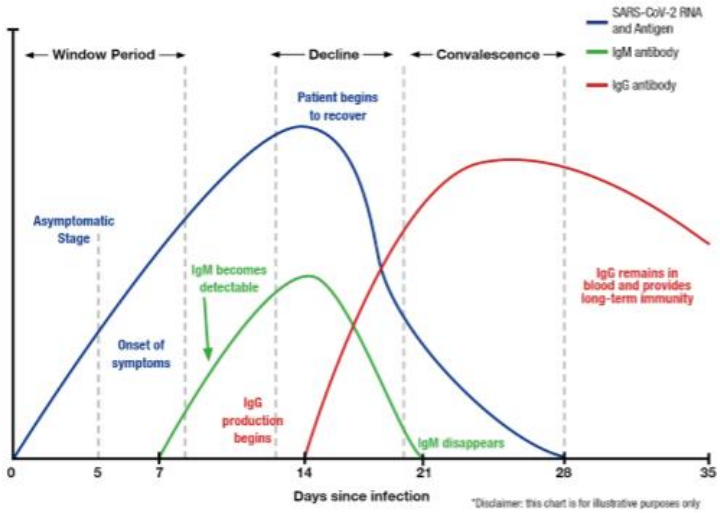
Details of testing devices

The essential workers antibody testing was conducted using lateral flow testing devices produced by DNA World / CTK Biotech, the same devices used for round 2 of the community antibody testing programme. These devices are designed for the qualitative detection of SARS-CoV-2 antibodies using whole blood, serum or plasma. Testing for this programme consisted of the sampling of whole blood obtained using a "pin prick" method administered by suitably trained healthcare professionals.

The test devices themselves have been subject to testing, both internationally and locally by the Microbiology Department of the General Hospital. It is acknowledged that these devices have limitations and in particular have a comparatively low level of sensitivity when compared to some other diagnostic devices.

The test devices are designed to detect the presence of two types of SARS-CoV-2 antibodies, IgG and IgM. These antibodies are produced at different times in the infection cycle: IgM antibodies are typically detectable approximately 7-10 days after exposure and indicate acute SARS-CoV-2 infection is present; IgG production occurs later and suggests recent or past infection.

Figure 3 - Variation of the Levels of SARS-CoV-2 RNA and Antigen, IgM and IgG after infection – For illustrative purposes only, Source: http://www.diazyme.com/covid-19-antibody-tests



The test itself provides separate indications as to the presence of the two different antibodies. For the purposes of this report, a combined positive result has been used for estimating prevalence; a participant who tested positive for either IgG or IgM antibodies (or both) was regarded as testing positive for the presence of SARS-CoV-2 antibodies.

It should be noted that there is currently no evidence regarding what / if any immunity the presence of IgG confers, or its longevity.

Accuracy

The testing programme relied on a self-selection (convenience) sample of eligible essential workers and as such caution should be applied in using these results, as they are not representative of all essential workers. An estimate of the number of essential workers for each sector who would have been eligible for a test was not available.

Due to technical issues experienced at a number of the testing sites, genuine double testing alongside manual input errors have meant that around 300 duplicate records are contained within the dataset. Some of these may have occurred where individuals have attended more than once for testing, although the assumption is that the majority are erroneous duplicates. Where duplicates occur on the same day, at the same testing location and with the same

antibody test batch number but with different test results, the positive test has been included in the analysis due to the lower likelihood of a false positive test compared to a false negative test.

Some private sector staff attended for testing in the first week and the sector in which they work may have been misclassified as additional sector classifications for private organisations were added at a later stage in the testing programme. For this reason, numbers and results by sector should be interpreted with caution as they are likely to misrepresent the likely seroprevalence of SARS-CoV-2 in that sector.

To reflect these issues in accuracy, all data in this report has been rounded to the nearest 10.

Differences between the different Government of Jersey testing programmes

Community Antibody Testing Programme

Alongside the serology testing offered to essential workers, the Government of Jersey has also run a community antibody testing programme. Beginning at the start of May, this programme invited 500 randomly selected households on the Island to participate. A second round ran between 30th May – 2nd June, with an additional 500 randomly selected households invited to participate together with those already identified in the first round. This programme allows for a statistical estimate to be produced of the population prevalence of COVID-19 in Jersey.[8]

Due to the design and coverage of this testing programme, a number of essential workers will have been tested. Results for these workers have not been included in analysis presented in this paper.

Essential worker PCR testing programme

To help trace and contain the spread of COVID-19, essential workers have been offered Polymerase Chain Reaction (PCR) swab tests. Priority was given to essential workers who are in direct contact with the public to establish whether they currently have COVID-19. Essential workers were identified for the testing based on their risk of contracting or spreading the disease through direct contact with the public. The PCR testing of essential workers programme ran concurrently with the essential worker antibody testing programme.

The essential workers who were offered PCR tests include:

- patient-facing health and care workers in all settings (including hospital, care homes, ambulance, hospice, family nursing and home care workers)
- police, fire and prison officers
- allied health and social care workers
- customs and immigration staff
- funeral directors

Those meeting the criteria for testing were contacted by their employer and instructed to book an appointment at the airport drive-through testing centre or, in some cases, at their workplace with a mobile testing unit. On average, results from the PCR test are available within 2-3 days of the swab being taken. Results from this testing programme are included in the overall figures for COVID-19 test results. Further analysis of these results for essential workers will be analysed and reported on separately.

[8] Statistics Jersey
https://www.gov.je/SiteCollectionDocuments/Government%20and%20administration/R%20Prevalence%20of%20antibodies%20200609%20SJ.pdf