

- 1 **Supplementary file**
- 2 **Supplemental methods: Sample selection methodology of subjects in the frame of COVID-19-MISS**
- 3 **study**
- 4
- 5

## 6 **Sample selection methodology of subjects in the frame of COVID-19-MISS study**

7 *1<sup>st</sup> round sample selection of subjects in the frame of COVID-19-MISS study (11 May 2020)*

8 According to the statistical design of the COVID-19-MISS study, a random sample of 1700 employees of  
9 the CHUV and Unisante institutions was required in order to assess the seroprevalence of COVID-19  
10 among healthcare workers and other hospital staff. Assuming initially a 6% loss due to non-response or  
11 non-eligibility of patients (for those belonging in the cohort of CHUV patients with previous positive PCR  
12 testing), a random sample of 1800 subjects was drawn among the whole population of employees in the  
13 two institutions .

14 *Stratified random sampling* has been used, in order to obtain a sample representative of the population with  
15 respect to their employment environment, using as stratification the following two factors:

- 16 • Institution (CHUV, Unisante)
- 17 • Work category (9 classes)

18 *Proportional allocation* of the total sample size of 1800 subjects in the 18 district stratum levels,  
19 according to the population size of each stratum, was adopted. The distribution of the total number of  
20 employees by institution and work category, along with the corresponding sample size are provided in  
21 Table 1 below. The selection of the sample based on the above specifications was been performed in SAS  
22 software (version 9.4) using the Surveyselect procedure.

23

24

25

26 Table 1: Employees and 1st round sample in the CHUV and Unisanté institution by work category.

Work category	Total number of employees – n (%*)			1 <sup>st</sup> round Sample size – n (%**)			1 <sup>st</sup> round responders – n (%#)		
	CHUV	Unisanté	Total	CHUV	Unisanté	Total	CHUV	Unisanté	Total
–	382	24	406	51	3	54	12	0	12
Students/Apprentices/Trainees	(2.8%)	(0.2%)	(3%)	(2.8%)	(0.2%)	(3%)	(23.5%)	(0%)	(22.2%)
Faculty	20	0	20	3	0	3	3	-	3
	(0.1%)	(0%)	(0.1%)	(0.2%)	(0%)	(0.2%)	(100%)	-	(100%)
Logistics	1318	3	1321	176	1	177	43	1	44
	(9.8%)	(0.02%)	(9.8%)	(9.8%)	(0.1%)	(9.8%)	(24.4%)	(100%)	(24.9%)
Physicians	2259	210	2469	302	28	330	185	17	202
	(16.8%)	(1.6%)	(18.3%)	(16.8%)	(1.6%)	(18.3%)	(61.3%)	(60.7%)	(61.2%)
Nursing assistant staff	533	4	537	71	1	72	19	1	20
	(4%)	(0.03%)	(4%)	(3.9%)	(0.1%)	(4%)	(26.8%)	(100%)	(27.8%)
Administration	3217	309	3526	430	41	471	222	28	250
	(23.9%)	(2.3%)	(26.2%)	(23.9%)	(2.3%)	(26.2%)	(51.6%)	(68.3%)	(53.1%)
Medical technology staff	1051	44	1095	140	6	146	110	4	114
	(7.8%)	(0.3%)	(8.1%)	(7.8%)	(0.3%)	(8.1%)	(78.6%)	(66.7%)	(78.1%)
Nursing staff	3895	106	4001	520	14	534	311	9	320
	(28.9%)	(0.8%)	(29.7%)	(28.9%)	(0.8%)	(29.7%)	(59.8%)	(64.3%)	(59.9%)
Social workers	99	0	99	13	0	13	6	-	6
	(0.7%)	(0%)	(0.7%)	(0.7%)	(0%)	(0.7%)	(46.2%)	-	(46.2%)
<i>Total</i>	<i>12774</i>	<i>700</i>	<i>13474</i>	<i>1706</i>	<i>94</i>	<i>1800</i>	<i>911</i>	<i>60</i>	<i>971</i>
	<i>(94.8%)</i>	<i>(5.2%)</i>	<i>(100%)</i>	<i>(94.8%)</i>	<i>(5.2%)</i>	<i>(100%)</i>	<i>(53.4%)</i>	<i>(63.8%)</i>	<i>(53.9%)</i>

27 Note: \*: Percentages are calculated over the total number of employees in the population of both  
 28 institutions; or \*\*: sample of each institution.

29 #: % of response calculated within each stratum

30

31

32 *2<sup>nd</sup> round sample selection of HCWs for the COVID-19-MISS study (17 May 2020)*

33 The average % of non-responders for the first round of recruitment was 46.1%. The two extremes, observed  
 34 all in very small random samples from 1 to 3 participants were 0% (for the class of Faculty at CHUV and  
 35 Nursing assistant staff as well as logistics for Unisanté) and 100% for Students/Apprentices/  
 36 Trainees for Unisanté. In all other strata, non-response ranged from 21.4% up to 76.5%.  
 37 In order to reach the initial target of 1700 subjects, a 2<sup>nd</sup> round of sampling was performed. Based on the  
 38 observed rates of non-response and the remaining required number of subjects in each stratum the 2<sup>nd</sup> round  
 39 sample size for each stratum was designed as presented in Table 2 (a total of 1958 employees).  
 40 The selection of the 2<sup>nd</sup> round sample based on the above specifications, excluding the subjects included in  
 41 the 1<sup>st</sup> round selection, has also been performed in SAS software (version 9.4) using the Surveyselect  
 42 procedure.

43 Table 2: 2<sup>nd</sup> round sample size in the CHUV and Unisanté institution by work category.

Work category	2 <sup>nd</sup> round Sample size – n		
	CHUV	Unisanté	Total
Students/Apprentices/Trainees	166	10	176
Faculty	0	0	0
Logistics	544	0	544
Physicians	191	18	209
Nursing assistant staff	194	0	194
Administration	403	19	422
Medical technology staff	38	3	41
Nursing staff	349	8	357
Social workers	15	0	15
<i>Total</i>	<i>1900</i>	<i>58</i>	<i>1958</i>

44

45

46 *3<sup>rd</sup> round sample selection of HCWs for the COVID-19-MISS study (7 June 2020)*

47 At the 7<sup>th</sup> of June 2020, we proceeded to a small 3<sup>rd</sup> round sample for the strata which have not reached  
48 their initial sample size target.

49 Taking into account the information of all recruitments of the prior rounds, the attrition rate between  
50 putative consents and formal blood drawn (i.e. sample id assigned) was only 2.34% overall (among the  
51 1452 appointments, 1418 blood sample were taken). Results by institution and work category are  
52 summarized in Table 3. Thus, based on all the scheduled appointments and applying the observed rate of  
53 appointments realization (by stratum) for the appointments, the final number of collected blood samples  
54 and the corresponding final, overall response rate is presented in Table 4. The corresponding  
55 representation of each stratum (samples collected over the population size of each stratum) is also  
56 provided in Table 5.

57 According to Table 4, 5 strata had reached exactly their target size, 3 strata have exceeded their target,  
58 and 8 strata had not reached their target sample size. A 3<sup>rd</sup> round sample selection was performed for the 8  
59 strata that had not reached their target sample size. The 3<sup>rd</sup> round sample sizes by stratum were derived  
60 based on the observed rates of final, overall response and the remaining required number of subjects in  
61 each stratum (a total of 295 employees, Table 6).

62 The selection of the 3<sup>rd</sup> round of sampling based on the above specifications and excluding the subjects  
63 included in the 1<sup>st</sup> and 2<sup>nd</sup> round selection as well as those indicated as PCR positive which have been  
64 separately reached, was performed in SAS software (version 9.4) using the Surveyselect procedure.

65

66

67 Table 3. Blood samples collected among the appointments scheduled up to 5 June 2020 (11.45 pm), by  
68 institution and work category.

<i>Work category</i>	<i>blood samples collected among scheduled appointments - n (%)</i>	
	CHUV	Unisanté
Students/Apprentices/Trainees	36 (94.4%)	3 (100%)
Faculty	3 (100%)	-
Logistics	131 (97.7%)	1 (100%)
Physicians	242 (96.3%)	20 (95%)
Nursing assistant staff	58 (89.7%)	1 (100%)
Administration	362 (98.6%)	27 (100%)
Medical technology staff	122 (99.2%)	5 (100%)
Nursing staff	422 (98.3%)	9 (100%)
Social workers	10 (100%)	-

69

70

71 Table 4: Employees, total target sample and overall responders (blood received) in the CHUV and

72 Unisanté institution by work category.

Work category	Total number of employees – n (%*)			Target sample size – n (%**)			Total blood samples collected <sup>^</sup> – n (%#)		
	CHUV	Unisanté	Total	CHUV	Unisanté	Total	CHUV	Unisanté	Total
Students/Apprentices/Trainees	382 (2.8%)	24 (0.2%)	406 (3%)	51 (2.8%)	3 (0.2%)	54 (3%)	36 (16.5%)	4 (30.8%)	40 (17.3%)
Faculty	20 (0.1%)	0 (0%)	20 (0.1%)	3 (0.2%)	0 (0%)	3 (0.2%)	3 (100%)	-	3 (100%)
Logistics	1318 (9.8%)	3 (0.02%)	1321 (9.8%)	176 (9.8%)	1 (0.1%)	177 (9.8%)	190 (26.3%)	1 (100%)	191 (26.4%)
Physicians	2259 (16.8%)	210 (1.6%)	2469 (18.3%)	302 (16.8%)	28 (1.6%)	330 (18.3%)	269 (54.5%)	28 (59.9%)	297 (54.9%)
Nursing assistant staff	533 (4%)	4 (0.03%)	537 (4%)	71 (3.9%)	1 (0.1%)	72 (4%)	91 (34.2%)	1 (100%)	92 (34.4%)
Administration	3217 (23.9%)	309 (2.3%)	3526 (26.2%)	430 (23.9%)	41 (2.3%)	471 (26.2%)	409 (49.1%)	36 (60%)	445 (49.9%)
Medical technology staff	1051 (7.8%)	44 (0.3%)	1095 (8.1%)	140 (7.8%)	6 (0.3%)	146 (8.1%)	132 (74.1%)	5 (55.6%)	137 (73.2%)
Nursing staff	3895 (28.9%)	106 (0.8%)	4001 (29.7%)	520 (28.9%)	14 (0.8%)	534 (29.7%)	479 (55.1%)	15 (68.2%)	494 (55.4%)
Social workers	99 (0.7%)	0 (0%)	99 (0.7%)	13 (0.7%)	0 (0%)	13 (0.7%)	11 (39.3%)	-	11 (39.3%)
<i>Total</i>	<i>12774</i> <i>(94.8%)</i>	<i>700</i> <i>(5.2%)</i>	<i>13474</i> <i>(100%)</i>	<i>1706</i> <i>(94.8%)</i>	<i>94</i> <i>(5.2%)</i>	<i>1800</i> <i>(100%)</i>	<i>1620</i> <i>(44.9%)</i>	<i>90</i> <i>(58.9%)</i>	<i>1710</i> <i>(45.5%)</i>

73 Note: \*: Percentages are calculated over the total number of employees in the population of both  
 74 institutions or \*\*: sample of each institution.  
 75 #: % of response calculated within each stratum as the number of collected blood samples over the  
 76 initially drawn sample of both rounds. For appointments scheduled after 5Jun2020, 11.45 pr, the  
 77 observed attrition rate is applied in order to project how many of these scheduled appointments will  
 78 eventually result to blood collection  
 79 (cases of employees under 18 years which were selected in the sample but they were ineligible also are  
 80 also taken into account as non-responders).

81

82

83

84 Table 5: Representation of employees by work category in the CHUV and Unisanté institution, based on  
 85 the 1<sup>st</sup> and 2<sup>nd</sup> round (updated as of 5 June 2020)

<i>Work category</i>	<i>Total number of employees – n (%*)</i>			<i>Responders (Total blood samples collected) - n</i>			<i>% of collected blood samples over total number of employees by class</i>		
	CHUV	Unisanté	Total	CHUV	Unisanté	Total	CHUV	Unisanté	Total
Students/Apprentices/Trainees	382 (2.8%)	24 (0.2%)	406 (3%)	36	4	40	9.4%	16.7%	9.9%
Faculty	20 (0.1%)	0 (0%)	20 (0.1%)	3	0	3	15.0%	-	15.0%
Logistics	1318 (9.8%)	3 (0.02%)	1321 (9.8%)	190	1	191	14.4%	33.3%	14.5%
Physicians	2259 (16.8%)	210 (1.6%)	2469 (18.3%)	269	28	297	11.9%	13.3%	12.0%
Nursing assistant staff	533 (4%)	4 (0.03%)	537 (4%)	91	1	92	17.1%	25.0%	17.1%
Administration	3217 (23.9%)	309 (2.3%)	3526 (26.2%)	409	36	445	12.7%	11.7%	12.6%
Medical technology staff	1051 (7.8%)	44 (0.3%)	1095 (8.1%)	132	5	137	12.6%	11.4%	12.5%
Nursing staff	3895 (28.9%)	106 (0.8%)	4001 (29.7%)	479	15	494	12.3%	14.2%	12.3%
Social workers	99 (0.7%)	0 (0%)	99 (0.7%)	11	0	11	11.1%	-	11.1%
<i>Total</i>	<i>12774 (94.8%)</i>	<i>700 (5.2%)</i>	<i>13474 (100%)</i>	<i>1620</i>	<i>90</i>	<i>1710</i>	<i>12.7%</i>	<i>12.9%</i>	<i>12.7%</i>

86 Note: \*: Percentages are calculated over the total number of employees in the population of both  
 87 institutions  
 88

89



90 Table 6: 3<sup>rd</sup> round sample size in the CHUV and Unisanté institution by work category.

<i>Work category</i>	<i>3<sup>rd</sup> round Sample size – n</i>		
	CHUV	Unisanté	Total
Students/Apprentices/Trainees	91	-	91
Faculty	-	-	-
Logistics	-	-	-
Physicians	61		61
Nursing assistant staff	-	-	-
Administration	43	8	51
Medical technology staff	11	2	13
Nursing staff	74	-	74
Social workers	5	-	5
<i>Total</i>	285	10	295

91

92

93

94

95

96

97

