

**Adviesaanvraag**

Vraagsteller	Overlegcomité
Datum van adviesaanvraag	03/02/2021
Onderwerp	Versoepelingen

**Adviesverstrekking t.a.v. het Overlegcomité**

Datum van adviesverstrekking	23/02/2021
Dit advies werd opgesteld en goedgekeurd door	De volgende leden van de expertgroep beheerstrategie: Isabelle Aujoulat, Philippe Beutels, Steven Callens, Bénédicte Delaere, Mathias Dewatripont, Frédéric Fripiat, Lode Godderis, Niel Hens, Yves Kreins, Tinne Lernout, Romain Mahieu, Christelle Meuris, Geert Molenberghs, Karine Moykens, Céline Nieuwenhuys, Michel Thieren, Pierre Van Damme, Steven Van Gucht, Yves Van Laethem, Marc Van Ranst, Dimitri Van der Linden, Maarten Vansteenkiste, Erika Vlieghe, Dirk Wildemeersch
Key takeaways	<ol style="list-style-type: none"><li>1. The current epidemiological evolution and modeling results do not leave room yet for relaxations in the upcoming 4 weeks. Forecasts for possibilities afterwards are more optimistic but depend on the evolution of the epidemic and vaccination roll-out</li><li>2. Thresholds for starting relaxations remain dependent on an extensive epidemiological assessment including n of cases, n of hospitalisations, positivity rate, Rt-value and context indicators (such as testing strategy). Thresholds may be revised in function of the vaccination coverage.</li><li>3. The epidemiological situation defines the society's total 'contact budget' which can be spent on a selection of relaxations. Each relaxation was allocated an 'epidemiological footprint', depending on a set of evidence-based criteria and taken in consensus. In addition, mental health, societal and economic considerations were taken into account, leading to a multi criteria assessment for each sector/type of relaxation.</li><li>4. In a first step of relaxations, with limited contact budget (e.g. by the end of March, provided epidemiological situation remains stable), we suggest to give priority to a selection of relaxations with low epidemiological yet high societal impact, such as:<ol style="list-style-type: none"><li>a. outdoor groups of 8-10 persons (for private life, sports and/or culture)</li><li>b. targeted relaxations in secondary schools for the most vulnerable children (special needs, professional schools)</li><li>c. higher education max. 20% +/- <i>kotbubbel</i></li><li>d. targeted group (8-10 p) activities for vulnerable groups (in social services, mental health services and socio-cultural sector)</li></ol></li></ol> <p>These recommendations are not taking into account relaxations that are already decided, but not implemented yet. In this context, it is to be considered to not yet re-open the remaining contact professions and give</p>



	<p>priority to these small relaxations in schools, for youth and the most vulnerable.</p> <p>5. In a second step, when the thresholds defined by the RAG are met, with more contact budget available because of a better epidemiological situation, we suggest to give priority to:</p> <ul style="list-style-type: none"><li>a. stepwise return to 100% on site education in all secondary schools</li><li>b. stepwise increase of on site higher education</li><li>c. stepwise expanding youth activities</li><li>d. stepwise restarting cultural activities for limited audiences</li></ul> <p>6. At the early stages of relaxations, we advise <u>against</u> an extensive reopening of non-essential travel, (indoor) horeca and large-scale gatherings. Also, curfews and mandatory telework should be maintained in the early stages of relaxations in order not to jeopardize other 'low epidemiological high societal impact' relaxations.</p>
--	---

## 1. Epidemiological context

The current epidemiological situation can be described as a plateau with small up and down variations. At the date of writing (22/02/2021), a 7-day average of 2006 cases/day was noted, and 119 hospitalisations/day. The positivity rate is 6% (up from 5% one week earlier), and the R-value based on the number of cases is 1.06 (95% confidence interval from 1.04 to 1.08); based on hospitalisations 0.99 (interval from 0.93 to 1.06). The ICU-occupation is 329 beds (a gently increasing figure), the total COVID-19-related hospital occupation 1617 beds, still showing a decline. For more details we kindly refer to the weekly RAG-reports, as well as to the daily and weekly Sciensano reports.

As illustrated in the table below, there is a clear difference in the actual epidemiological situation as compared to the previous relaxation period in June 2020.

	30 June 2020	22 February 2021
Daily new cases (7-day average)	83	2099
Positivity rate	0.9%	6.3%
Daily new hospitalisations (7-day average)	16	123
Number of patients in ICU	37	348

In addition, the forecast for the upcoming weeks is somewhat unclear, and dependent on the following evolutions:

1. Further spread and dominance of B.1.1.7 (UK-variant) and other new variants (associated with established higher transmission rates and increasing evidence of possibly worse morbidity and disease outcome).
2. Gradual change to spring season with warmer days (with possibly less transmission, and more possibilities for outdoor activities).
3. Acceleration of the vaccination campaign (with a gradual, albeit non-linear and slow increase in population immunity).
4. Lower motivation of the population and decreasing adherence to the measures.

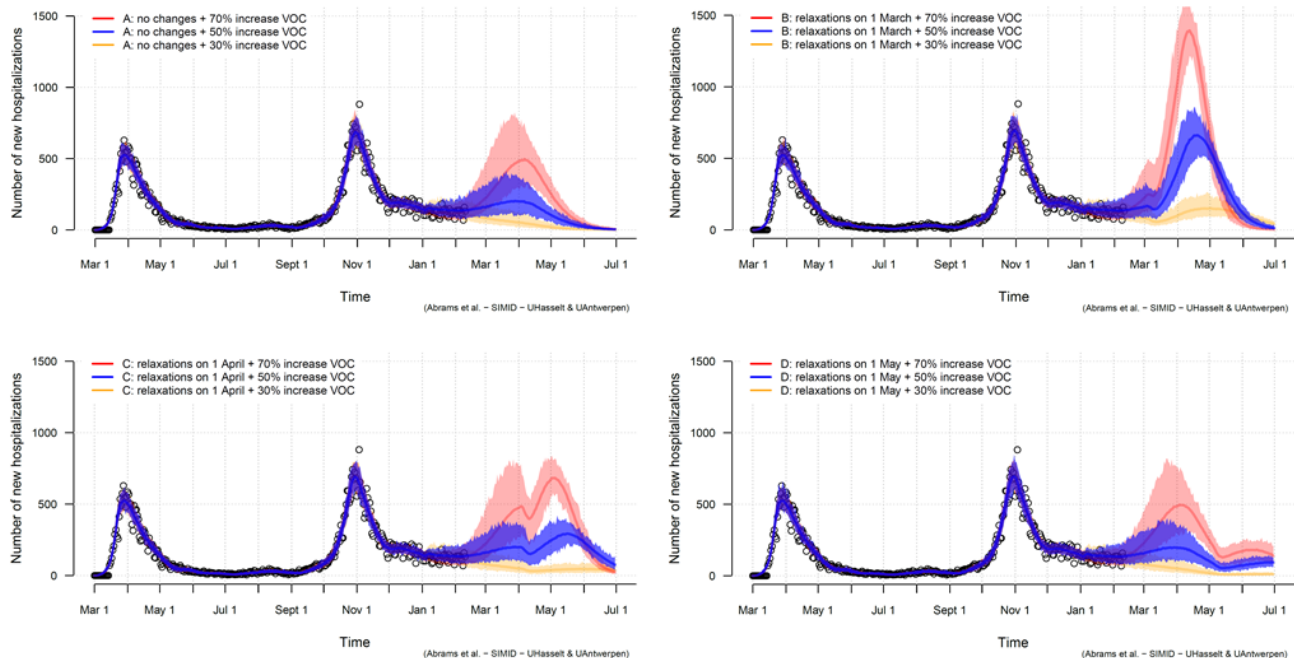
A sufficient vaccination of all vulnerable groups is expected to still take some time. Therefore, if the epidemiological situation allows it, a more liveable situation has to be found and careful relaxations will be in order. However, a multi-scenario analysis of the Belgian reference model (Abrams et al., 2020) shows that social contact behaviour similar to mid-September 2020 will lead to a third wave of COVID-19 if initiated too early.

Due to its larger transmission potential, the B.1.1.7 variant is expected to completely take over the current endemic variants by mid-March. The B.1.1.7 variant might cause, if the current transmission dynamics are sustained, a challenge but not an insurmountable problem for epidemic control provided we continue to restrict our contacts, and provided all essential measures to contain the epidemic are in place and constantly strengthened (i.e. testing, contact tracing, cluster detection and local outbreak management).

Lifting measures can, in spite of the ongoing vaccination campaign, still lead to a third wave. However, postponing deconfinement allows the vaccination campaign to offset the increased transmission risk and associated disease burden. It is therefore essential to release influential measures to reduce transmission rather later than sooner.

Vaccination and seasonality (the latter currently not modelled) are expected to have a positive impact on the incidence of new hospitalisations in the upcoming period. However, recent and consolidating evidence from the

UK suggest that the B.1.1.7 variant is associated with a potential higher per-case probability of severe and lethal disease<sup>1</sup>.



## 2. Thresholds to guide timing on relaxations

In order to guide possible relaxations, epidemiological meaningful and attainable thresholds are needed, which take the degree of vaccination of the vulnerable population into account. A clear set of short-term (i.e. intermediate) and long-term (i.e. end) goals together with an estimated time trajectory to achieve the first intermediate goal will help to foster motivation and will allow for the development of a coherent narrative that serves as a red line in the management of this crisis.

The earlier set thresholds for relaxations are **< 800 cases/day, < 75 hospitalisations/day, positivity rate < 3%, R-value < 1**. Although the longer-term epidemiological trend (over the course of months) is slowly going in the right direction, these thresholds have not yet been reached. The nature of the curve over the last three months is one of a plateau with small oscillations (from November 2020 to date, the 7-day average has started to increase and then decrease again four times in total). The RAG critically revised these thresholds and recommends not to change them at this stage. Thresholds are primarily focused on ensuring the healthcare system does not get overwhelmed with novel COVID-19 cases, and guarantee that non-COVID-19 care can still be provided with the high quality standard the Belgian healthcare system is known for. The impact of COVID-19 goes beyond the mere ICU-bed occupancy rates at peak moments; mid-long term downstream effects on the entire care system and long-term burden on the healthcare system of post-COVID morbidity need to be taken into account as well. The threshold of 75 new hospitalisations was set to preserve the total healthcare capacity and there are no elements justifying to set a lower threshold at this moment (i.e. allowing a higher number of hospitalisations). On the contrary, the growing evidence of more severe disease caused by the B.1.1.7 variant calls for caution. Because of the uncertainty regarding the new variants and since there is no dissociation yet between the trend of the number of new infections and of new hospitalisations following a change in test strategy or vaccination, it is also

<sup>1</sup> [NERVTAG report on B.1.1.7 dd. 22/1/2021](#)



not recommended to set a new threshold for the number of new infections at this moment. The situation will be evaluated again at the end of March.

### 3. Different periods and steps within the relaxations

The end goal of a relaxation strategy is to resume professional and private life activities with the same level of societal activities and freedom as before COVID-19. The actual global evolutions in terms of epidemiology, spread of new variants, measures taken and vaccination roll-out do not allow yet crystal clear predictions of when we will reach a society at a stage comparable to the pre-COVID-era. It is more likely that we will evolve globally to a situation where COVID-19 will remain around, but at much lower threat levels (as is the case for several other viral pathogens, including influenza<sup>2</sup>) following sufficient herd immunity, in a large part due to vaccination. There are however intermediate and attainable goals of partly resuming activities provided certain restrictions, protocols, and testing are respected. To allow citizens to follow the situation, it is critical to invest in more visual communication.

When observing the planned vaccination calendar, we can distinguish three distinct periods in the upcoming months, with different impact on the epidemiology and possibilities to relax, namely:



**Period 1:** Very limited societal immunity acquired through vaccination yet. Major waves can still be caused, a fortiori within the context of B.1.1.7 spread. **Careful relaxations with small steps that are purely based on a positive epidemiological evolution**, before reaching sufficient immunity within vulnerable groups (i.e. at least 70% vaccinated)<sup>3</sup>. In between steps, a sufficiently long period (4 weeks) should be foreseen to allow epidemiological assessment.

**Period 2:** Vulnerable population (as defined by the Task Force on vaccination) has been vaccinated, but vaccination in the general population is still ongoing. This implies that a new (limited) wave can still occur in the general society, affecting not-yet identified vulnerable patients and middle-aged groups without known comorbidity. **More relaxations in larger steps yet with protocols and restrictions**, before reaching sufficient immunity within society (at least 70% vaccinated).

**Period 3:** At least 70% of the population is vaccinated. **Finding a way to live with the virus without restricting society.**

This document focuses mainly on period 1, which consists of several relatively small steps. We will however outline possibilities for relaxations on later periods, and update this plan according to new evolutions in the epidemiology or vaccine roll-out.

<sup>2</sup> Phillips, N. (2021). The coronavirus is here to stay - here's what that means. *Nature*, 590(7846), 382–384. <https://doi.org/10.1038/d41586-021-00396-2>

<sup>3</sup> Vaccination-induced immunity will always be lower than vaccine coverage because the efficacy of vaccines is less than 100%. This means that if 70% of vaccination-induced immunity is the goal, more than 70% of the population will have to be vaccinated. For instance, if 80% of the population is vaccinated over a relatively short time span with a vaccine offering 90% protection, then vaccine induced immunity can be considered to amount to 72% (=90%\*80%).



#### 4. The essential role of non-pharmaceutical interventions (NPIs) in controlling the pandemic

The essence of relaxations implies the gradual decrease of the number and stringency of so-called ‘non-pharmaceutical interventions’ (NPIs) over time, in order to regain more of the freedom and activities from the pre-COVID-era while maintaining sufficient control of the virus. However, when thinking about reducing NPIs, it is essential to understand the importance of NPIs in controlling the epidemic.

Non-pharmaceutical interventions are public health measures, apart from vaccination and therapeutics, that can be taken to help reduce transmission and thus slow the spread of illnesses<sup>4,5</sup>. Implementing these in the COVID-19 pandemic has shown to be very effective in reducing transmission, hospitalisations, and deaths. However, solid comparative studies or modelling on early relaxations are scant. A recent modeling study<sup>6</sup> in the Lancet Infectious Diseases of 131 countries, looked at effects of introducing and lifting NPIs. These effects were not immediate; it took around one week following the introduction of an NPI to observe 60% of the maximum reduction in reproductive number (R) and even longer (almost three weeks) following the relaxation of an NPI to observe 60% of the maximum increase in R. This highlights the need for fast intervention in the upslope of the epidemic and reiterates the need for gradual relaxation in the downslope or plateau phase (as currently experienced in Belgium). There are many other studies<sup>7,8,9</sup> highlighting the importance of NPIs in the management of this pandemic or trying to rate and rank the effectiveness of different NPIs, although this is a very difficult task since NPIs are rarely implemented or relaxed independently. These studies emphasise the effect of distancing as well as the joint implementation of two or more NPIs simultaneously and have served as a basis for this advice. In addition, the effect of NPI's needs to be interpreted in the context of societal culture, demographic characteristics, state structure,...

The decisions to reintroduce and relax restrictions should be informed by various factors, including the capacity and resilience of the health-care system (as mentioned in paragraph 2).

##### 4.1. International comparison

Note that Belgium's incidence takes a middle position in the ECDC ranking, as presented on Friday, 19 February 2021, in the weekly Sciensano report. It is striking that our relatively stable figures reached with measures that correspond to a comparatively low stringency. Indeed, among the countries listed, only Luxembourg has a slightly lower stringency. France scores slightly higher. Countries that had a very severe recent peak needed to resort to very stringent measures, such as the UK, Ireland, the Netherlands. Israel, in spite of its advanced vaccination campaign, has rounded a recent high peak and has been combating this with very stringent measures. Evidently, such measures as school closure and (early) curfews are very invasive.

---

<sup>4</sup> [Nonpharmaceutical Interventions \(NPIs\) | CDC](#)

<sup>5</sup> [Guidelines for the implementation of non-pharmaceutical interventions against COVID-19 \(europa.eu\)](#)

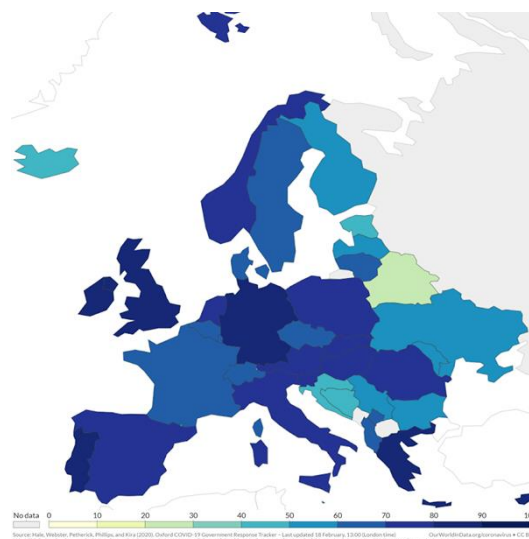
<sup>6</sup> Li et al. (2021). The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (R) of SARS-CoV-2: a modelling study across 131 countries. The Lancet Infectious Diseases, 21(2), 193–202. [https://doi.org/10.1016/S1473-3099\(20\)30785-4](https://doi.org/10.1016/S1473-3099(20)30785-4)

<sup>7</sup> Liu et al. (2021). The impact of non-pharmaceutical interventions on SARS-CoV-2 transmission across 130 countries and territories. BMC Medicine 19:40.

<sup>8</sup> Haug et al. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. Nature Human Behaviour 4: 1303-1312.

<sup>9</sup> Bo et al. (2021). Effectiveness of non-pharmaceutical interventions on COVID-19 transmission in 190 countries from 23 January to 13 April 2020. International Journal of Infectious Diseases 102: 247-253.

Country	14-day incidence <sup>10</sup> (per 100k)		Stringency index <sup>11</sup> (17/02/2020)	B.1.1.7
	26/01/2021	20/02/2021		
Belgium	250	242	60	55%
France	415	397	64	35%
Luxembourg	273	353	57	~60%
Germany	262	131	83	21%
Netherlands	464	294	88	75%
United Kingdom	887	293	86	39%
Ireland	917	250	88	90%
Portugal	1440	490	79	43%
Spain	973	500	71	~20%
Czech Republic	1059	1014	72	
Denmark	242	101	67	
Israel	1271	812	87	



## 5. Methodology for selecting relaxations

To determine which relaxations can be rolled out and in which order, we explain our methodology through some underlying principles, i.e. epidemiological footprint, mental/societal footprint, economic footprint.

### 5.1. Contact budget and epidemiological footprint of relaxations

Not all relaxations are equal in terms of epidemiological impact ('footprint'). According to the size of the population involved, the type of relaxation, and the level of risk for increased transmission, we allocate to each relaxation a specific footprint. The methodology and criteria used for this allocation are explained below.

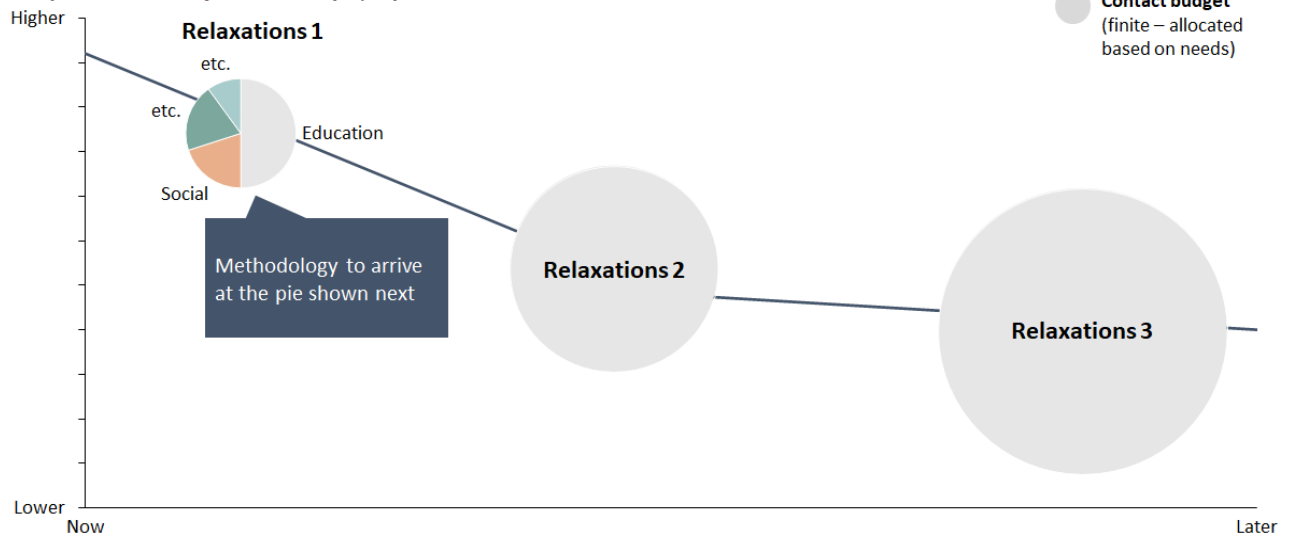
The combined effect of the epidemiological footprints of all relaxations foreseen in a certain phase is not endless, but clearly defined by the epidemiological 'budget': this reflects the epidemiological margin to allow more contacts associated with relaxations. The better the epidemiological situation (i.e. low reproduction number, incidence etc.), the larger the contact budget becomes. As the graph below illustrates, more relaxations with a higher epidemiological footprint would become possible if the epidemiological situation indeed improves.

<sup>10</sup> [COVID-19 Data Dashboard \(gibex.github.io\)](https://gibex.github.io/COVID-19-Data-Dashboard/)

<sup>11</sup> [COVID-19: Government Stringency Index, Feb 18, 2021 \(ourworldindata.org\)](https://ourworldindata.org/COVID-19-Government-Stringency-Index-Feb-18-2021)



### Hosp cases and key indicators (Rt, ...)



This epidemiological ‘budget’ is a societal given; therefore societal choices are to be made when deciding on which relaxations to give priority.

As the illustrative figure below portrays, this budget could be represented by a pie, which can be divided into different numbers and sizes of pieces, each piece representing a sector. By implementing a large relaxation in one sector, other sectors might have to remain closed, whilst with this same budget, another possibility would be to open several sectors, but with smaller relaxations.





## 5.2. Defining the epidemiological footprint for the different relaxations: criteria and methodology

Although it is difficult to assess the precise epidemiological footprint of each activity or reopening, scientific evidence on transmission risks and NPIs can be used to classify the characteristics of certain relaxations as ‘low’, ‘medium’, ‘high’ or ‘very high’ footprint, based on criteria of the environment (outdoor, ventilation), number of people involved (small versus large groups, mixing populations or generations), duration and safety of contacts (with or without mask), possibility to streamline/standardize contacts through a protocol or safety program, ways how to ensure and control the activity. In addition, occupational infection risks as derived from the RSZ-data (see paragraph 5.5) were also taken into account to assess risks per activity and per sector.

	Low footprint	Medium footprint	High footprint	Very high footprint
<b>Environment</b>	Outdoor	Indoor, well ventilated (see SHC ventilation guidelines)	Indoor not well ventilated	
<b>Group size</b>	<10	10-100 and/or <20% capacity	>100 and/or 20-50% capacity	>500 and/or 50-100% capacity
<b>Type of groups</b>	Fixed groups	Mixing groups with time interval	Mixing groups	Internationally mixing groups
<b>Duration of contact</b>	<15 min		> 15 min	More than one day for people without masks
<b>Protective equipment</b>	Mask wearing		No masks	No masks, shouting, talking, singing
<b>Social distancing</b>	Distance >1.5m	Distance <1.5m		Close contact
<b>Organisability and controllability</b>	Highly manageable	Somewhat manageable	Not manageable	
<b>Estimated number and type of population concerned</b>	Very specific small group of population	Specific age range	Full Belgian population and/or intergenerational mixing	International population

This is in essence a semi-qualitative assessment, taken in consensus within the GEMS. For some activities, the assessment is more clear cut than for others, and contextualization is always essential. Not all these measures are of equal weight and often the specific combination of these aspects is important in the epidemiological assessment. This means that this table is a guide to what is conceptually more safe, but that it cannot be used as a sole basis for assessment.

For instance, meeting outdoors in small groups can be safe, provided that these groups do not use the occasion to also meet indoors. Some activities may display a mix of ‘low’ and ‘medium’ or ‘high’ impact: for instance, reopening secondary schools may be highly organized, yet are assessed as ‘high risk’ given the large population



involved, ventilation issues, meetings around schools, etc. Reopening sports activities in small groups outdoors can be 'low impact', provided all the surrounding activities (canteens, dressing rooms, meeting of parents...) are avoided.

Prerequisites, such as extensive testing, contact tracing, effective local outbreak management, and others, may mitigate the risks associated with a reopening, although only up to a certain extent. When deciding on the order of the relaxations based on safety, one has to look at the current status of these prerequisites and not an ideal situation. Testing could be considered as an essential (and compulsory) part of the relaxations/reopenings; we have therefore added several suggestions for specific contexts or populations where dedicated testing could be of added value during relaxations. Furthermore, sector-protocols need to be implemented as they were designed to make the activities safer.



### 5.3. Concrete classification of possible relaxations

The following table attempts to indicate where restarting certain activities within different sectors could be classified in terms of epidemiological footprint. Each relaxation example is assessed for its epidemiological footprint independently and not for the set of listed examples for that sector. All assessments have been made under the assumption that the existing sector protocols are fully respected.

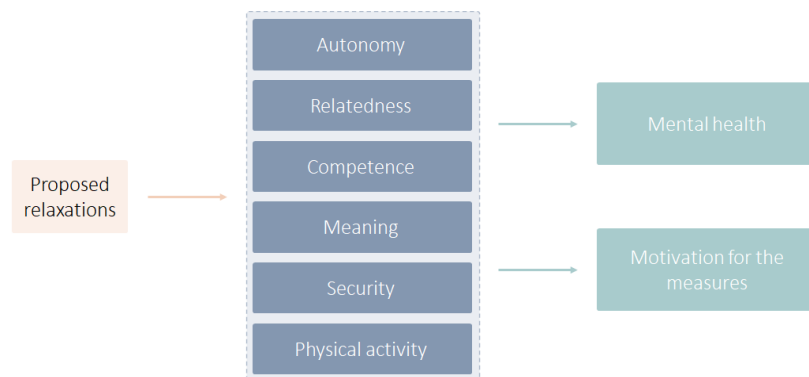
	Low footprint	Medium footprint	High footprint	Very high footprint
<b>Private life</b>	Max 8 p outdoor, at distance	Max 2 indoor (close) contacts	Max 4 indoor (close) contacts	Unlimited indoor (close) contacts
<b>Education</b>	School for special needs 100% (small population)	Higher education 10→20%	Higher education 20→50-100% <b>OR</b> Secondary school 50/50→100% (large population)	All education 100% on site
<b>Youth</b>	Outdoor youth movement, max 10	Indoor activities in youth centres, max 10 p <b>OR</b> Training session of monitors in Easter holiday, with testing protocol <b>OR</b> Summer outdoor youth camps, groups max 50 p	Restart all youth activities with groups up to 50 p	
<b>Culture</b>	Outdoor heritage sites <b>OR</b> Outdoor group activities (e.g. guided tours), 10 p	Outdoor and indoor performances, 50-100 p, and/or <20% capacity <b>OR</b> Outdoor performances, < 200 p <b>OR</b> Outdoor group activities, 50 p <b>OR</b> Indoor activities for socio-cultural sector, max 10 p (small population) <b>OR</b> Outdoor amusement park	Indoor performances, 20-50% audience capacity <b>OR</b> Indoor group activities up to 50 p <b>OR</b> Indoor playground	Indoor performance, > 50% capacity, singing/shouting
<b>Sport</b>	Training outdoor groups of up to 10 p for all ages	Training indoor, no contact, well ventilated, 10 p	Training indoor, contact activities, well ventilated, groups > 10 p <b>OR</b> Competition for non-contact sports <b>OR</b> Changing rooms and canteens open	Competition contact sports



<b>Horeca</b>		Terrace, table of 4 p	Indoor, table of 4 p <b>OR</b> Casinos	Nightclub, dancing <b>OR</b> Group parties (indoor and outdoor)
<b>International travel and tourism</b>		Reopening holiday parks (without restaurants/bars) <b>OR</b>	Allowing non-essential travel across EU/Schengen, with testing and Q post travel	Allowing non-essential travel to/from third countries
<b>Events</b>		Commercial fair without horeca, 1p/10m2	Local, small scale outdoor festival according to CERM <b>OR</b> Receptions outdoors <b>OR</b> Reopening fancy fair/kermis	International large scale outdoor or indoor festival <b>OR</b> Family parties and gatherings
<b>Religion and life moments</b>		Funerals max 15 p (< 20% capacity) <b>OR</b> Religious service and other ceremonies (e.g. wedding) max 15 p	Funerals for larger groups ( 20-50% of capacity) <b>OR</b> Religious service for groups > 15 p	Weddings and other large private gatherings
<b>Care and non profit sector</b>		Indoor collective activities, max 10 p		
<b>Telework</b>	Telework where possible 100%	Essential personnel going back to their office respecting sanitary and social distancing rules	A restricted number of personnel going back to the office respecting sanitary and social distancing rules <b>OR</b> Part-time telework (⅓ rule)	All employees returning to their office

#### 5.4. Mental and societal impact

Mental health of the Belgian population is impacted by the crisis and follows the pattern of the pandemic and respective measures. It is therefore important to take into account what impact certain measures and relaxations might have on people's motivation and mental health as well as on society at large, since this crisis has reinforced socioeconomic inequalities, which themselves have an impact on mental health. It is also clear that specific groups (e.g. adolescents, single people, people with pre-existing conditions and lower socio-economic status) suffer from poorer mental health which should be recognized and addressed. The framework below gives an overview of key theoretical parameters contributing to the improvement of an individuals' mental health and motivation to adhere to the measures (see Annex 1 for a more detailed overview).



- The need for **autonomy** gets nurtured through acts of choice and independence, self-expression and creativity, and the engagement in preferred leisure time activities.
- The need for **relatedness** gets nurtured through close/intimate contacts with significant others, group gatherings, acts of solidarity, and mutual care and is especially precarious in younger generations.
- The need for **competence** gets nurtured through the mastery of tasks, attainment of goals, and the full use and development of individuals' skills.
- The need for **meaning** gets nurtured when one can engage in meaningful activities, has long-term goals to which one commits, and experiences one's different roles and identities in a harmonious way.
- The need for **security/safety** is preserved when the environment is well-structured and predictable, a sufficient (compensatory) income is provided, and sufficient risk-reducing measures are taken to protect people's health.
- Engaging in regular moderate-to-intense **physical activity** has been found to be uniquely related to individuals' mental health during [this pandemic](#).

To evaluate the psychological gains associated with different relaxations, a need-based model comprising the elements above is proposed. A list of potential relaxations was rated by a group of experts in terms of their potential to fulfil these needs. The following table gives an indication of the possible psychological gain of different relaxations.

Using this need-based approach, we can conclude that **some relaxations deserve priority from a mental health perspective**. First, for the general population, it is estimated that allowing larger groups (> 15 persons) to attend funerals and enlarging the number of outside contacts from 4 to 8 will have, respectively, a very large and large psychological impact. Not prioritizing the latter relaxation may even come with a psychological cost if people are not given a solid rationale why this relaxation is unwarranted at this point from a virologic perspective. Second, it should be noted that various relaxations for youth (e.g. opening secondary and higher education to 100%; summer outdoor youth camps in groups of 50p) are deemed to yield very high psychological benefits, presumably



because this group is relatively more distressed. Hence, priority should be given to youngsters and young adults in diverse life domains (education, sports, youth sector). Third, relaxations in the domain of sports, both for adults and youth, and culture are expected to yield (very) large psychological benefits (e.g. training outdoor 10 p; outdoor heritage sites). Finally, in the work domain, being able to return part-time to work is expected to yield large psychological gains as well.

Two additional considerations need to be taken into account. First, although relaxations do create possibilities for improved need fulfillment, these needs can also be supported through **motivating communication** (see annex 3). To the extent people understand the necessity of their persistent efforts, their autonomy gets preserved under constraining circumstances; also, the achievement of a commonly shared goal within a coherent narrative reinforces people's competence and relatedness. Second, in spite of motivating communication and given that several relaxations will not be put in place for quite some time, it is critical to invest in various **compensatory measures** to preserve a further deterioration of people's mental health (see annex 2).

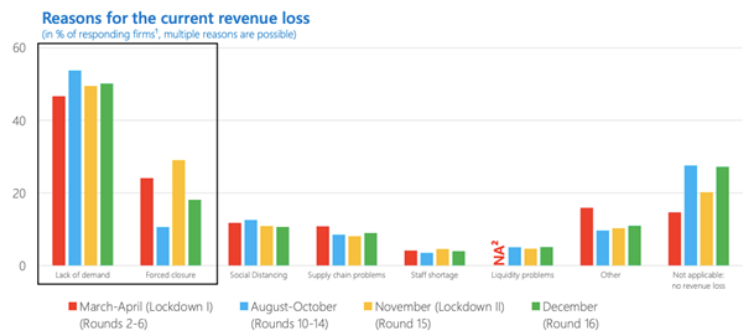
	Low psychological gain	Medium psychological gain	High psychological gain	Very high psychological gain
<b>Private life</b>		Max 2 indoor (close) contacts	Max 8 p outdoor, at distance Max 4 indoor (close) contacts	
<b>Education</b>	Higher education 20% (for lecturers)	Higher education 50% (for lecturers) Higher education 20% (for students)	Higher education 100% Higher education 50% (for students) Secondary school 50/50→100% (for teachers)	Secondary school 50/50→100% (for students)
<b>Youth</b>			Outdoor youth movement, 10 p Indoor youth centres 10 p Summer outdoor youth camps 50 p (for organisers)	Summer outdoor youth camps 50 p (for youth)
<b>Culture</b>		Outdoor 10 p (for visitors) Amusement park (for visitors)	Outdoor heritage sites Outdoor 10 p (for organisers) Performances 100-200 p Amusement park (for organisers)	
<b>Sport</b>			Training indoor 10 p	Training outdoor 10 p
<b>Horeca</b>		Outdoor 4 p (for customers) Indoor 4 p (for customers)	Outdoor 4 p (for business owners and employees) Indoor 4 p (for business owners and employees)	



<b>International travel and tourism</b>			Allow international travel	
<b>Religious and life moments</b>			Religious services > 15 p	Funerals > 15 p
<b>Care and non profit sector</b>			Care and non profit sector: indoor collective activities 10 p (both attendees & organisers)	
<b>Telework relaxation</b>		Telework: restricted number of personnel back to office with distancing)	Telework: part-time and full-time back to work	

### 5.5. Economic considerations

Fear of the virus, i.e. risk perception, is a more important contributor to revenue loss more than forced closure, as is illustrated in the graph with revenue loss in the Belgian context (ERMG<sup>12</sup>). Studies performed in the US (Chetty et al.<sup>13</sup>) and on the comparison between Denmark and Sweden (Sheridan et al.<sup>14</sup>) show that speeding up reopening does not help the economy if individuals fear the virus. The dominance of fear on economic activity (since it depresses general demand) is confirmed in an International Monetary Fund study on 128 countries (see IMF blog<sup>15</sup>). It is therefore important not to go for new relaxations before one can be confident this will not create a significant rise in virus circulation. Such a prospect would hurt the businesses that are already open and thus workers that are currently working. This economic pain would of course be heightened if the situation were to subsequently require a new round of restrictive measures.



Of course, closures are costly and should not be delayed unnecessarily. Allocating the sequence of reopenings for a given contact budget over time naturally depends on how far protocols can go in making reopening the various activities safe. But next to this, the following economic considerations are relevant:

1. Next to its mental health implications, keeping schools open has long-term benefits in terms of enhancing students' 'human capital' and future productivity and wages, especially for more fragile youths (evidence shows that school interruption does magnify inequality in educational achievement).
2. While keeping activities closed implies costs, financial compensation can limit individual losses, which does not work for education, an additional reason to keep schools open.
3. Financial compensation has the advantage of limiting the potentially considerable impact on mental well-being due to economic hardship and uncertainty about the future. As many people are currently receiving only part of their salary as compensation and are most often not compensated for personal investments made, this impact is however not to be underestimated. In addition, the economic status of an individual can have a considerable impact on their mental wellbeing due to immediate financial concerns and uncertainty about the future.

While cautious and gradual reopening can limit the risk of a third wave, there will remain a non-zero probability one will have to partly reverse reopening to avoid it. This means one should think ahead about how one would do it efficiently:

1. On this front, adjusting private-life rules has the advantage of not really being economically costly. The same is true with varying mask-wearing rules. To a lesser extent, this is valid too for youth/sport activities supported by volunteers : while their social impact is important, they can be switched on and off relatively easily from an economic point of view.

<sup>12</sup> ERMG dashboard report, 22 December 2020

<sup>13</sup> Chetty et al. (2020). How did COVID-19 and stabilisation policies affect spending and employment?, Working Paper n°27431, National Bureau of Economic Research, June 2020, and revised November 2020. The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data.

<sup>14</sup> Sheridan et al. (2020). Social distancing laws cause only small losses of economic activity during the COVID-19 pandemic in Scandinavia. Proc Natl Acad Sci U S A. 2020 Aug 25;117(34):20468-20473. doi: 10.1073/pnas.2010068117.

<sup>15</sup> Grigoli & Sandri. (2020). COVID's Impact in Real Time: Finding Balance Amid the Crisis, IMF Blog, 8 October 2020.



2. At the other extreme, with the current high level of uncertainty (due to the emergence of new variants and uncertainty related to vaccine deliveries), it makes little economic sense to reopen activities that need to be planned up to six months ahead (events, big culture, big sport): quasi-certainty is needed for these sectors this can at this point not be offered for events taking place before the month of August. Of course, this needs permanent re-evaluation.

Being prepared to reverse course allows for faster gradual deconfinement, just like having a car with better brakes allows it to drive faster without taking more risks. Of course, communicating openly the risk of partial reconfinement when the reopening takes place is important, for both the credibility of the authorities and the acceptance of the reversal.

### Occupational health considerations

A number of labour market indicators are adversely affected. This is of specific concern, since data from a longitudinal survey study indicates that temporarily losing work (on a full-time or part-time basis) has an important impact on mental health. For example, temporary unemployment increased in October and November, while the annual growth rate of the number of unemployed job seekers also registered an increase in November. Business confidence and the number of vacancies received also suffered a decline during that period. However, we note that the figures are turning less negative than during the first wave in 2020, with even slight economic growth in the fourth quarter<sup>16</sup>.

The following table gives an overview of the infectious occupational hazard for workers in key sectors with a 14-day incidence (29 Sept – 12 Oct 2021) higher than the average 14-day incidence of the sectors. Depending on the type of contacts between staff and customers/visitors, higher incidences in staff from particular sectors can spread out to the clients/visitors as well (e.g. fitness, contact professions, horeca,...).

Sector	14-day incidence of employees		Number of employees (not including self-employed)	NACE-code
	(29/09-12/10/2021)	(06/10-19/10/2020)		
Football clubs	1609	2250	3,605	93121
Sportbonden	1428	2250	1,961	93191
Sports clubs	1394	2349	5,954	9312
Fitness centers	1187	1764	3,707	9313
Construction of office buildings	1139	2556	1,756	41202
Specialized food retail	1117	1785	3,312	4729
Performing arts	1020	1377	5,196	5196
Sports, leisure, recreation	955	1660	26,911	93
Hotels	792	1160	20,076	5510
Arts, amusement, recreation	785	1395	60,382	R
Human health care	780	1631	261,154	86
Restaurants	756	1368	149,471	5610
Passenger transportation (land)	719	1276	40,751	493
Restaurants full service	685	1258	89,197	56101
Cafés/bars	645	1352	19,070	56301
Hair and beauty	628	1446	13,535	9602
Education	597	1294	531,993	P
Catering	588	1119	22,449	562
<b>All sectors</b>	<b>511</b>	<b>1053</b>	<b>4,923,483</b>	
<b>General population</b>	<b>436</b>	<b>848</b>		

<sup>16</sup> For more information: MAG report (19/02) and [www.steunpuntwerk.be](http://www.steunpuntwerk.be)

## 6. Multicriteria analysis<sup>17</sup> per sector or type of relaxation

When compiling all the above mentioned assessments and considerations, we come to the following multicriteria analysis and recommendations per 'sector'.

Private life			
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations
<p>The impact of an increase in the number of close contacts, has been estimated as 'high footprint', given the entire Belgian population is implied, given the majority of viral transmission occurs in private life, and given the difficulty to streamline or control.</p> <p>In particular indoor, close, and prolonged contacts without respect of mask wearing, safe distance and proper ventilation (e.g. indoor gatherings of family and friends with a meal) are considered to be of very high risk.</p> <p>As long as the vulnerable groups have not yet been fully vaccinated, private gatherings, especially with inter- generational mixing, remain to be avoided.</p> <p>Outdoor contacts are much less at risk for viral transmission provided also here a safe distance is respected. This is much more feasible in small groups.</p> <p>The epidemiological footprint for private life is estimated for the whole Belgian population (e.g. 11,500,000 individuals).</p>	<p>Private life, and having meaningful interactions with others is very important for people's sense of relatedness and autonomy, which foster their mental health.</p> <p>Special attention should go to singles of all age groups, they are disproportionately affected.</p>	<p>In contrast with economic sectors, where re-opening or interrupting activities has considerable organisational and financial impact (e.g. adaption of protocols, buying or selling stock of goods,...), changes in rules for private life can be organised at a relatively short notice.</p>	<p>Consistency and clear rules for limited private contacts have been the mainstay since the second wave, and have been essential in avoiding a third wave so far.</p> <p>Maintained and clear communication on the risks of private contacts will be essential to continue to reduce the risks.</p> <p>Curfews are epidemiologically very influential as they stimulate adherence to measures forbidding festive between-household gatherings indoors and outdoors that occur late in the evening and at night, and may therefore be more prone to violate distancing rules.</p> <p>Allowing large gatherings in the private atmosphere (e.g. celebrations, parties), would require a clear 'protocol' and set of rules - which is unlikely to happen within the private home setting.</p>
Recommendations			
<ul style="list-style-type: none"> <li>→ The GEMS recommends to keep the number of private contacts indoors restricted to 1 in a first phase, and even in subsequent relaxations to increase this number only very gradually (e.g. not more than 2 in a next phase, and no more than 4 later on) as these bring the highest risk.</li> <li>→ Once relaxations can be considered, contacts outdoors could be expanded to 8-10 people at a distance and with groups as homogenous over time as possible.</li> <li>→ Group numbers should correspond maximally with other outdoor activities e.g. small groups for sports training or youth work.</li> <li>→ In later stages, n of contacts indoor should correspond with table sizes in horeca (e.g. max. 4 p).</li> <li>→ Constructive communication and inspiration guides could support maintenance of safe yet meaningful social contacts in private life.</li> <li>→ Social mobilisation projects could be financed to support the comfort of engaging in outdoor activities, social cohesion and relatedness among citizens.</li> <li>→ Family gatherings and parties are to be absolutely avoided as long as possible as they can have very high epidemiological impact.</li> <li>→ Curfews are an important tool to avoid unsafe private gatherings and are not to be released too soon.<sup>18 19 20 21</sup></li> </ul>			

<sup>17</sup> Estimations on number of people originate from RSZ data, Rijksdienst voor zelfstandigen or other sources when specified.

<sup>18</sup> Khatatbeh M. (2020). Efficacy of Nationwide Curfew to Encounter Spread of COVID-19: A Case From Jordan. *Frontiers in public health*, 8, 394.

<sup>19</sup> Andronico et al. (2020). Evaluating the impact of curfews and other measures on SARS-CoV-2 transmission in French Guiana. *MedRXiv*.

<sup>20</sup> Haug et al. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. *Nat Hum Behav* 4, 1303–1312.

<sup>21</sup> Baunez et al. (2020). An early assessment of curfew and second COVID-19 lock-down on virus propagation in France. *MedRXiv*.



Educational system																				
Epidemiological footprint		Mental and societal impact	Economic considerations	Organisational considerations																
<p>Overall, relaxations in the educational system are to be considered as ‘high risk’, given large numbers of population implied (pupils, students, teachers, other staff), as shown in this overview of all impacted populations per community. Reopening schools typically causes overcrowding at public transport on peak moments.</p>		<p>Education is a key life domain to support children’s cognitive, social, emotional, and identity development, with both teachers and peers playing a fundamental role.</p>	<p>In the long term, proper education is economically highly important. Educational loss is very difficult to correct or to compensate for and is thus to be avoided at all times.</p>	<p>The school year is ending in June, which means opening this sector may not be relevant anymore if late in the school year.</p>																
<table><tr><th></th><th>Flanders</th><th>FWB</th><th>German</th></tr><tr><td>Primary</td><td>810.930</td><td>354.725</td><td>5.667</td></tr><tr><td>Secondary</td><td>534.829</td><td>401.917</td><td>5.425</td></tr><tr><td>Higher</td><td>283.826</td><td>202.749</td><td>1.501</td></tr></table>			Flanders	FWB	German	Primary	810.930	354.725	5.667	Secondary	534.829	401.917	5.425	Higher	283.826	202.749	1.501	<p>Teachers can help to prevent and detect problems among children (e.g. mental or physical abuse at home).</p>	<p>Please find below an overview of the impacted populations (i.e. total numbers of teachers/professors including all communities).</p>	<p>Very strict protocols exist.</p>
	Flanders	FWB	German																	
Primary	810.930	354.725	5.667																	
Secondary	534.829	401.917	5.425																	
Higher	283.826	202.749	1.501																	
<p>Also, most activities take place in (not well ventilated) indoor spaces</p>		<p>An increasing number of mental health problems has been documented in mid- and late-adolescents (e.g. students in higher education).</p>	<table><tr><th></th><th>Total</th></tr><tr><td>Primary</td><td>91.011</td></tr><tr><td>Secondary</td><td>103.818</td></tr><tr><td>Higher</td><td>72.049</td></tr></table>		Total	Primary	91.011	Secondary	103.818	Higher	72.049	<p>Repeated testing of secondary school teachers can help to mitigate risks.</p>								
	Total																			
Primary	91.011																			
Secondary	103.818																			
Higher	72.049																			
<p>On the risk mitigating side, most activities are highly organisable and controllable</p>		<p>Closure of schools and online teaching were found to lower pupils’ motivation and to increase the gap between children who have learning difficulties or underprivileged children and others.</p>																		
<p>Specific, targeted and well-organized relaxations for small groups may have low epidemiological impact</p>																				
<p>For higher education, a clear distinction between what happens in auditoria (can be organized), and outside needs to be made (student social life). In this context, the kotbubbel (= student ‘household’) could help regularize safe social networks of students provided a clear division is made between the student and home household.</p>		<p>Belgium has managed to keep schools and educational systems open so far; careful re-opening should help not to jeopardize the gains here</p>																		
		<p>Adult education: importance to help lead socially vulnerable to the job market.</p>																		
Recommendations																				
<p>→ Secondary school: given high epi impact (but also important mental health issues in adolescents): GEMS suggests to open up very gradually, awaiting first the impact of the B.1.1.7 spread as predicted in the above mentioned models. Priority can be given to small scale targeted relaxations e.g. in schools for special needs and professional education. After Easter holidays, a gradual return of 2nd and 3rd grade of secondary school students can be considered. Yet, in the meantime, teachers, the school health services, and the health promotion sector need to combine forces to co-create and disseminate highly structured and age-adapted psychosocial and health education packages to engage young people in group discussions mental health concerns and their (lack of) motivation to adhere to the measures.</p>																				
<p>→ Higher education: re-opening up to 20% can be considered as medium impact step, but cave unsafe gatherings around – could be proactively counteracted with organized outdoor activities in small groups, the implementation of the (revised) kotbubbel idea, and the hiring of additional psychologists to provide psychological care to students.</p>																				
<p>→ Adult education: priority should be given to practical classes on site.</p>																				



Horeca									
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations						
<p>Typically large epidemiological footprint: large population of different age categories implied (customers and staff), activities are intrinsically unsafe (long standing close contacts, talking and laughing without mask, crowding indoor, variable ventilation levels, alcohol intake decreases risk perception and adherence to rules).</p> <p>The epidemiological footprint for the economic sectors is estimated for the whole Belgian population (e.g. 11.500.000 individuals).</p>	<p>Horeca is closely associated with leisure activities and therefore estimated to have a medium to high gain, depending on whether it concerns workers or customers.</p>	<p>Part of the sector has alternatives to remain open, but that is not always sufficient as there are many other factors impacting the number of customers.</p> <p>Please find below the total population economically impacted for the Horeca (including employees and independents).</p> <table><tr><td>Cafés</td><td>75.588</td></tr><tr><td>Restaurants (incl. catering)</td><td>145.003</td></tr><tr><td>Accommodations</td><td>25.115</td></tr></table> <p>The proportion of financially vulnerable employees has been estimated to be the highest in horeca compared to other sectors<sup>22</sup>.</p>	Cafés	75.588	Restaurants (incl. catering)	145.003	Accommodations	25.115	<p>Protocol is under revision, with additional attention for ventilation</p> <p>Auto-assessment and enforcement is important.</p>
Cafés	75.588								
Restaurants (incl. catering)	145.003								
Accommodations	25.115								
Recommendations									
<p>→ Restart very gradually and not in first relaxation (only when sufficient contact budget available): exclusively outdoors, tables of max. 4 p.</p> <p>→ Indoor only in a later phase with ventilation certificate, ventilation norms and status should be upgraded (and considered to make this a condition for reopening).</p> <p>→ Facilities for large groups (e.g. feestzalen): to be considered only in much later stages (high risk assessment).</p>									

<sup>22</sup> Horemans J., Kuypers S., Marchal S., Marx I. (2020). [De kwetsbare werkende. Een profielschets van armoede en financiële bestaanszekerheid bij werkende Belgen](#). Centrum voor Sociaal Beleid Herman Deleeck, Universiteit Antwerpen.



Economic sectors which are open (focus on telework, see also separate note in 'plan A')			
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations
<ul style="list-style-type: none"> <li>Typically large epidemiological footprint: large population of different age categories implied, reducing on-site inter-person activities can have a large beneficial epidemiological impact, as it prevents bridging households.</li> </ul> <p>Likewise, telework has been a very strong asset in decreasing at risk contacts between persons</p> <p>The epidemiological footprint for the economic sectors is estimated for the whole Belgian population (e.g. 11.500.000 individuals).</p>	<ul style="list-style-type: none"> <li>People working constantly in telework report to suffer from lack of social contacts and difficulties in demarcating work and leisure time (blurring).</li> </ul> <p>Motivation for telework within the sectors has been decreasing gradually</p>	<p>The economic impact of teleworking is multifaceted and complex, having both positive and negative impacts on productivity and worker satisfaction that is highly job function and sector-dependent. Its overall impact is ambiguous and could hamper innovation<sup>23</sup> in the long run.</p>	<ul style="list-style-type: none"> <li></li> </ul>
Recommendations			
<p>→ In early stages of relaxations, continued focus on telework wherever possible is essential to keep sufficient epidemiological budget for necessary other relaxations</p> <p>→ Only in late stages of relaxation, consider to make telework again 'voluntary'</p>			

<sup>23</sup>

<https://www.oecd.org/coronavirus/policy-responses/productivity-gains-from-teleworking-in-the-post-covid-19-era-a5d52e99/> and [https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945\\_policy\\_brief\\_-\\_covid\\_and\\_telework\\_final.pdf](https://ec.europa.eu/jrc/sites/jrcsh/files/jrc120945_policy_brief_-_covid_and_telework_final.pdf) and see also : <https://blocnotesdeleco.banque-france.fr/en/blog-entry/teleworking-how-will-it-affect-productivity>



Healthcare sector															
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations												
<p>The health care sector at large is heavily affected by the pandemic (both impact on staff and on own activities).</p> <p>Health-care setting is still an important cause of new covid-19 infections and outbreaks, both for staff and patients</p> <p>Vaccination of HCW ongoing; completion will be an important milestone as this will increase the sectors' resilience</p> <p>The threat of the third wave is real, the sector needs to be prepared for this (mentally, logistically).</p> <p>Nursing homes: if sufficient vaccine-induced immunisation in nursing homes is reached, relaxations within the nursing homes are expected to have a limited impact on transmission and hospitalisations (see advice GEMS d.d. 17/02).</p>	<p>Mental health of health care workers and patients has been considerably affected after 2 large epidemic waves and with fear for a third wave before the sector has been fully vaccinated</p> <p>Necessary and high-standard care for non-COV-patients has been jeopardized for &gt; 1 year now; needs of non-COVID-patients often not met</p> <p>Patients with long-term hospital stays, suffer a lot from lack of visitors in hospital</p> <p>The deterioration of mental health during the pandemic has worsened waiting lists and lack of psychiatric care capacity for patients in need</p>	<p>All lines in the sector have not been able to function normally for over a year, causing an important backlog in work and revenue.</p> <p>The total population</p> <table><tr><th>Activities</th><th>Total number of employees and self-employed</th></tr><tr><td>General practitioners</td><td>14.739</td></tr><tr><td>Specialist physicians</td><td>37.094</td></tr><tr><td>Hospital activities</td><td>221.693</td></tr><tr><td>Other activities for human health</td><td>90.424</td></tr><tr><td>Dental care</td><td>12.618</td></tr></table>	Activities	Total number of employees and self-employed	General practitioners	14.739	Specialist physicians	37.094	Hospital activities	221.693	Other activities for human health	90.424	Dental care	12.618	<p>Organisation in two streams (covid/non-covid) will have to remain until 70% of the population has been vaccinated and numbers of new covid-19 cases remain low</p>
Activities	Total number of employees and self-employed														
General practitioners	14.739														
Specialist physicians	37.094														
Hospital activities	221.693														
Other activities for human health	90.424														
Dental care	12.618														
Recommendations															
<p>→ Activities and way of working for first, second and third line actors unchanged so far until sufficient vaccination coverage among vulnerable groups. Activity planning for hospitals likely 'not yet back to normal' for the upcoming 6 months</p> <p>→ Progressive relaxations within nursing homes foreseen as described in advice GEMS d.d. 17/02.</p> <p>→ Consider whether rapid Ag testing and ad-hoc vaccination could be considered for long-term hospital patients (to be assessed by RAG).</p>															



Welfare and non-profit/NGO sector			
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations
<p>Overall, the population implied for specific activities within this sector is limited.</p> <p>With good protocols, targeted relaxations are not considered to have important epidemiological impact.</p>	<p>Financial stress has a strong impact on mental health by negatively affecting individuals' need for autonomy and competence. Social services, mental health services, street educators, youth associations, etc., (the so-called first line) face great distress. Collective activities would be of great support and prevention tools for people suffering from loneliness and mental fragility. Today, these activities are forbidden or made very difficult.</p>	<p>After a year of pandemic, the social impact of the epidemic is particularly felt. It is accentuated by the fact that public services have become literally inaccessible: VDAB/Forem/Actiris, CPAS/OCMW, mutuals, etc. People sometimes have to wait months before receiving their replacement income. Social workers are no longer able to help people, as they have to deal with congested telephone lines.</p>	
Recommendations			
<ul style="list-style-type: none"> <li>→ Set up in each public institution a relay worker/facilitator to give access to social workers. Make physical accessibility compulsory in those administrations that have an essential role in the accessibility of replacement income.</li> <li>→ Make targeted activities for socio-economic groups possible with a very strict protocol, taking into account the stability of the group, its size, length of meetings, ventilation conditions, etc. (e.g. groupe de paroles avec des jeunes, groupe d'échange thématique dans des centres de santé mentale, animation d'atelier de santé communautaire dans les maisons médicales, groupe de soutien à la parentalité, thérapie de groupe, etc.).</li> </ul>			



Youth												
Epidemiological footprint		Mental and societal footprint	Economic considerations	Organisational considerations								
<p>Diverse age ranges/activities considered: 0-12 (children), 13-18 (adolescents), 19-25 y (young adults)</p> <p>Number of people concerned is limited, the large majority is not vulnerable to severe disease. However, they are connected with vulnerable groups via their parents and relatives.</p> <p>Youth (18-25) typically make more contacts than older or younger age groups.</p> <p>Unsafe gatherings and meetings among youth (18-25) have been known to be part of the root causes of the second wave (given the spillover effect on older and more vulnerable generations).</p> <p>Total youth population per age group in Belgium<sup>24</sup>:</p> <table><tr><th>Age groups</th><th>Population</th></tr><tr><td>0-14</td><td>1.935.671</td></tr><tr><td>15-19</td><td>633.651</td></tr><tr><td>20-24</td><td>668.176</td></tr></table>		Age groups	Population	0-14	1.935.671	15-19	633.651	20-24	668.176	<p>Youth is suffering mentally considerably more than the rest of society.</p> <p>Especially those studying in higher education had very limited contact, which forestalls their need for relatedness and autonomy.</p> <p>Large disparity among children and youth: age groups 0-12 and 13-18 have more ‘rights’ to make contacts in contrast to 18-25 age group.</p> <p>The Maisons de jeunes / Jeugdhuizen are closed for the moment. As we know, young people are facing great difficulties, mental distress and lack of contact. For some of them, Maisons de jeunes / Jeugdhuizen are an essential reference point and a real support.</p>	<p>Youth camps and stages are an important alternative for working parents during school holidays.</p> <p>Youth associations account for 4330 employees/independent s.</p> <p>In 2015, 126.000 volunteers were involved in youth associations in Belgium<sup>25</sup>.</p>	<p>Youth camps last summer were well organized and caused little viral transmission: this model can be repeated.</p> <p>During Easter holidays, typically several training sessions for monitors are organized – to be considered whether a dedicated testing schedule could mitigate risks.</p>
Age groups	Population											
0-14	1.935.671											
15-19	633.651											
20-24	668.176											
Recommendations												
<p>→ The GEMS advises to keep strict rules for children and youth activities i.e. small groups (max 10), but to extend this for all age ranges until 25 y, provided activities are supervised, outdoors and well organized.</p> <p>→ Training sessions for monitors during Easter holidays to be considered with dedicated testing schedules to mitigate.</p> <p>→ Open the Maisons de jeunes / Jeugdhuizen and the collective activities with a very strict protocol and without horeca-activities, taking into account the stability of the group, its size, length of meetings, ventilation conditions, etc.</p>												

<sup>24</sup> [STATBEL: Structure de la population](#)

<sup>25</sup> [Fondation Roi Baudouin: Le volontariat en Belgique - Chiffres-clés](#)



Culture											
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations								
<p>Very diverse sector, varying safety levels, depending on size of audience, level of organization and interaction: professional vs amateur, performances vs group or individual activities.</p> <p>Overall considered as ‘medium’ to ‘high’ risk, given the number of people concerned: e.g. 120.000/7200 staff in VI/Bru working in 2100 infrastructures/facilities. About 68% of the Belgian population participates in culture<sup>26</sup>.</p> <p>Overall well-organised and streamlineable activities, with protocols, safe contacts. However, many people are convening: side-activities may be at risk (transport, toilets, cafeteria, crowding,..).</p> <p>RSZ-data reveal higher than average infections rates among professional culture workers</p>	<p>The engagement in, especially enjoyable, leisure time, such as cultural activities, has been found to contribute to individuals’ well-being by fostering a sense of meaning (Schulz et al., 2018)<sup>27</sup>.</p> <p>Volunteering or participating in cultural associations is an essential part of societal life</p>	<p>Sector has suffered a lot during crisis. Like horeca, this sector employs many financially vulnerable persons<sup>28</sup>, for whom it is not always easy to foresee an alternative to make up for lost revenue. Continued financial and psychological support for this sector is therefore essential.</p> <p>Please find below the total number of employees and independents working in cultural sub-sectors.</p> <table><tr><th>Type of activities</th><th>Total</th></tr><tr><td>Creative, artistic and performance activities</td><td>51.677</td></tr><tr><td>Recreational and leisure activities</td><td>14.150</td></tr><tr><td>Libraries, archives, museums and other cultural activities</td><td>8.196</td></tr></table> <p>In 2015, 232.000 volunteers were involved in youth associations in Belgium<sup>29</sup>.</p>	Type of activities	Total	Creative, artistic and performance activities	51.677	Recreational and leisure activities	14.150	Libraries, archives, museums and other cultural activities	8.196	<p>For performing arts it is very important to know well in advance when activities can restart as artists need to be booked.</p> <p>Consider repeated testing for artists.</p> <p>For large scale performances consider prior Ag-testing for audience.</p> <p>Additional attention to ventilation in indoor settings according to the norms as mentioned by the Superior Health Council.</p> <p>Important overlap with issues in events’ sector (see below)</p>
Type of activities	Total										
Creative, artistic and performance activities	51.677										
Recreational and leisure activities	14.150										
Libraries, archives, museums and other cultural activities	8.196										
Recommendations											
<p>→ In early stage of relaxations, connoisseur to allow relaxations for ‘low epidemiological impact’ activities (e.g. outdoors in small groups, cultural heritage...), as well as socio-cultural activities for small groups of vulnerable people</p> <p>→ In second or third relaxations, activities for audiences and larger groups can be restarted with respect for strict protocols and prevention of crowding</p>											

<sup>26</sup> [Culture statistics - cultural participation - Statistics Explained \(europa.eu\)](#)

<sup>27</sup> Schulz, P., Schulte, J., Raube, S., Disouky, H., & Kandler, C. (2018). The role of leisure interest and engagement for subjective well-being. Journal of Happiness Studies, 19(4), 1135-1150.

<sup>28</sup> Dries Lens, Ive Marx en Ninke Mussche. De initiële effecten van de COVID-19 pandemie op de Belgische arbeidsmarkt – opkomende ongelijkheden. COVIVAT beleidsnota 6, December 2020, Leuven / Antwerpen, zie <https://sites.google.com/view/covivat/publicaties>

<sup>29</sup> [Fondation Roi Baudouin: Le volontariat en Belgique - Chiffres-clés](#)



Sports															
Epidemiological footprint	Mental and societal impact	Economic considerations	Organisational considerations												
<p>Considerable part of the population involved (figures for ...) - more than 1.4 million people in sports clubs.</p> <p>Risk depends heavily on context (outdoor versus indoor, fixed small groups versus competition, n-contact versus contact, side-activities such as canteens, dressing rooms, gatherings of parents and friends).</p> <p>RSZ-data: professionals working in the sports sector carry considerable risk (football, fitness,...).</p> <p>Professional sports are allowed, but pose a large risk when (large) audiences are allowed again, as behavior of sports audiences is associated with higher risk (shouting, singing) as other audiences</p> <table border="1"> <thead> <tr> <th></th><th>Flanders</th><th>FWB</th><th>German</th></tr> </thead> <tbody> <tr> <td>Recognised / subsidised sports federations</td><td>+/- 1.4 mio</td><td>703.421</td><td>20.662</td></tr> <tr> <td>Number of sports clubs / sports infrastructures</td><td>16.791 / 10.600</td><td>7.066</td><td>240</td></tr> </tbody> </table>		Flanders	FWB	German	Recognised / subsidised sports federations	+/- 1.4 mio	703.421	20.662	Number of sports clubs / sports infrastructures	16.791 / 10.600	7.066	240	<p>Preserving the population's level of physical activity, which has been declining during the second lockdown, contributes both directly and indirectly (i.e. through the satisfaction of basic psychological needs) to individuals' mental health<sup>30</sup>.</p> <p>Volunteering or participating in sports associations is an essential part of societal life</p>	<p>Professional sports are largely functioning (but without audience)</p> <p>Non-professional activities are spread over heterogeneous landscape of clubs, associations (often thriving on volunteers) and private enterprises (e.g. fitness)</p> <p>4520 employees and independents are working in fitness centers in Belgium.</p> <p>In 2015, 285.000 volunteers were involved in youth associations in Belgium<sup>31</sup>.</p>	<p>Extensive and phased protocols have been made by the sector and administration</p> <p>Additional attention for ventilation and auto-risk-assessment are essential</p> <p>Consider additional testing for workers in specific sectors e.g. fitness staff</p>
	Flanders	FWB	German												
Recognised / subsidised sports federations	+/- 1.4 mio	703.421	20.662												
Number of sports clubs / sports infrastructures	16.791 / 10.600	7.066	240												
Recommendations															
<ul style="list-style-type: none"> <li>→ In an early stage, outdoor training of non-contact sports may be considered in small groups (up to 10 p)</li> <li>→ Activities indoor and presence of audiences to be considered in later stages.</li> <li>→ Communication of protocols and self-assessment tools for clubs, amateurs.</li> <li>→ Professional sporters should adopt much more an exemplary function in prevention of transmission</li> <li>→ Fitness: norms for ventilation, consider repeated testing of staff as well as low-threshold sampling.</li> </ul>															

<sup>30</sup> Williamon, A. & Antonini Philippe, R. (2020). Wellbeing in and through performance: perspectives from sports and music. *Frontiers in psychology*, 11, 399.

<sup>31</sup> [Fondation Roi Baudouin: Le volontariat en Belgique - Chiffres-clés](#)



International travel and tourism									
Epidemiological footprint	Mental and societal footprint	Economic considerations	Organisational considerations						
<p>International travel is associated with generation of more contacts and facilitates the exchange of different types of viruses.</p> <p>International travel has been found at the origin of the first and (in part) the second wave in Belgium, as well as in other countries.</p> <p>A high number of citizens is implied in traveling. The estimated share of Belgian population participating in tourism for personal purposes in 2018, i.e. they undertook at least one tourist trip for personal purposes during the year, is of 7.820.000 individuals<sup>32</sup>.</p> <p>Of particular concern are frequent (business) travelers, migrant workers and those visiting foreign family and friends: more at risk contacts are made, and positivity ratios among this population upon return are often much higher than in Belgium, depending on the epidemic’s evolution in these countries.</p>	<p>Demand for international travel is particularly intense as a leisure activity during the school holiday periods[</p> <p>Besides, international travel plays an important role in maintaining relationships with friends and families abroad. This is particularly the case for border communities.</p> <p>Discouraging as only measure is not sufficient to prevent the burden of travel-related imported cases, more structural measures are needed</p>	<p>Belgium is a country at the crossroads of Europe; in particular Brussels has a strong international character.</p> <p>Sector has not been closed formally with the second wave, but suffering significant losses due to lack of clear perspective.</p> <p>Certain specific subgroups:</p> <p>-business travelers (to be further rationalized)</p> <p>-Seasonal and migrant labourers (to be closely followed up, encourages for repeated testing)</p> <table><tr><th>Activities</th><th>Number of employees/self-employed</th></tr><tr><td>Travel agencies</td><td>16.043</td></tr><tr><td>Tour operators</td><td>13354</td></tr></table>	Activities	Number of employees/self-employed	Travel agencies	16.043	Tour operators	13354	<p>Testing before or upon arrival + quarantaine of 10 d upon return, with testing at d1 and d7. This needs to be enforced.</p> <p>Repeated testing schedules for seasonal or migrant labourers may be considered.</p>
Activities	Number of employees/self-employed								
Travel agencies	16.043								
Tour operators	13354								
Recommendations									
<p>→ Continue to discourage all types of international travel until group immunity among Belgian population has been reached (this included non-essential but also business travel), with exception for the border regions</p> <p>→ Keep and enforce very strict measures for those international travels which nevertheless take place: negative testing before travel towards Belgium, quarantaine and testing at d1 and d7 after return from red zones. Consider use of ‘quarantaine hotels’.</p> <p>→ Given all EU-member states are facing similar challenges with vaccination roll-out versus threat of new variants, strive towards maximal inter-European collaboration in travel-related measures, including reciprocal travel agreements between neighboring countries</p> <p>→ Specific information campaigns and or more intensive testing schedules are needed for particular target groups (travelers visiting friends, relatives abroad, seasonal and migrant workers).</p> <p>→ We kindly refer to our advice already given on seasonal workers</p>									

<sup>32</sup> [Eurostat: Toerismestatistieken](#)



Events			
Epidemiological footprint	Mental and societal footprint	Economic considerations	Organisational considerations
<p>Wide range of activities, focused on bringing people together.</p> <p>Depending on type of activity, footprint ranges from high (commercial fair, receptions, company and private gatherings,...) to very high footprint (large scale festivals).</p> <p>Strong international orientation, which implies risks for further import and spread of novel variants.</p> <p>Certain events (e.g. festivals) are particularly attended by a specific age range (18-30), which is at low risk for severe disease but which can further transmit disease to more vulnerable groups.</p>	<p>Activities are considered as a 'proxy' for society regaining normality again (in particular for youth).</p>	<p>One of the sectors which has been closed for the entire duration of the pandemic.</p> <p>Important international dimensions (both in organization/staff and visitors).</p>	<p>CERM may help to select corona proof events in later stages.</p> <p>Prior testing and/or quarantine after event to be considered as possible mitigation effect.</p> <p>When opening, ventilation and other golden rules are crucial (cf. Moritz et al. 2020).</p>
Recommendations			
<ul style="list-style-type: none"> <li>→ Large scale and /or 'full contact' events are to be considered for later stages only, i.e. when at least 70% of the population is vaccinated. Even then, the strong international context is of concern as a risk factor for import and spread of novel variants.</li> <li>→ Smaller scale, local events where 6 golden rules can still be respected may be considered in periods with low viral transmission (i.e. high contact budget), preferably with already considerable protection of the vulnerable population (65+ and those with comorbidities) and guided by the CERM.</li> </ul>			



Religion and life moments			
Epidemiological footprint	Mental and societal footprint	Economic considerations	Organisational considerations
<p>Throughout the epidemic, religious gatherings and celebrations have been associated with large outbreaks/superspreading events (high number of people; close contacts in ill-ventilated spaces, difficult to streamline,...)</p> <p>Singing, shouting and exclamation generate more risk for aerosol production</p> <p>Risks are closely linked to those of private gatherings</p>	<p>Religion is considered a fundamental right, and to be handled in a different way than leisure or other private activities</p> <p>Religion can offer important moral support in times of hardship and crisis</p> <p>Numerous religious celebrations have been postponed or lived in a silent manner</p> <p>Funerals with very limited number of guests are perceived as very harsh and makes mourning more difficult. Funerals cannot be postponed or planned in contrast with other celebrations</p> <p>Weddings have been often postponed (see also private gatherings)</p>		<p>Heterogenous sector, difficult to streamline</p> <p>Protocols should be further refined, attention to safe seating, respect for 6 golden rules, mask wearing, no singing or shouting, proper ventilation</p> <p>Strong similarities with culture protocols</p> <p>Rapid antigen testing of guests could be explored as extra layer of safety for funerals and marriages</p>
Recommendations			
<ul style="list-style-type: none"> <li>→ Priority may be given early to increasing n of gatherings for funerals, provided strict protocols respecting the golden rules are adhered to. Additional rapid antigen testing can be considered for mitigation of risks</li> <li>→ When more large scale relaxations are considered, number of persons in organised religious ceremonies may be increased (in line with audiences for e.g. culture)</li> <li>→ Large family gathering associated with ceremonies (e.g. marriages, confirmations,...) are still to be avoided until at least all vulnerable groups have been vaccinated</li> </ul>			



## Overview of annexes

1. Estimated psychological impact of relaxations
2. Executive summary of MAG (Mental Assessment Group) report
3. Motivation and communication
4. Belgian COVID-19 infection in work sectors
5. International situation

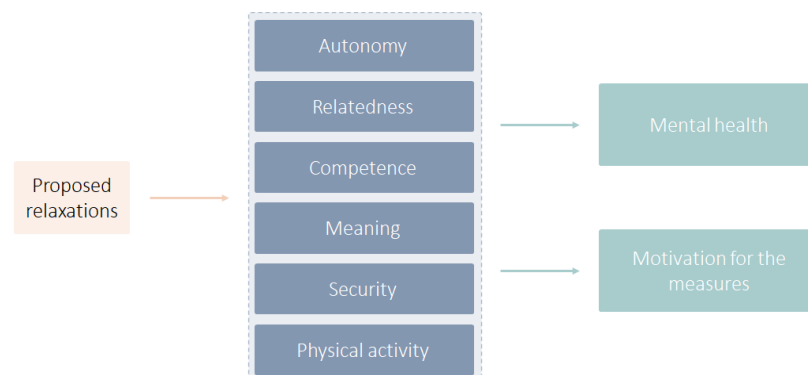
## Annex 1. Estimated Psychological Impact of Relaxations

Prepared by: Maarten Vansteenkiste, Lode Godderis, Isabelle Aujoulat, Céline Nieuwenhuys with the help of Omer Van den Bergh, Olivier Klein, and Olivier Luminet

Approved by GEMS members: Isabelle Aujoulat, Philippe Beutels, Steven Callens, Bénédicte Delaere, Mathias Dewatripont, Frédéric Fripiat, Lode Godderis, Niel Hens, Yves Kreins, Tinne Lernout, Romain Mahieu, Christelle Meuris, Geert Molenberghs, Karine Moykens, Céline Nieuwenhuys, Michel Thieren, Pierre Van Damme, Steven Van Gucht, Yves Van Laethem, Marc Van Ranst, Dimitri Van der Linden, Maarten Vansteenkiste, Erika Vlieghe, Dirk Wildemeersch

### A. Heuristic Framework: A Need-based Approach

To evaluate whether proposed relaxations have the potential to ameliorate individuals' mental health and motivation, it is critical to evaluate them against a psychological framework that outlines a number of well-demonstrated and robust key drivers of people's mental health and motivation. Drawing upon well-validated need-theories<sup>33,34,35</sup> and the field of physical activity, six different psychological and physical needs are proposed that serve as mediating mechanisms. Recent research indicates that these drivers play a critical role in the current distressing times much as they do in pre-corona times<sup>36</sup>. Every measure, either oriented towards a specific subgroup or applicable to the entire population, can be evaluated against its potential to positively impact on these drivers of mental health and motivation. This need-based approach was chosen because the proposed psychological needs (autonomy, relatedness, competence, meaning) and physical needs (safety, physical activity) are said to be applicable across age groups, life domains, and cultural backgrounds<sup>37</sup>.



- The **need for autonomy**, which is very much at threat at present, entails experiences of volition, psychological freedom, and authenticity in one's acting, thinking, and feeling. This need gets nurtured through acts of choice and independence, self-expression and creativity, and the engagement in preferred leisure time activities. Autonomy frustration involves the experience of feeling controlled, coerced, or pressured to act, think, or feel in certain ways.
- The **need for relatedness** denotes the experience of warmth, belonging, and connection. This need gets nurtured through close/intimate contacts with significant others, group gatherings, acts of solidarity, and mutual care. Relatedness frustration involves the experience of rejection, loneliness, and disconnection.

<sup>33</sup> Maslow, A. H. (1954). Motivation and personality. New York: Longman.

<sup>34</sup> Ryan & Deci. (2017). Self-determination theory: Basic psychological needs in motivation, development, and wellness. New York: Guilford Publishing

<sup>35</sup> Vansteenkiste, Ryan & Soenens. (2020). Basic Psychological Need Theory: Trends, critical themes, and future directions. Motivation and Emotion, 44, 1-31.

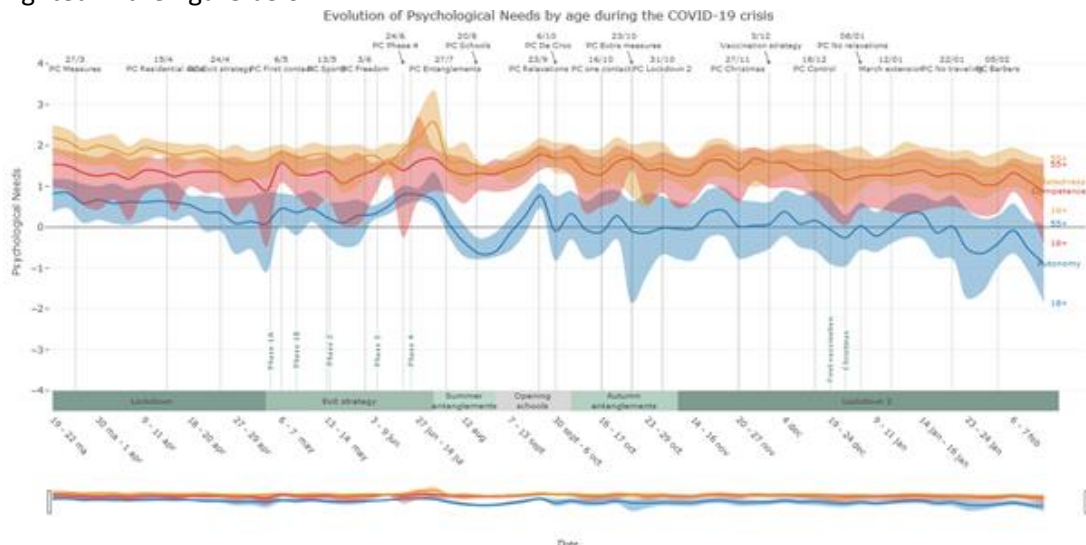
<sup>36</sup> Vermote et al. (in revision). Do psychological needs play a role in times of uncertainty? Associations with well-being during the corona crisis. Journal of Happiness Studies.

<sup>37</sup> Chen et al. (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. Motivation and Emotion, 39, 216-236

- The **need for competence** involves the experiences of effectiveness, mastery, and self-efficacy in dealing with the environment. This need gets nurtured through the mastery of tasks, attainment of goals, and the full use and development of individuals' skills. Competence frustration involves the experience of ineffectiveness and diminished confidence.
- The **need for meaning** refers to people's desire to have a life that is valuable and worth living, to experience a broader purpose and direction in life, and to live a coherent life that makes sense<sup>38</sup>. This need gets nurtured when one can engage in meaningful activities, has long-term goals to which one commits, and experiences one's different roles and identities in a harmonious way. When meaning is absent, people are aimlessly drifting and experience one's life as incomprehensible and devoid of value.
- The **need for security/safety** is fulfilled when people feel safe from environmental threats (environmental), perceive themselves as having sufficient material resources to ensure basic survival (financial) and they perceive themselves and significant others to be protected against threatening diseases (health). This need is preserved when the environment is well-structured and predictable, a sufficient (compensatory) income is provided, and sufficient risk-reducing measures are taken to protect people's health. People feel insecure when the environment is chaotic and unstable, they suffer from financial hardship and report health concerns.
- Engaging in regular moderate-to-intense **physical activity** has been found to be uniquely related to individuals' mental health during this pandemic. The group of citizens that are less active than in pre-corona times has been steadily growing with up to 48% (especially among young adults) being less active in January than before the pandemic (see rapport 21 from the motivation barometer). Sufficient physical activity can be reached in both a structured and organized way (e.g. sport clubs, fitness centers) but also more informally (e.g. biking to work; active leisure time activities, household activities).

## B. Current situation

Individuals' psychological needs have been ongoingly assessed during this pandemic. A number of findings need being highlighted in the figure below.



First, **autonomy is the most frustrated psychological need**, more than relatedness and competence. Second, the satisfaction of individuals' psychological needs has been consistently more under threat among **young adults**

<sup>38</sup> Martela & Steger. (2016). The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. The Journal of Positive Psychology, 11(5), 531–545. <https://doi.org/10.1080/17439760.2015.1137623>





(18-35 years) compared to older generations (36-54 years; 55+). As shown in the figure below, the bottom line of the shadowed lines denotes the level of satisfaction among the younger generations, while the upper line denotes the level of satisfaction among the older generations. Such findings can be well understood from the perspective that the current situation involves much more of a rupture for younger people's daily living style than older generations. Younger generations meet each other in larger groups and are developmentally speaking faced with several relational-oriented tasks, such as the development of close and trustworthy relationships, the formation of an identity and engaging in romantic relationships. The current situation puts these critical developmental tasks more on hold for them. Third, it should be noted that the situation is becoming increasingly difficult for the entire population. **All need satisfactions are increasingly less fulfilled**, with people on average reporting more autonomy frustration than satisfaction since half of January (the horizontal line represents the flipping point).

### C. Psychological Matrix

Different relaxations can be evaluated against this theoretical background. To this end, a psychological matrix was created by rating the potential psychological gains associated with each of the proposed relaxations. The following principles were taken into account:

- The hypothesized impact of a relaxation varies in direction (positive/negative) and dose (from -3 to +3).
- In assigning a weight, **different elements** are taken into account, including
  - The repetitive vs. non-recurring nature of an event (e.g. attending a single cultural event vs. being able to go to school all week long)
  - The presumed benefits for those organizing and those benefiting from the activity (e.g. lecturers and students in higher education).
  - The degree to which those benefiting from the relaxation are psychologically vulnerable and, hence, in higher psychological need.
- In calculating the net effects of a measure, the following **considerations** are taken into account:
  - Six different persons rated the psychological impact of each of the proposed relaxations on the six proposed needs.
  - Each of the different drivers are assigned the same weight, congruent with past work showing that these different predictors play a unique role in people's mental health (e.g. Chen et al., 2015)
  - The average psychological impact is multiplied by the number of people benefiting from the measure.
  - For ease of interpretation, the final scores of the calculated psychological impact of a relaxation were categorized, with the different measures having a small, moderate, large, or very large impact.

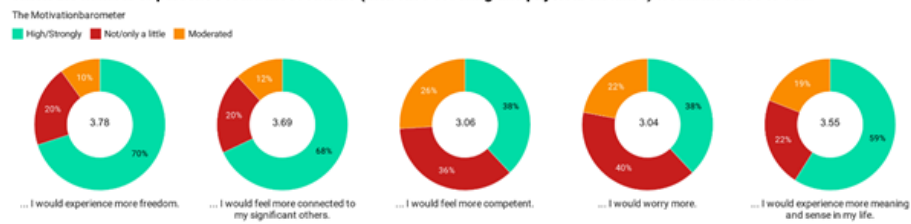
The table in the main document provides a schematic overview of the hypothesized psychological gains of different relaxations as a function of the life domain under consideration. The relaxations with the greatest psychological impact are the following:

- Allowing outdoor contacts in groups of 8 people
- Allowing more than 15 persons on a funeral
- Opening higher education and secondary education for 100%
- Outdoor sport activities for adults up to 10 people

- Indoor sport activities for youth up to 10 people
- Part-time instead of full-time telework
- Summer outdoor youth camps up to 50 people

The hypothesized incremental benefits associated with outdoor contacts were confirmed in a recent sample of Flemish participants. As can be noticed in the figure below, participants especially deemed opening up the number of contacts to ten persons outside to be beneficial for their autonomy, relatedness, and meaning in life. Interestingly, this effect was the most pronounced for autonomy, the most heavily thwarted psychological need for the moment. Further, the anticipated benefits of this relaxation were deemed to yield a larger impact than allowing two close contacts per person.

**When the number of persons I could meet outside (incl. face covering and physical distance) would increase to 10...**



**When the number of close contacts would increase to two per person...**





## Annex 2. Executive summary of MAG (mental assessment group) report (19 February 2021)

*Prepared by: Lode Godderis, Philippe Beutels, Isabelle Aujoulat, Céline Nieuwenhuys, Maarten Vansteenkiste*

*Approved by GEMS members: Isabelle Aujoulat, Philippe Beutels, Steven Callens, Bénédicte Delaere, Mathias Dewatripont, Frédéric Fripiat, Lode Godderis, Niel Hens, Yves Kreins, Tinne Lernout, Romain Mahieu, Christelle Meuris, Geert Molenberghs, Karine Moykens, Céline Nieuwenhuys, Michel Thieren, Pierre Van Damme, Steven Van Gucht, Yves Van Laethem, Marc Van Ranst, Dimitri Van der Linden, Maarten Vansteenkiste, Erika Vlieghe, Dirk Wildemeersch*

In The Mental Assessment Group report, we describe the current mental health state of the Belgian population through a short description of the results and conclusions of studies and reports. We have compiled the findings according to mental health indicators (well-being, use of medication, consumption of psychological and psychiatric care and data on sickness absence, unemployment,...) and per age- or specific group, as available. The report is updated monthly. These results are being used by the GEMS-members in the advice they produce, in which key findings concerning the motivation and mental health problems are summarized. The report will also separately be sent as a source of reference to the ministers of health and the Commissariaat.

On February 19, we can conclude that the mental health of the Belgian population remains impacted by the crisis and follows the pattern of the pandemic and respective measures. Hence, mental health indicators are rising over the course of the second lockdown period. Importantly, specifically during periods of uncertainty (e.g. whether or not new stringent measures will be taken) mental health issues rise and also during periods of lockdown because of the lack of social interaction and fear. The Covid-19 crisis has reinforced social inequalities, which themselves have an impact on mental health. It is also clear that specific groups (e.g. young adolescents, single-parent families, people with pre-existing conditions, people receiving social benefits and lower socio-economic status) suffer more mental health issues which should be recognized and addressed. However, it is also clear that good data on vulnerable groups are lacking, so we need to rely on expert opinions and testimonies.

### A. Perceived mental health

The satisfaction of individuals' psychological needs for autonomy, competence, and relatedness has been consistently more under threat among young adults (18-35 years) compared to older generations (36-54 years; 55+). Such findings can be well understood from the perspective that the current situation involves much more of a rupture for younger people's daily living style than older generations. The current situation puts these critical developmental tasks more on hold for them. Yet young children and adolescents continue to have too little social interaction and social relationships with their peers. Social interaction is a basic need, including for young children, contributing to healthy development, mental health and school and social integration. In terms of their motivation, a similar age pattern can be observed, with older generations being consistently more willingly motivated and experiencing the adherence to the measures less as a daunting duty.

Similar associations (to different extents over different stages of the pandemic) have been found between mental wellbeing and covariates including age, gender, employment, household size, educational attainment, sector of employment, experience with COVID-19 and housing conditions. Although all investigated groups experience changes in mental health as the pandemic evolves, there is an inverse relationship between age and mental wellbeing. Often a deterioration of mental health occurs before measures are taken, in anticipation, and likely as a result of evolving perceived risks and media coverage. In surveys, students seem to be worse off than any other group when compared to non-students of their own age, however one needs to be aware that some vulnerable young people are underrepresented in these studies. In addition to age, the sector of employment has an important impact on the evolution of mental wellbeing. At the extremes we find students consistently at the worst end, and retired persons at the best end of the scale.

These results also indicate that the second wave peak and its associated measures have had a greater and more prolonged adverse effect on mental health than the first wave peak and lockdown. We can observe that a



growing % of the population have a very low score of resilience. This indicates a limited or lack of coping mechanisms to deal with (prolonged) stressful situations.

#### B. Mental health problems and disorders

To what extent these reported mental health indicators lead to mental health disorders is still subject of investigation, hence these data arrive with an important delay. Some indications we obtain from surveys show more anxiety disorders during lockdown periods in December and March-April compared to September and in June. Also, the prevalence of depressive disorders seems to increase compared with September and in 2018. Also here, people aged 18-24 (both males and females) are by far the most affected by anxiety and depressive disorders, and even in a higher proportion than in the first lockdown. Certain groups seem to be less prone to mental disorders (anxiety, depression, sleep disorders and suicidal tendencies): people aged 65 and over, people living in couple, people with a higher education diploma, people who are (still) in paid employment.

To what extent people needing help are also having access to mental health support is under investigation. Based on the data registered up to and including August 2020, the latest COVID-19 monitoring report notes a decrease in the number of reimbursements and related expenditures in psychology and psychiatry. This was especially so in the months of March, April and May 2020 (= first wave) and also in consultations, visits and advice at doctors' offices. Despite this, alarming messages have been sent by paediatric mental health services, indicating a growing number of referrals for serious psychiatric disorders, including suicides or suicidal ideations. According to clinicians in the field, a number of children and adolescents with psychiatric needs are currently put for weeks on waiting lists, and the sector is getting saturated, with a lack of admission capacity and an exhausted staff.

#### C. Economic indicators with an impact on mental health

Short-term absences seem to be under control, while the numbers of long-term sickness absence (>1 year) are rising, with the current trend, the RIZIV-INAMI expect more than 500.000 workers in invalidity. However, no direct link between the Covid crisis and the rise of the invalidity rate can be made since the invalidity benefits start from the first day of the first year of sickness absence. The current invalidity benefits beneficiaries are entitled to this right from 1 February 2020.

A number of labor market indicators were adversely affected. This is of specific concern, since data from a longitudinal survey study indicates that temporarily losing work (on a full-time or part-time basis) has an important impact on mental health. For example, temporary unemployment increased in October and November, while the annual growth rate of the number of unemployed job seekers also registered an increase in November. Business confidence and the number of vacancies received also suffered a decline during that period. However, we note that the figures are turning less red than during the first wave in 2020, with even slight economic growth in the fourth quarter.

#### D. Conclusion

In conclusion, most of the objective data collected and specified above show a significant deterioration in mental health of the Belgian population. With respect to the pillar mental health, an important challenge is to preserve further decreases in mental health, which has been observed in some categories, such as youngsters and students, singles, or occupations most affected by the measures (e.g. health care sector, horeca, cultural sector). Based on the evidence we have from on-going studies, the population by far the most affected are young people aged 16 to 25 y, with an increase in anxiety disorders among 18-24 year olds. These studies also show that limitation of the social bond linked to confinement has important consequences, in particular for young people, among whom more than two thirds are dissatisfied with social context. However, it should be noted that children and adolescents are not well represented in on-going studies.



### Annex 3. Motivation and communication

*Prepared by: Maarten Vansteenkiste, Lode Godderis, Isabelle Aujoulat, Céline Nieuwenhuys*

*Approved by GEMS members: Isabelle Aujoulat, Philippe Beutels, Steven Callens, Bénédicte Delaere, Mathias Dewatripont, Frédéric Fripiat, Lode Godderis, Niel Hens, Yves Kreins, Tinne Lernout, Romain Mahieu, Christelle Meuris, Geert Molenberghs, Karine Moykens, Céline Nieuwenhuys, Michel Thieren, Pierre Van Damme, Steven Van Gucht, Yves Van Laethem, Marc Van Ranst, Dimitri Van der Linden, Maarten Vansteenkiste, Erika Vlieghe, Dirk Wildemeersch*

#### A. Summary

Different motivational indicators (i.e. trust in the measures, voluntary motivation, risk perception, self-efficacy) indicate that motivation has been dropping since half of January, with the increasing corona fatigue explaining the decreasing adherence to the measures. Different recommendations are provided to counter the drop in motivation:

- Choose a fixed weekly or bi-weekly moment during which politicians and experts provide a helicopter perspective on the current situation.
- Develop a coherent narrative that serves as a red line and recurrent theme in the communication of the coming months. The narrative
  - (re)introduces a set of goals, some of which are situated in the near (i.e. intermediate goals) and others in the more distant future (i.e. end goal). Make sure that the sequence of goals are attainable to optimally motivate people and to guide them from one goal to the other, thereby highlighting the key role of our behavior in achieving these goals.
  - makes reference to a set of key values that provide the basis for the choices being made (i.e. pressure on the health care system, schools, mental health, and economy).
  - aims to develop a sense of ‘we-ness’ around a commonly shared end goal, thereby highlighting the fact that we are all together on a ‘shared mission’ and need to collectively arrive at the finish line. In the meantime, we need to support each other, for instance, by personalizing our motivation.
- Make more use of visual communication strategies which are easier to cognitively process and can be used as a reminder of required behavior. Figures can provide insight in the broader narrative and framework (e.g. objective-based approach), the reason why efforts are required or relaxations are not feasible yet (e.g. role of variants) and the required behavior (e.g. sector protocols).

#### B. Current situation

○ During the first months of the second lockdown (November-December), people’s motivation has been fluctuating, with 50% to 67% of the population being fully committed to adhere to the measures. Yet, since half of January, a gradual decrease can be noticed, with the current level of motivational support at 26% (figure 4a in the research repository). Several motivational indicators suggest that people report **the highest level of corona fatigue since the beginning of the assessments back in March 2020**. Specifically, people’s trust in the effectiveness of the measures (figure 4c in the research repository), their perceived self-efficacy to adhere to the measures (figure 4d in the research repository), and their perceived risk to be infected (figure 4b in the research repository) has dropped considerably. This rather steep motivational decline since half of January helps to explain the decrease in adherence since half of January (figure 4e in the research repository). To illustrate, people now report on average 4.4 close contacts.

#### C. Explanations

○ Three reasons can be put forward to explain the drop in adherence and motivation. First, people seem to **underestimate** the fragility of the situation and the risks we are still exposed to, presumably because the communication was fairly positive and hopeful over the past week with the hospitalizations slowly decreasing.



Our risk level is as low as back in August, at the moment the situation was objectively much better than today. These reduced risk perceptions lead people to question the necessity of their extra efforts, which helps to explain the **drop in their voluntary motivation** and the increase in experienced autonomy frustration (see Figure 3 in the research repository; which are at a similar level as in August). Second, because this crisis and second lock down has lasted for so long, people feel increasingly **less efficacious** to adhere to the measures. Their energetic resources are depleted, which explains their reduced self-control. Third, people are increasingly **losing their trust** in the effectiveness in the measures, in part because the numbers have been stabilizing for quite some time, in part because the government introduced relaxations that were disconnected from the initially established target to achieve the 'safe haven'. These drops in self-efficacy and outcome expectations help to explain the overall increase in **discouragement** (see Figure 4a in the research repository).

#### D. Interface between motivation to adhere to the measures and vaccination.

The two broader narratives – people's adherence to the measure and their readiness to be vaccinated - are mutually impacting one another in different ways. This exchange could be positive and reinforcing, but also negative and hampering. Several dynamics play a role. First, people's motivation for being vaccinated relates to their intentions to adhere to the measures after vaccination. Individuals who willingly chose to be vaccinated are more willing to stick to the measures, while those who feel pressured to be vaccinated are less likely to do so<sup>39</sup>. Second, people's perception of the vaccination coverage of vulnerable people may impact on their voluntary motivation to adhere to the measures through their changing risk perceptions. Third, the more people experience the current measures as unnecessarily constraining and autonomy-thwarting, the more they may reactively turn to conspiracy theories that restore their threatened freedom and provide them a sense of meaning and identity. Overall, these interfacing psychological dynamics deserve further attention, both research-wise as well in our communication.

#### E. Recommendations

Although relaxations were found to increase people's motivation in May, June and July<sup>40</sup>, people's motivation can also be improved through systematic and targeted **motivating communication**, even when difficult messages need to be brought to the broader public<sup>41</sup>.

**General recommendations.** Three general recommendations are provided.

1. Choose a **fixed weekly or bi-weekly moment** to communicate about the situation, thereby providing a broader picture of the medical (i.e. infections, hospitalizations; testing, quarantine, vaccination) and psychosocial (e.g. new initiatives being developed) situation. Such communication should not be dependent upon the introduction of relaxation or more stringent measures as one needs to ongoingly motivate the population. To build trust in the government, **two politicians and two experts** could jointly communicate.
2. Develop for these fixed communication moments a **coherent narrative** that serves as a red line and recurrent theme in the communication of the coming months. The narrative contains three elements.
  - a. First, (re)introduces a set of **goals**, some of which are situated in the near (i.e. intermediate goals) and others in the more distant future (i.e. end goal). Make sure that the sequence of goals are **attainable** to optimally motivate people and to guide them from one goal to the other, thereby highlighting the key role of our **behavior** in achieving these goals.
  - b. Second, consistently refer to a set of **key values** that provide the basis for the choices being made (i.e. pressure on the health care system, schools, mental health, and economy) and make consequent choices aligned with these values.

<sup>39</sup> [Report #20 from the motivation barometer](#)

<sup>40</sup> [Report #6 from the motivation barometer](#)

<sup>41</sup> [Report #15 from the motivation barometer](#)





- c. Third, try to develop a sense of **'we-ness' around a commonly shared end goal**, thereby highlighting the fact that we are all together on a 'shared mission' and need to collectively arrive at the finish. In the meantime we need to support each other. Frame adhering to the measures as deed of solidarity. Ask people to **personalize their motivation**, that is to think concretely of a person they have in mind for whom they stick to the measures.
3. Make more use of **visual communication strategies** which are easier to cognitively process and can be used as a reminder of required behavior. Figures can provide insight in the broader narrative and framework (e.g. objective-based approach), the reason why efforts are required or relaxations are not feasible yet (e.g. role of variants) and the required behavior (e.g. sector protocols).

**Specific recommendations.** In light of these general recommendations, the following more specific points deserve attention during these weekly communications:

4. To counter the decreasing risk perception, create **realistic risk perceptions** by presenting key epidemiological information in a neutral and informative way. This implies, first, tempering messages of unjustified hope that can backfire over time (as they elicit disappointment) and, second, communicating about the fragility of the current situation through the **use of 'if-then messages'**. Specifically, to foster **risk awareness**, communicate the expected effect of new variants on the infection and hospitalisation rates depending on their varying levels of contagion. To avoid that such information elicits anxiety and panic, it is critical to highlight the factors that help to keep the situation under control (see point 5 & 6).
5. Highlight the critical role of our **behavioral efforts** to get a grip on the situation and to help us move forward to the first goal. Provide graphical estimates of how variable adherence to the measures can lead to (a) a faster versus limited outbreak of a new variant and (b) a faster versus delayed attainment of a first goal. **Express confidence** in the population's capacity to keep the situation under control and make steady progress towards the first goal by referring to periods where we successfully adhered to measures (e.g. first month of the lockdown adherence was higher) and managed to get the situation more quickly under control. This helps to build self-efficacy and fosters a sense of **hope**.
6. To increase people's trust and avoid further discouragement, highlight **the effectiveness of measures** that are taken and how they have been effective in reducing the infections and hospitalisations rates in the past. In doing so, the more optimistic situation in Belgium can be contrasted with other countries, where more lenient measures were taken.
7. Rather than highlighting what is forbidden, **positive communication** needs to be oriented to what is still possible within the given circumstances and **support measures** need to be taken to increase people's sense of effectiveness and social cohesion (e.g. inspiration guides; social mobilisation projects).
8. Provide **systematic, concrete and positive feedback** on citizens' efforts, which explains why the curves have decreased, lives have been saved and has put us in a better position than our neighbouring countries. Concretely, express gratitude for adhering to the measures and empathically recognize the distressing times we all face.
9. Create **realistic expectations regarding vaccination**. Indicate that even after vaccination people will be required to adhere to the measures. So, vaccination will open the door to freedom, yet, it will be a collective rather than personal freedom.
10. Encourage people who are vaccinated to continue adhering to the measures for **prosocial reasons**. Because it is unclear whether the virus can be transmitted after vaccination, one can avoid infecting others by adhering to the measures (refer to the situation of youngsters, who found themselves in a similar position throughout the crisis). Even if the virus would no longer be contagious after vaccination, by adhering to the measures one empathizes with those who are eagerly waiting to be vaccinated.



## Annex 4. Belgian COVID-19 infection in work sectors

Geert Molenberghs<sup>1,2</sup>, Johan Verbeeck<sup>1</sup>, Godelieve Vandersmissen<sup>3,4</sup>, and Lode Godderis<sup>3,4</sup>

<sup>1</sup>Data Science Institute, I-BioStat, Universiteit Hasselt, Hasselt, Belgium

<sup>2</sup>I-BioStat, KU Leuven, Leuven, Belgium

<sup>3</sup>Centre for Environment and Health, Department of Public Health and Primary Care, KU Leuven, Leuven, Belgium

<sup>4</sup>IDWE, External Service for Prevention and Protection at Work, Heverlee, Belgium

19 February 2021

### A. Introduction

The workplace is an important place of possible infection, it is often (up to 25%) reported in the contact centre database as one of the collectivities visited by the index case. It is also among the main activities for a large proportion of the population, therefore it is of interest to analyse the incidence of COVID-19 cases in the working population by sectors. Two sources of information on infection in work sectors will be used in this report, the RSZ/ONSS data and the contact tracing data.

#### a. RSZ/ONSS data

The RSZ/ONSS data analyses of COVID-19 infections in the working population were set up in the first place in order to allow signal detection. The alerts consist of 2 or more cases in the same company as well as the detection of employment of an index case in a risk sector as defined by the regional contact tracing agencies (daily alerts are sent by the RSZ/ONSS to the regions). Aggregated data show the evolution over time of the incidence in the sectors. It helps to better understand the spread of the virus in the active population.

Data description: RSZ-ONSS received information about positive COVID-19 cases from Sciensano during the period 8 Sept 2020 - 25 Jan 2021. RSZ-ONSS links this information to workplace-related databases, at the level of the national number (NISS). The linkage is allowed during a period of 14 days, after which the information on positive cases is destroyed, while the aggregated output tables are stored. Linkage is done on positive cases with the NSSO Dimona database of active workers. This covers most of the workers, such as private and public sectors, interim employment and job students, but does not provide information on self-employed nor foreign workers that are not subject to the Belgian social security scheme.

Each company is classified by sectors of its main activity (as attributed by the RSZ-ONSS) which are identified by the NACE code. This standard code divides workplaces into 21 main sectors and then in subcategories for which the specificity depends on the chosen granularity (which can have up to 943 subcategories). However, although some companies may be active in more than one sector, only one NACE number associated with the main activity is used in the analysis. This limitation is particularly important to consider for employees within the national education, because all these employees are registered as working in the 'Secondary education' even if they are in reality primary school teachers.

Further, since the link of the cases is only identified at the level of the company, no information is available on the type of the job of the index case (e.g., administrative work in metal industry will be registered under metal industry) nor information on the exact employment location is not always available and/or accurate (e.g. information on telework or temporary unemployment is not available).

Finally, the actual source of infection (in particular: at the workplace or elsewhere) cannot be traced back from this database.





## b. Contact tracing

For companies affiliated with IDEWE, COVID-19 positive tested employees are reported to IDEWE starting from 22 Jul 2020. Of these index cases contact tracing is performed on high and low-risk contact within the company. Subsequently, appropriate measures are taken within the company and by high-risk contacts to limit spread of the infection. At the start of the contact tracing, data were registered in a shared excel document. From 29 Oct 2020 a 'tracing application' was used to register all notifications of index cases in companies under medical surveillance of IDEWE. Note that high and low-risk contacts are registered only for contacts in the company, contacts at home or in leisure time are not registered.

An index case can be any person present in the company. It can be an employee, but as well an interim worker, an intern,... Importantly, for schools, the index case can also be a student. Of the index cases the employer information is retrieved via the INSZ number by IDEWE. Information of the employer is subsequently grouped by region and by customer segments. Although some customer segments are similar to the NACE code sectors, this is not true in general.

The incidences in the RSZ/ONSS sectors may thus differ from those in the contact tracing customer segments due to two aspects:

1. The RSZ/ONSS data concerns only employees while the contact tracing data concerns any person within the company.
2. Similar named sectors and customer segments may contain different companies.

For instance the NACE sector education contains only information on positive cases among employees, while the contact tracing data contains as well students. In schools a considerable amount of index cases were pupils, especially since the increased testing of children in January 2021.

Note that some larger companies have organised a contact tracing by their internal prevention service. Data of these companies are however not included in this analysis, causing an underestimation of index cases in general. For some segments this underestimation might be more important.

## B. Methodology

### a. RSZ/ONSS data

The data provided by RSZ/ONSS will be shown per work sector. Work sectors are divided by NACE codes and grouped into 5 levels of detail, going from 21 sectors at level 1 to 943 sectors at level 5. The evolution of the 14-day incidence of positive COVID-19 cases among all employees registered in the same sector (number of cases per 100,000 employees) is presented for the 5 levels of work sectors. A 95% confidence interval (CI) for the incidence is calculated on a logit transformation of the incidence, after which it is back transformed to the original scale.

At each of the 5 levels of detail of the work sectors, the 10 highest incidences in the two 14-day periods before the COVID measures of 19 October are selected (Period 4: 29 Sept - 12 Oct, Period 5: 6 - 19 Oct ) and presented together with the COVID-19 14-day incidence over all work sectors ( 4.5 million individuals) and the COVID-19 14-day incidence in the general population ( 11.5 million individuals) for reference. Additionally, for each of the 5 levels the longitudinal profile of the 14-day incidences is evaluated by fitting Gaussian-Gaussian models in a 2-step approach. Based on these models sectors with extreme values for the time to the peak, the height and halfwidth of the peak and height and halfwidth before and after the peak can be identified.



Because the number of employees in some work sectors is low compared to others, the precision of the 14-day incidence is low in those small sectors. Therefore, we select the 10 highest incidences for level 1, 2 and 3 sectors with a minimum of 10,000 employees, while for level 4 and level 5 sectors with a minimum of respectively 3,000 and 1,500 employees are selected.

Finally, some sectors of interest are compared on level 4 sectors.

#### b. Contact tracing

Additional to the comparison of the 14-day incidence of index cases between customer segments under surveillance, also the 14-day incidence of index cases between regions are compared. The reported day is the last day of the 14 day period.

Since its initiation on 29 Oct 2020, the tracing application registers in a standardized manner besides information on incidences also information on high-risk and low-risk contacts of index cases. Per segment and per region, the mean number of high-risk contacts by the index case over the entire study period (29 Oct 2020 -18 Feb 2021) and the four weekly percentage of index cases with two or more high risk contacts are evaluated.

There might be an underreporting of high-risk contacts because the number of contacts for an index case is set '0' by default by the application. For index cases, who for example could not be contacted or who refused to answer, the number of high and low-risk contacts is reported 0, which may not coincide with reality.

### C. Results

#### a. Level 1 work sector

Of the 21 sectors at level 1, in the top 5 sectors with the highest 14-day incidence in both periods before the COVID measures of 19 October the following sectors are present: Kunst, amusement en recreatie (sector R), Verschaffen van accommodatie en maaltijden (sector I), Menselijke gezondheidszorg en maatschappelijke dienstverlening (sector Q) and Openbaar bestuur en defensie, verplichte sociale verzekeringen (sector O) (Table 1,2,3,4 and Figure 1,2).

In addition to these sectors, also Onderwijs (sector P) has a 14-day incidence above the incidence over all work sectors (Table 3 and 4).

The peak of 14-day incidences for all sectors with a minimum of 10,000 employees is in the period 20/10- 2/11. Since the healthcare sector remains active and is confronted daily with COVID-19 infected individuals, as expected, the incidence is significantly higher and wider in the healthcare sector (sector Q) and also remains increased in the period after the COVID measures (Figure 1).

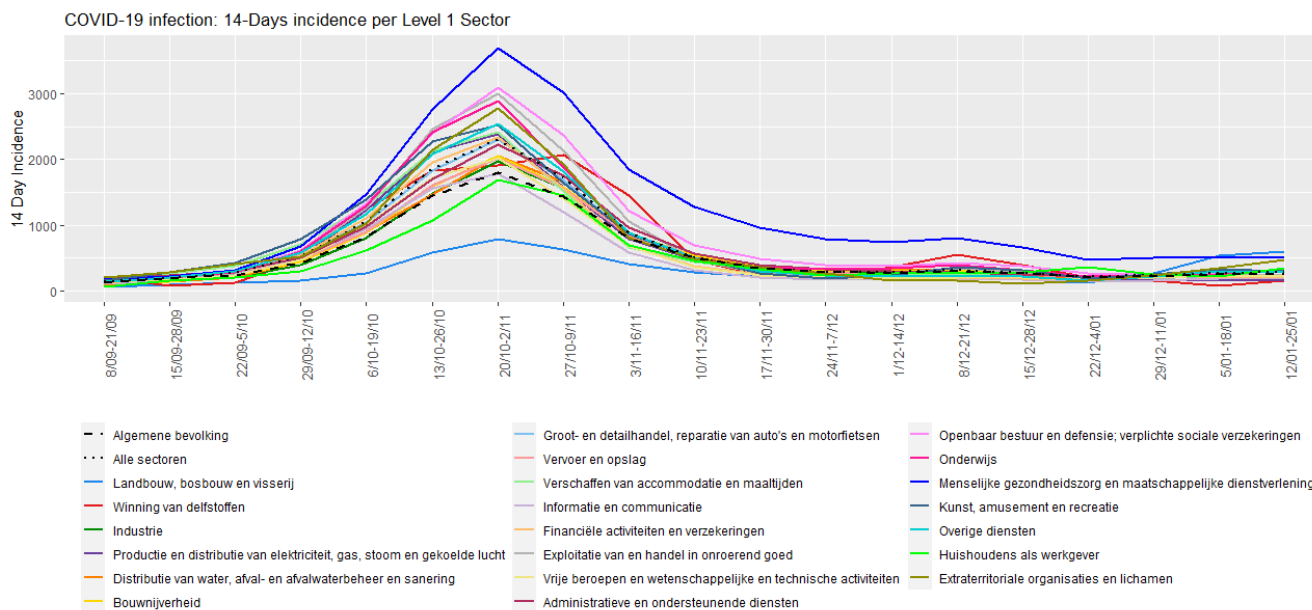


Figure 1: 14-Day incidence of COVID-19 infection of all 21 sectors at Level 1

Table 1: 14-Day incidence of COVID-19 infection of all 21 sectors at Level 1 period 4

Description	NACE Code	Employees	Incidence (95% CI)
Kunst, amusement en recreatie	R	60382	785(718;859)
Verschaffen van accommodatie en maaltijden	I	219468	714(680;750)
Menselijke gezondheidszorg en maatschappelijke dienstverlening	Q	588348	678(657;699)
Openbaar bestuur en defensie; verplichte sociale verzekeringen	O	542270	608(588;629)
Onderwijs	P	531993	597(577;618)
Overige diensten	S	81336	584(534;639)
Exploitatie van en handel in onroerend goed	L	24599	561(475;662)
Financiële activiteiten en verzekeringen	K	125758	528(489;570)
Groot- en detailhandel; reparatie van auto's en motorfietsen	G	634221	526(508;544)
Extraterritoriale organisaties en lichamen	U	3891	514(332;795)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
Administratieve en ondersteunende diensten	N	350493	507(484;531)
Productie en distributie van elektriciteit, gas, stoom en gekoelde lucht	D	21032	504(417;609)
Informatie en communicatie	J	124635	479(442;519)
Vrije beroepen en wetenschappelijke en technische activiteiten	M	199790	476(447;507)
Winning van delfstoffen	B	2559	469(267;824)
Vervoer en opslag	H	272414	464(439;490)
Distributie van water; afval- en afvalwaterbeheer en sanering	E	35281	445(381;520)
Bouwnijverheid	F	226328	433(407;461)
<b>Algemene populatie</b>			<b>423</b>
Industrie	C	542636	387(371;404)
Huishoudens als werkgever; niet-gedifferentieerde productie van goederen en diensten door huishoudens voor eigen gebruik	T	4605	304(180;513)
Landbouw, bosbouw en visserij	A	40373	161(126;205)

Table 2: 14-Day incidence of COVID-19 infection of all 21 sectors at Level 1 period 5

Description	NACE Code	Employees	Incidence (95% CI)
Menselijke gezondheidszorg en maatschappelijke dienstverlening	Q	588348	1358(1329;1388)
Kunst, amusement en recreatie	R	60382	1266(1181;1357)
Openbaar bestuur en defensie; verplichte sociale verzekeringen	O	542270	1206(1177;1235)
Exploitatie van en handel in onroerend goed	L	24599	1205(1076;1349)
Verschaffen van accommodatie en maaltijden	I	219468	1202(1158;1248)
Onderwijs	P	531993	1193(1164;1222)
Productie en distributie van elektriciteit, gas, stoom en gekoelde lucht	D	21032	1122(989;1274)
Overige diensten	S	81336	1103(1034;1177)
Winning van delfstoffen	B	2559	1102(762;1592)
Financiële activiteiten en verzekeringen	K	125758	1058(1003;1117)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
Extraterritoriale organisaties en lichamen	U	3891	1000(732;1366)
Groot- en detailhandel; reparatie van auto's en motorfietsen	G	634221	965(942;990)
Vrije beroepen en wetenschappelijke en technische activiteiten	M	199790	926(885;969)
Administratieve en ondersteunende diensten	N	350493	913(882;944)
Informatie en communicatie	J	124635	909(858;963)
Distributie van water; afval- en afvalwaterbeheer en sanering	E	35281	863(772;965)
Vervoer en opslag	H	272414	847(814;882)
Bouwnijverheid	F	226328	821(784;859)
<b>Algemene populatie</b>			<b>816</b>
Industrie	C	542636	741(719;764)
Huishoudens als werkgever; niet-gedifferentieerde productie van goederen en diensten door huishoudens voor eigen gebruik	T	4605	546(369;806)
Landbouw, bosbouw en visserij	A	40373	217(176;268)

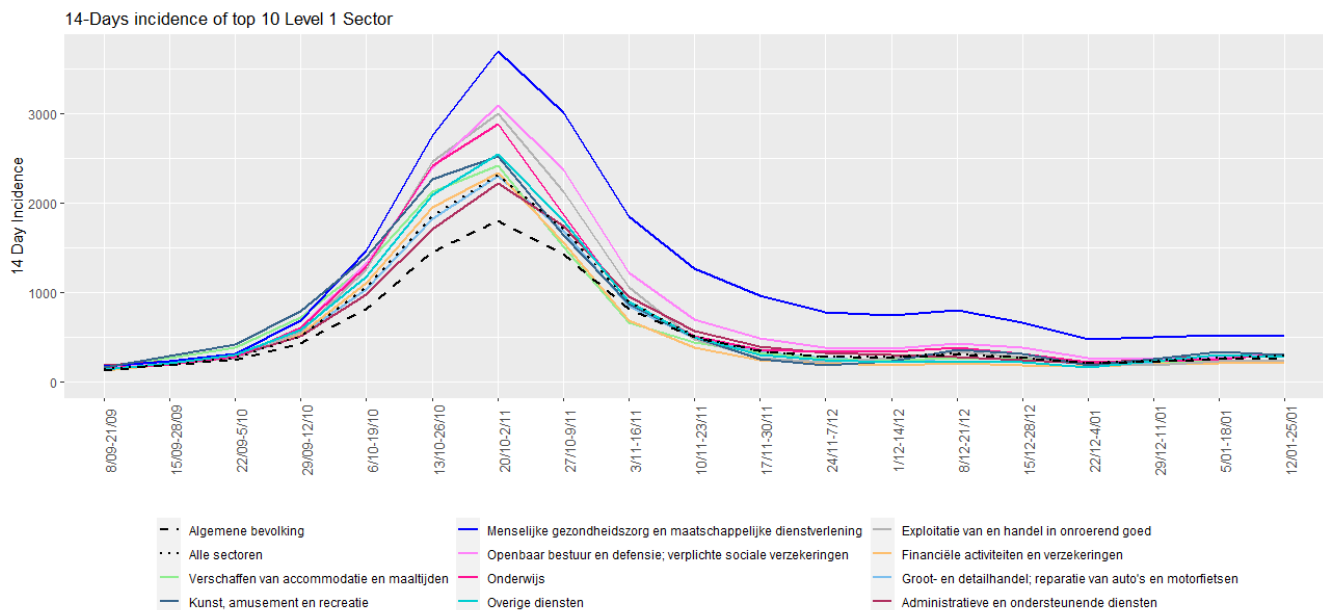


Figure 2: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence and minimum 10,000 employees at Level 1



Table 3: 14-Day incidence of COVID-19 infection of all sectors with minimum 10,000 employees at Level 1 period 4

Description	NACE Code	Employees	Incidence (95% CI)
Kunst, amusement en recreatie	R	60382	785(718;859)
Verschaffen van accommodatie en maaltijden	I	219468	714(680;750)
Menselijke gezondheidszorg en maatschappelijke dienstverlening	Q	588348	678(657;699)
Openbaar bestuur en defensie; verplichte sociale verzekeringen	O	542270	608(588;629)
Onderwijs	P	531993	597(577;618)
Overige diensten	S	81336	584(534;639)
Exploitatie van en handel in onroerend goed	L	24599	561(475;662)
Financiële activiteiten en verzekeringen	K	125758	528(489;570)
Groot- en detailhandel; reparatie van auto's en motorfietsen	G	634221	526(508;544)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
Administratieve en ondersteunende diensten	N	350493	507(484;531)
Productie en distributie van elektriciteit, gas, stoom en gekoelde lucht	D	21032	504(417;609)
Informatie en communicatie	J	124635	479(442;519)
Vrije beroepen en wetenschappelijke en technische activiteiten	M	199790	476(447;507)
Vervoer en opslag	H	272414	464(439;490)
Distributie van water; afval- en afvalwaterbeheer en sanering	E	35281	445(381;520)
Bouwnijverheid	F	226328	433(407;461)
<b>Algemene populatie</b>			<b>423</b>
Industrie	C	542636	387(371;404)
Landbouw, bosbouw en visserij	A	40373	161(126;205)

Table 4: 14-Day incidence of COVID-19 infection of all sectors with minimum 10,000 employees at Level 1 period 5

Description	NACE Code	Employees	Incidence (95% CI)
Menselijke gezondheidszorg en maatschappelijke dienstverlening	Q	588348	1358(1329;1388)
Kunst, amusement en recreatie	R	60382	1266(1181;1357)
Openbaar bestuur en defensie; verplichte sociale verzekeringen	O	542270	1206(1177;1235)
Exploitatie van en handel in onroerend goed	L	24599	1205(1076;1349)
Verschaffen van accommodatie en maaltijden	I	219468	1202(1158;1248)
Onderwijs	P	531993	1193(1164;1222)
Productie en distributie van elektriciteit, gas, stoom en gekoelde lucht	D	21032	1122(989;1274)
Overige diensten	S	81336	1103(1034;1177)
Financiële activiteiten en verzekeringen	K	125758	1058(1003;1117)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
Groot- en detailhandel; reparatie van auto's en motorfietsen	G	634221	965(942;990)
Vrije beroepen en wetenschappelijke en technische activiteiten	M	199790	926(885;969)
Administratieve en ondersteunende diensten	N	350493	913(882;944)
Informatie en communicatie	J	124635	909(858;963)
Distributie van water; afval- en afvalwaterbeheer en sanering	E	35281	863(772;965)
Vervoer en opslag	H	272414	847(814;882)
Bouwnijverheid	F	226328	821(784;859)
<b>Algemene populatie</b>			<b>816</b>
Industrie	C	542636	741(719;764)
Landbouw, bosbouw en visserij	A	40373	217(176;268)

### b. Level 2 work sector

In the sectors at level 2 with a minimum of 10,000 employees, Sport, ontspanning en recreatie (sector 93) has the highest 14-day incidence in both studied periods before the COVID-19 measures (period 29/09-12/10 and 6/10-19/10). The incidence is above sectors which are confronted daily with COVID infections, such as Menselijke gezondheidszorg (sector 86) and Maatschappelijke dienstverlening met huisvesting (sector 87), (Table 5, 6 and Figure 3). Other sectors that are present in the top 10 highest 14-day incidences in both periods are Eet- en drinkgelegenheden (sector 56), Ondersteunende activiteiten voor verzekeringen en pensioenfondsen (sector 66), Beveiligings- en opsporingsdiensten (sector 80) and Administratieve en ondersteunende activiteiten ten behoeve van kantoren en overige zakelijke activiteiten (sector 82).

Similar to level 1 sectors, the peak of 14-day incidence is in the period 20/10-2/11. The sectors involved with health care (sector 86) and care in collective households (sector 87) show a significant higher peak of incidences compared to other sectors, which is also increased before the peak and has a higher halfwidth after the peak for sector 87 (Figure 3). Also the sector Sport, ontspanning en recreatie (sector 93) has an significant increased incidence before the peak compared to the other sectors. After the peak, the 14-day incidences in the health care (sector 86) and care in collective households (sector 87) sectors remain significant elevated compared to the other sectors.

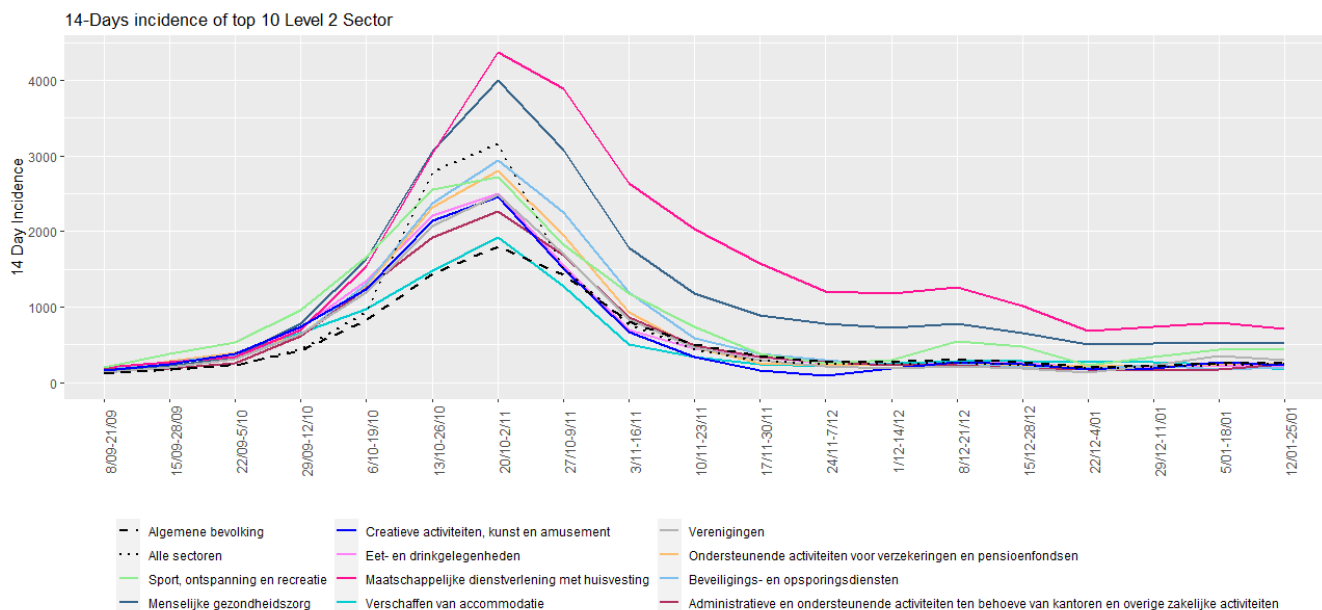


Figure 3: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 2

Table 5: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 2 period 4

Description	NACE Code	Employees	Incidence (95% CI)
Sport, ontspanning en recreatie	93	26911	955(846;1078)
Menselijke gezondheidszorg	86	261154	780(747;814)
Creatieve activiteiten, kunst en amusement	90	21922	739(634;861)
Eet- en drinkgelegenheden	56	191978	723(686;762)
Maatschappelijke dienstverlening met huisvesting	87	162464	698(659;740)
Verschaffen van accommodatie	55	27454	652(563;754)
Verenigingen	94	47887	639(571;714)
Ondersteunende activiteiten voor verzekeringen en pensioenfondsen	66	30351	626(543;721)
Beveiligings- en opsporingsdiensten	80	20096	622(522;741)
Administratieve en ondersteunende activiteiten ten behoeve van kantoren en overige zakelijke activiteiten	82	36731	618(543;704)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
<b>Algemene populatie</b>			<b>423</b>

Table 6: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 2 period 5

Description	NACE Code	Employees	Incidence (95% CI)
Sport, ontspanning en recreatie	93	26687	1660(1513;1820)
Menselijke gezondheidszorg	86	261680	1631(1583;1680)
Maatschappelijke dienstverlening met huisvesting	87	162476	1543(1484;1604)
Eet- en drinkgelegenheden	56	189940	1342(1291;1395)
Openbaar bestuur en defensie; verplichte sociale verzekeringen	84	542998	1321(1291;1352)
Beveiligings- en opsporingsdiensten	80	20015	1304(1156;1471)
Onderwijs	85	534158	1294(1264;1325)
Ondersteunende activiteiten voor verzekeringen en pensioenfondsen	66	30322	1273(1153;1406)
Exploitatie van en handel in onroerend goed	68	24582	1257(1125;1404)
Administratieve en ondersteunende activiteiten ten behoeve van kantoren en overige zakelijke activiteiten	82	37037	1242(1134;1360)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
<b>Algemene populatie</b>			<b>816</b>

### c. Level 3 work sector

In the sectors at level 3 with a minimum of 10,000 employees, Sport (sector 931) has the highest 14-day incidence in both studied periods before the COVID-19 measures (period 29/09-12/10 and 6/10-19/10). The incidence is above sectors which are confronted daily with COVID infections, such as hospitals (sector 861), primary care (sector 862) and collective household employees (sectors 873, 879) (Table 7, 8 and Figure 4). Callcenters (sector 822) are also present in the top 10 highest 14-day incidences in both periods.

The peak of the 14-day incidence in employees in hospitals (sector 861) and collective households (sector 872, 873, 879) is significantly higher compared to the other sectors. In the sectors Sports (sector 931) and Instellingen met huisvesting voor ouderen en voor personen met een lichamelijke handicap (sector 873) the incidence is significant higher before the peak then in other sectors. The latter sector also has a peak that is earlier and a half width that is larger after the peak. After the peak, the 14-day incidences in the health care (sector 861) and care in collective households (sector 871, 872, 873) sectors remain significantly elevated compared to the other sectors.(Figure 4).



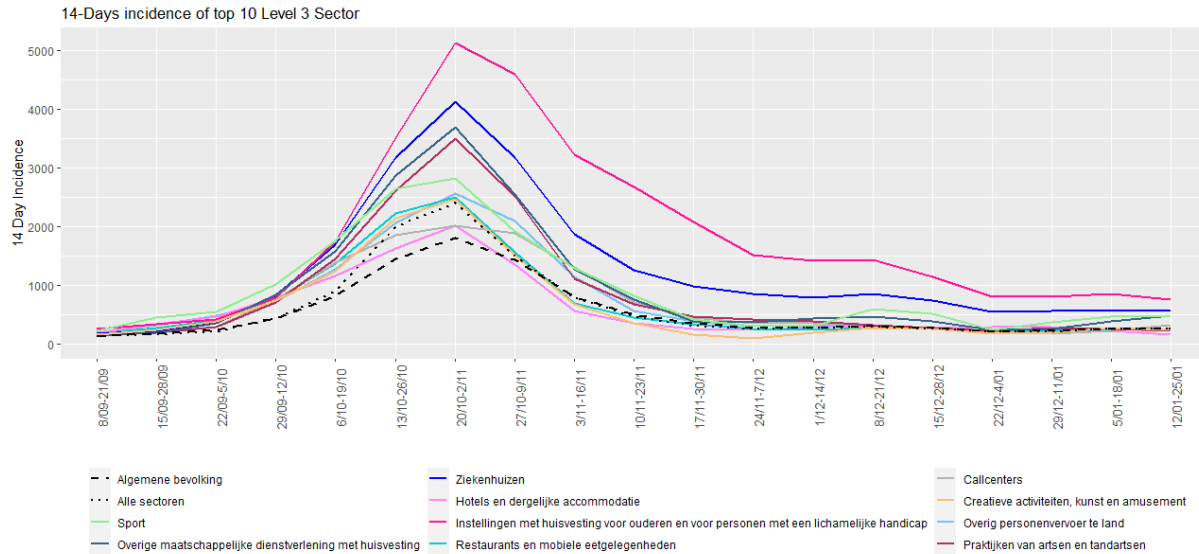


Figure 4: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 3

Table 7: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 3 Period 4

Description	NACE Code	Employees	Incidence (95% CI)
Sport	931	21131	1008(882;1152)
Overige maatschappelijke dienstverlening met huisvesting	879	15412	837(705;994)
Ziekenhuizen	861	210745	819(781;858)
Hotels en dergelijke accommodatie	551	20076	792(678;925)
Instellingen met huisvesting voor ouderen en voor personen met een lichamelijke handicap	873	66667	786(722;856)
Restaurants en mobiele eetgelegenheden	561	149471	756(713;801)
Callcenters	822	10133	750(599;938)
Creatieve activiteiten, kunst en amusement	900	21922	739(634;861)
Overig personenvervoer te land	493	40751	719(641;806)
Praktijken van artsen en tandartsen	862	22695	705(604;823)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
<b>Algemene populatie</b>			<b>423</b>

Table 8: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 3 Period 5

Description	NACE Code	Employees	Incidence (95% CI)
Sport	931	21062	1752(1583;1938)
Instellingen met huisvesting voor ouderen en voor personen met een lichamelijke handicap	873	66609	1746(1649;1848)
Ziekenhuizen	861	210960	1688(1634;1744)
Overige maatschappelijke dienstverlening met huisvesting	879	15472	1577(1392;1786)
Praktijken van artsen en tandartsen	862	22765	1454(1306;1618)
Administratieve en ondersteunende activiteiten ten behoeve van kantoren	821	11777	1435(1235;1666)
Secundair onderwijs	853	404968	1409(1373;1446)
Instellingen met huisvesting voor personen met mentale handicap of psychiatrische problemen en voor drugs- en alcoholverslaafden	872	39972	1406(1295;1526)
Drinkgelegenheden	563	19500	1400(1244;1575)
Callcenters	822	10367	1389(1181;1633)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
<b>Algemene populatie</b>			<b>816</b>



#### d. Level 4 work sector

Of the sectors with at least 3,000 employees, sectors involving sports (sportclubs sector 9312, fitnesscentra sector 9313 and other sports sector 9319), Andere vormen van arbeidsbemiddeling (sector 7830), Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels (sector 4729) and Vervaardiging van lucht- en ruimtevaartuigen en van toestellen in verband daarmee (sector 3030) are in the top 10 sectors with the highest 14-day incidence in both periods before the COVID-19 measures (Table 9, 10 and Figure 5).

The peak of the 14-day incidence is significantly higher compared to other sectors for the sectors:

- Andere vormen van arbeidsbemiddeling (sector 7830)
- Health and care sectors: sector 4773 (Apothekers in gespecialiseerde winkels), 8610 (Ziekenhuizen), 8621 (Huisartspraktijken), 8720 (Instellingen met huisvesting voor personen met een mentale handicap of psychiatrische problemen en voor drugs- en alcoholverslaafden), 8730 (Instellingen met huisvesting voor ouderen en voor personen met een lichamelijke handicap), 8790 (Overige maatschappelijke dienstverlening met huisvesting)
- Haar- en schoonheidsverzorging (sector 9602)
- Fitnesscentra (sector 9313)
- Public services sectors: Openbaar bestuur op het gebied van gezondheidszorg, onderwijs, cultuur en andere sociale dienstverlening, exclusief sociale verzekeringen (sector 8412) and Openbare orde en civiele veiligheid (sector 8424)

The 14-day incidences were higher before the peak for sportclubs (sector 9312), Instellingen met huisvesting voor ouderen en voor personen met een lichamelijke handicap (sector 8730), Kinderopvang (sector 8891), Organisatie van congressen en beurzen (sector 8230) and certain wholesale and retail sectors (4631, 4764, 4762). After the peak the incidences remained significant elevated for Sportclubs (sector 9312), Andere vormen van arbeidsbemiddeling (sector 7830) and health care and collective household care sectors (8610, 8710, 8720, 8730) (Figure 5).

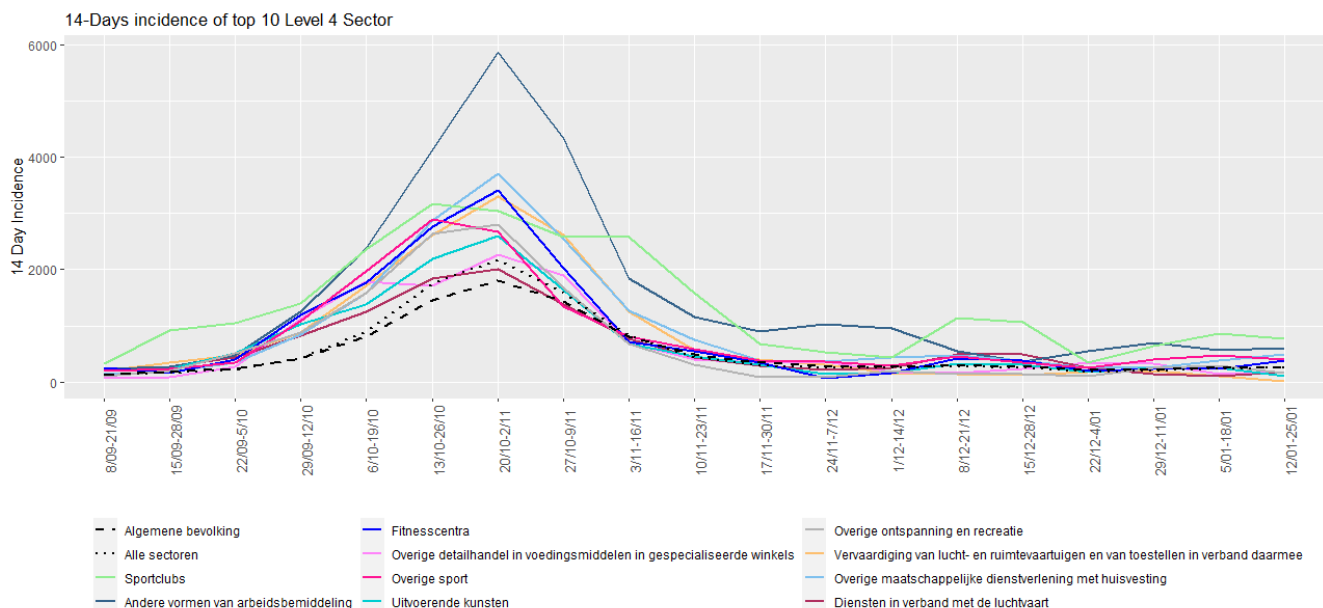


Figure 5: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 4

Table 9: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 4 Period 4

Description	NACE Code	Employees	Incidence (95% CI)
Sportclubs	9312	5954	1394(1126;1725)
Andere vormen van arbeidsbemiddeling	7830	4320	1250(959;1629)
Fitnesscentra	9313	3707	1187(884;1591)
Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels	4729	3312	1117(810;1538)
Overige sport	9319	3220	1087(781;1510)
Uitvoerende kunsten	9001	5196	1020(780;1333)
Overige ontspanning en recreatie	9329	3398	883(618;1260)
Vervaardiging van lucht- en ruimtevaartuigen en van toestellen in verband daarmee	3030	5257	875(656;1166)
Overige maatschappelijke dienstverlening met huisvesting	8790	1541	837(705;994)
Diensten in verband met de luchtvaart	5223	5968	821(621;1085)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
<b>Algemene populatie</b>			<b>423</b>

Table 10: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 4 Period 5

Description	NACE Code	Employees	Incidence (95% CI)
Andere vormen van arbeidsbemiddeling	7830	4326	2381(1967;2880)
Sportclubs	9312	5875	2349(1991;2769)
Overige sport	9319	3208	1964(1537;2506)
Kinderopvang	8891	25658	1824(1667;1995)
Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels	4729	3305	1785(1385;2297)
Fitnesscentra	9313	3741	1764(1388;2239)
Instellingen met huisvesting voor ouderen en voor personen met een lichamelijke handicap	8730	66609	1746(1649;1848)
Overige kredietverstrekking	6492	3230	1734(1337;2247)
Vervaardiging van lucht- en ruimtevaartuigen en van toestellen in verband daarmee	3030	5251	1714(1396;2103)
Openbare orde en civiele veiligheid	8424	53021	1688(1582;1801)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
<b>Algemene populatie</b>			<b>816</b>

#### e. Level 5 work sector

Of the sectors with at least 1,500 employees, sectors involving sports (football clubs sector 93121, sports federations sector 93191), Andere vormen van arbeidsbemiddeling (sector 78300), secondary schools (sector 85311) and Algemene bouw van kantoorgebouwen (sector 41202) are in the top 10 sectors with the highest 14-day incidence in both periods before the COVID-19 measures (Table 11, 12 and Figure 6).

The peak of the 14-day incidence is the highest for the sector Andere vormen van arbeidsbemiddeling (sector 78300) and Secondary schools (sector 85311). After the COVID measures, football clubs is the sectors with the highest incidence after the peak, similar to the sectors of hospitals and care in nursing homes (sectors 86101 and 87301) (Figure 4 and 6).

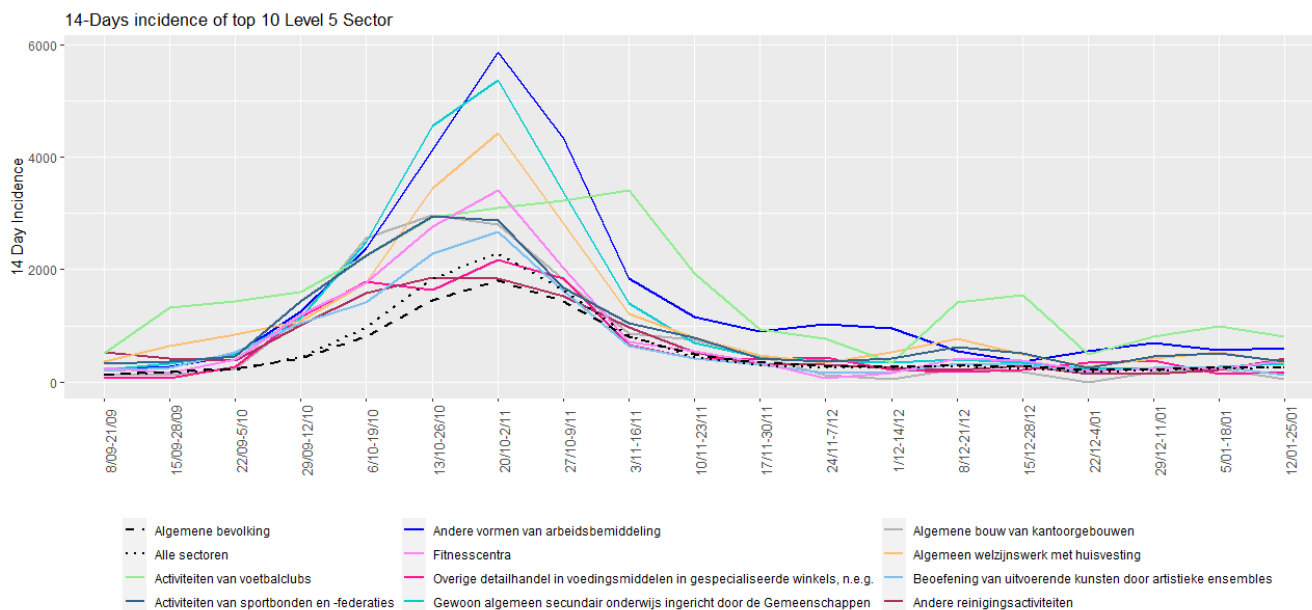


Figure 6: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 5

Table 11: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 5 Period 4

Description	NACE Code	Employees	Incidence (95% CI)
Activiteiten van voetbalclubs	93121	3605	1609(1246;2076)
Activiteiten van sportbonden en -federaties	93191	196	1428(988;2060)
Andere vormen van arbeidsbemiddeling	78300	432	1250(959;1629)
Fitnesscentra	93130	370	1187(884;1591)
Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels	47299	285	1155(822;1620)
Gewoon algemeen secundair onderwijs ingericht door de Gemeenschappen	85311	159055	1143(1092;1196)
Algemene bouw van kantoorgebouwen	41202	175	1139(736;1759)
Algemeen welzijnswerk met huisvesting	87902	250	1080(742;1570)
Beoefening van uitvoerende kunsten door artistieke ensembles	90012	492	1056(806;1383)
Andere reinigingsactiviteiten	81290	284	1019(709;1463)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
<b>Algemene populatie</b>			<b>423</b>

Table 12: 14-Day incidence of COVID-19 infection of 10 sectors with the highest incidence at Level 5 Period 5

Description	NACE Code	Employees	Incidence (95% CI)
Vervaardiging van wapens en munitie	25400	2183	2657(2060;3422)
Algemene bouw van kantoorgebouwen	41202	1761	2556(1914;3406)
Gewoon algemeen secundair onderwijs ingericht door de Gemeenschappen	85311	159806	2478(2403;2555)
Andere vormen van arbeidsbemiddeling	78300	4326	2381(1967;2880)
Activiteiten van voetbalclubs	93121	3556	2250(1811;2793)
Activiteiten van sportbonden en -federaties	93191	1956	2250(1678;3010)
Distributie van gasvormige brandstoffen via leidingen	35220	1881	2126(1563;2886)
Activiteiten van medische laboratoria	86901	5159	1977(1631;2395)
Kinderdagverblijven en crèches	88911	22564	1950(1778;2139)
Vertoning van films	59140	1633	1837(1287;2615)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
<b>Algemene populatie</b>			<b>816</b>

#### f. Work sectors of special interest

When looking specifically at secondary schools (sector 8531), hairdressers and beauty salons (sector 9602), bars, restaurants and hotels (sector 5630, 5610, 5621, 5510) and sport sectors (sector 9312, 9313, 9319) and compare them to retail workers (sector 4729, 4724, 4719 and 4711) and hospitals (sector 8610), we notice that sport sectors are the most affected sectors in both periods before the October COVID measures, higher than specialized food shops (Table 13, 14 and Figure 7). The 14-day incidence in both periods before the October measures are comparable between hairdressers and beauty salons, secondary schools and bars. Arts (sector 9001) and passenger transport (sector 4931) show a 14-day incidence similar to hospitals.

Of the sectors of interest in this section, the peak in sector hospitals (sector 8610), fitnesscentra (sector 9313) and hairdressers and beauty salons (sector 9602) is significantly higher compared to all other sectors. Sportclubs (sector 9312) show additionally an increased 14-day incidence before and after the peak. There were significantly less 14-day incidences before the peak in Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels (sector 4729).

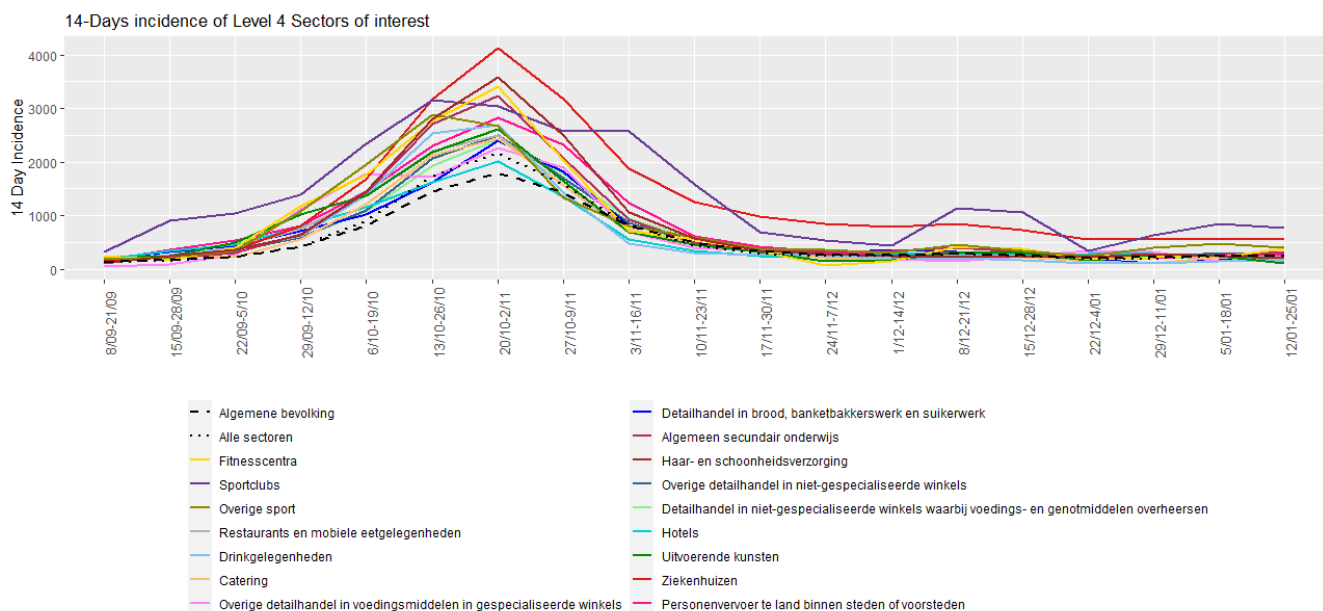


Figure 7: 14-Day incidence of COVID-19 infection of selected sectors of interest at Level 4

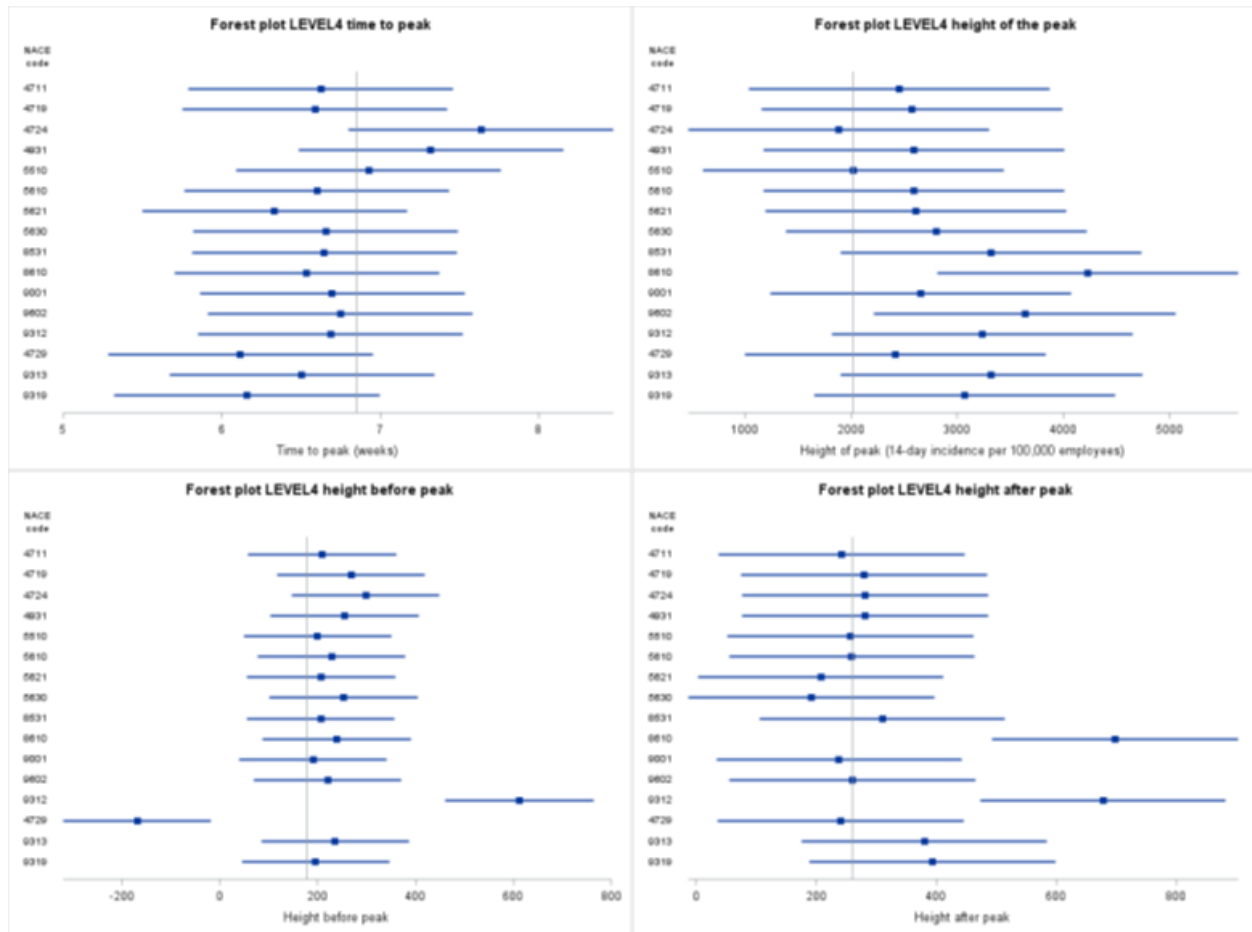


Figure 8: Forest plots of characteristics of the longitudinal profile of selected sectors of interest at Level 4.

Table 13: 14-Day incidence of COVID-19 infection of selected sectors of interest at Level 4 Period 4

Description	NACE Code	Employees	Incidence (95% CI)
Sportclub	9312	5954	1394(1126;1725)
Fitnesscentra	9313	3707	1187(884;1591)
Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels	4729	3312	1117(810;1538)
Overige sport	9319	3220	1087(781;1510)
Uitvoerende kunsten	9001	5196	1020(780;1333)
Ziekenhuizen	8610	210745	819(781;858)
Personenvervoer te land binnen steden of voorsteden	4931	28851	818(720;929)
Hotels en dergelijke accommodatie	5510	20076	792(678;925)
Restaurants en mobiele eetgelegenheden	5610	149471	756(713;801)
Detailhandel in brood, banketbakkerswerk en suikerwerk in gespecialiseerde winkel	4724	6592	713(536;948)
Algemeen secundair onderwijs	8531	390549	656(631;682)
Haar- en schoonheidsverzorging	9602	13535	628(508;776)
Drinkgelegenheden	5630	20160	625(525;744)
Detailhandel in niet-gespecialiseerde winkels waarbij voedings- en genotmiddelen overheersen	4711	141068	599(560;641)
Overige detailhandel in niet-gespecialiseerde winkel	4719	17391	598(494;724)
Catering	5621	11901	563(443;715)
<b>Alle sectoren</b>		<b>4923483</b>	<b>511(505;517)</b>
<b>Algemene populatie</b>			<b>423</b>

Table 14: 14-Day incidence of COVID-19 infection of selected sectors of interest at Level 4 Period 5



Description	NACE Code	Employees	Incidence (95% CI)
Sportclubs	9312	5875	2349(1991;2769)
Overige sport	9319	3208	1964(1537;2506)
Overige detailhandel in voedingsmiddelen in gespecialiseerde winkels	4729	3305	1785(1385;2297)
Fitnesscentra	9313	3741	1764(1388;2239)
Ziekenhuizen	8610	210960	1688(1634;1744)
Personenvervoer te land binnen steden of voorsteden	4931	28924	1459(1327;1604)
Haar- en schoonheidsverzorging	9602	13555	1446(1258;1661)
Algemeen secundair onderwijs	8531	392334	1435(1398;1473)
Drinkgelegenheden	5630	19500	1400(1244;1575)
Uitvoerende kunsten	9001	5229	1377(1094;1731)
Restaurants en mobiele eetgelegenheden	5610	148173	1368(1310;1428)
Catering	5621	11755	1208(1026;1422)
Hotels en dergelijke accommodatie	5510	19828	1160(1020;1319)
Overige detailhandel in niet-gespecialiseerde winkels	4719	17435	1107(962;1274)
Detailhandel in niet-gespecialiseerde winkels waarbij voedings- en genotmiddelen overheersen	4711	140813	1083(1030;1138)
<b>Alle sectoren</b>		<b>4923483</b>	<b>1037(1028;1046)</b>
Detailhandel in brood, banketbakkerswerk en suikerwerk in gespecialiseerde winkels	4724	6656	1002(805;1297)
<b>Algemene populatie</b>			<b>816</b>

#### g. Contact tracing

Of the 11,755 index cases registered between 22 Jul 2020 (week 30) and 18 Feb 2021, the customer segment, region and the registration date are known for 11,732 index cases. Before the COVID-19 measures of October, the 14-day incidence of cases was above average for the segment public transport, education and emergency services (Figure 9). Although the measures reduced the incidence of index cases in all segments and regions, since mid-January the 14-day incidence shows a small peak, which is visually noticeable for the segment education (Figure 9) and regions Hasselt and Roeselare ((Figure 10). Note however that the extensive uptake in testing students and pupils may have influenced the increase in education.

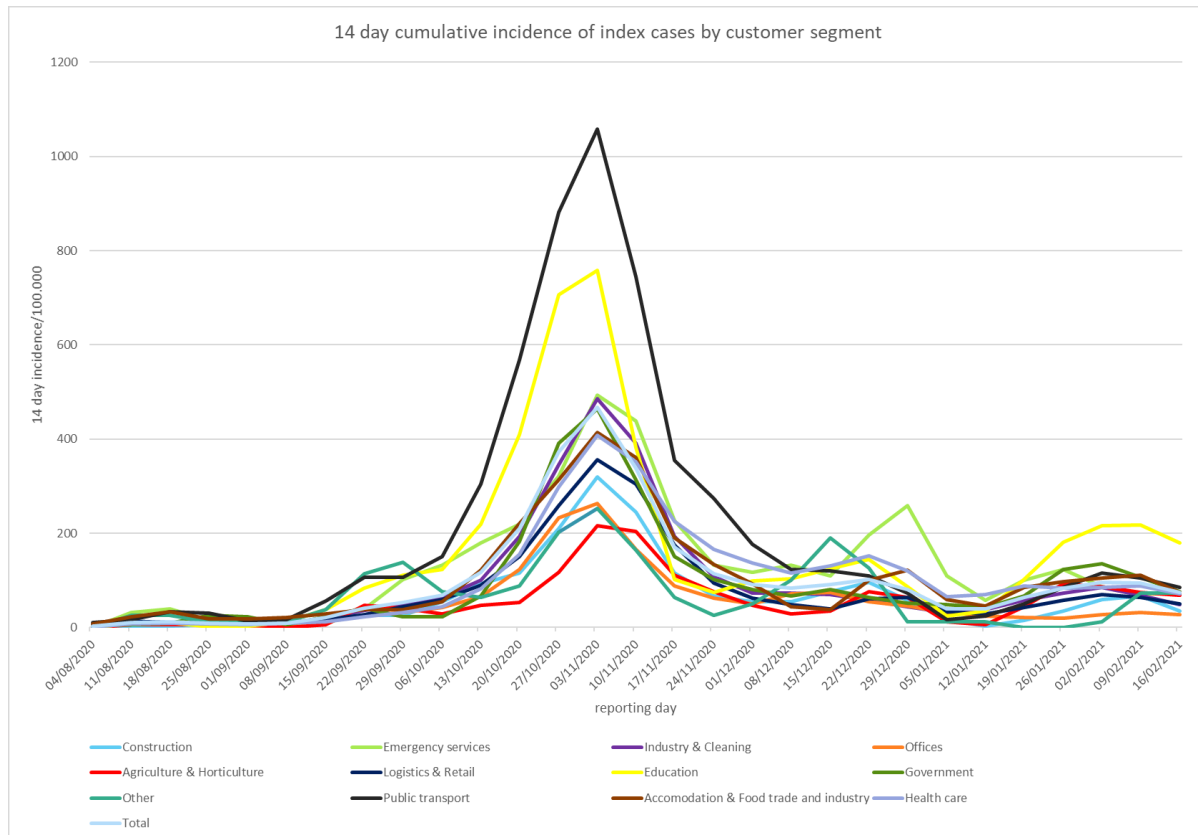


Figure 9: 14-Day incidence of index cases by segments under surveillance

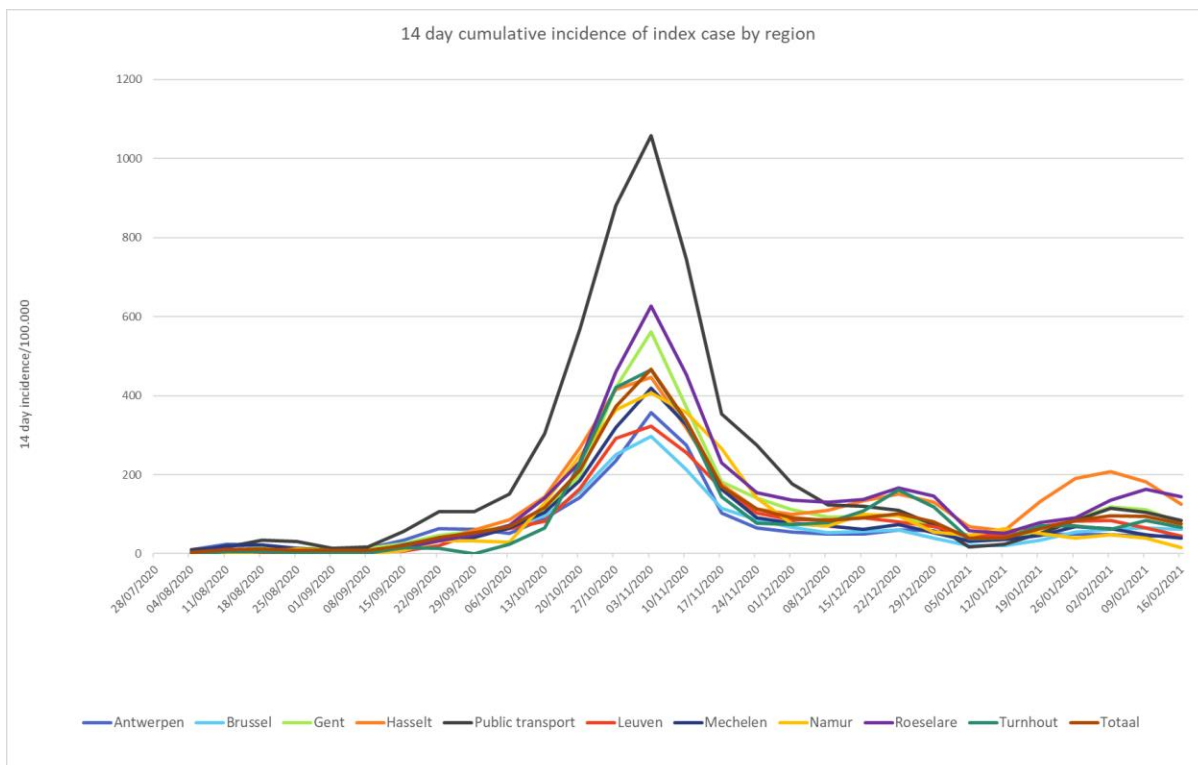


Figure 10: 14-Day incidence of index cases by region



Since the institution of the tracing app on 29 Oct 2020, there are 6016 index cases of whom high-risk contacts were recorded. Of 5952 index cases the customer segment and region is known. The segment emergency services and the Public transport and Hasselt region show a higher mean number of high-risk contacts in the period 20 Oct 2020-18 Feb 2021 compared to other segments and regions. (Figures 11 and 12).

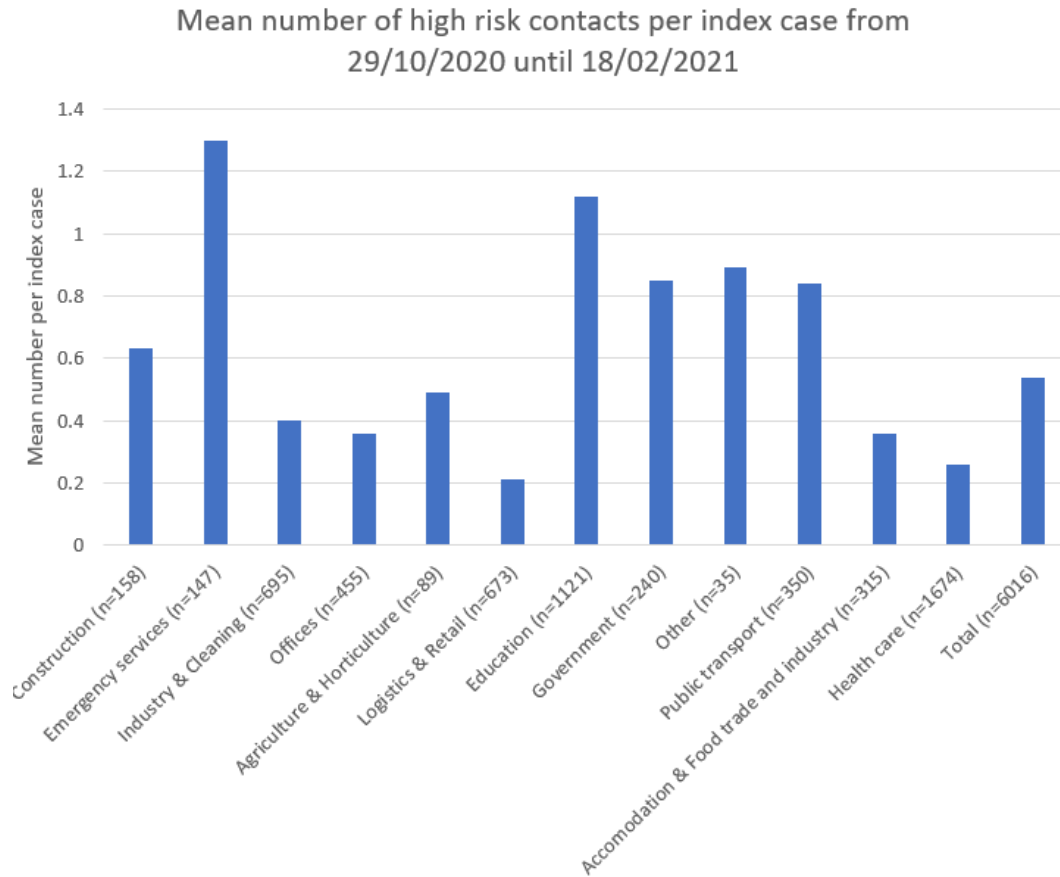


Figure 11: The mean number of high-risk contacts per index case by segments under surveillance



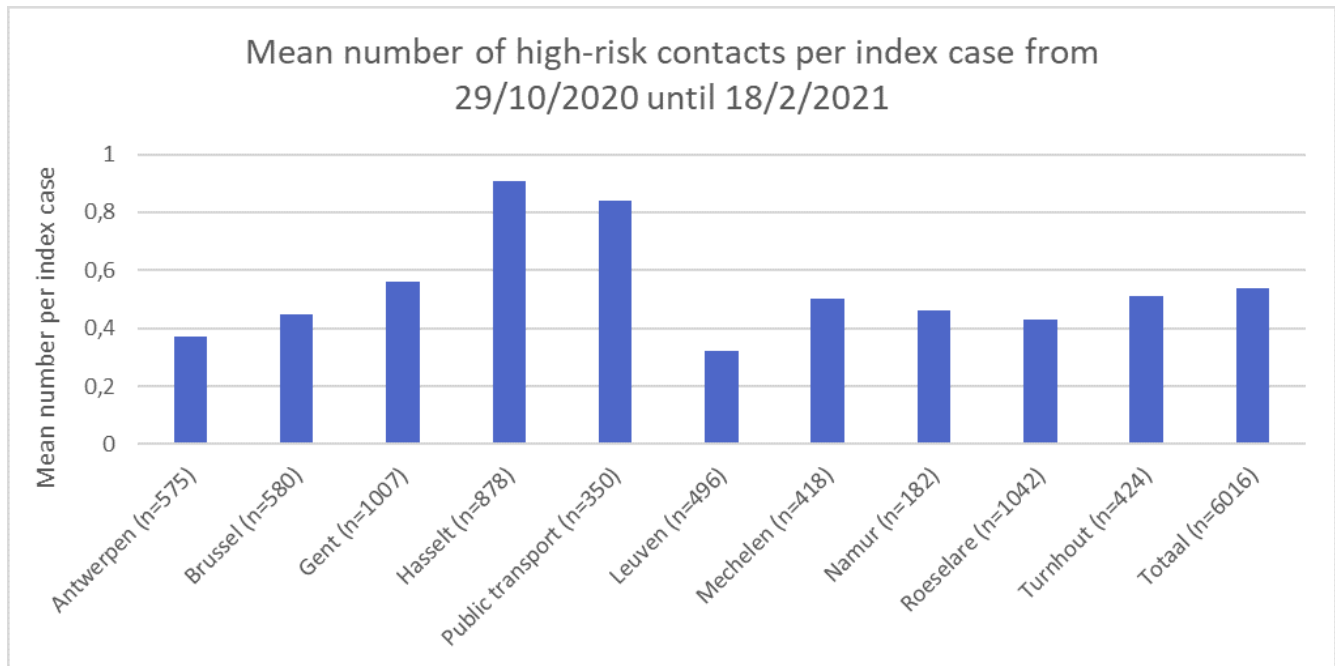


Figure 12: The mean number of high-risk contacts per index case by region

The number of high-risk contacts per index case varies from 0 to 56, with more than 99% being lower than 10 high-risk contacts. A sole high number of high-risk contact for an index will influence the mean number for a segment importantly, especially when groups are small. To avoid extra high numbers of contacts in uencing data, we report the percentage of index cases who had two of more high-risk contacts per four weeks.

The segment emergency services shows a higher percentage of index cases with 2 or more high-risk contacts (Figures 13). Several sectors show an increase over time periods, incidating index cases have increasing high- risk contacts. Note that the number of index cases for the segments 'construction' and 'agriculture' is very low some time periods. The percentages in Figure 13 might therefore not be representative for this segment during these periods.

Most regions show an increase over time of the percentage of index cases with 2 or more high-risk contacts (Figure 14). Note that the number of index cases for regions 'Namur' and 'public transport' is low in the last period. The percentages in Figure 14 might therefore not be representative for the region in this period.

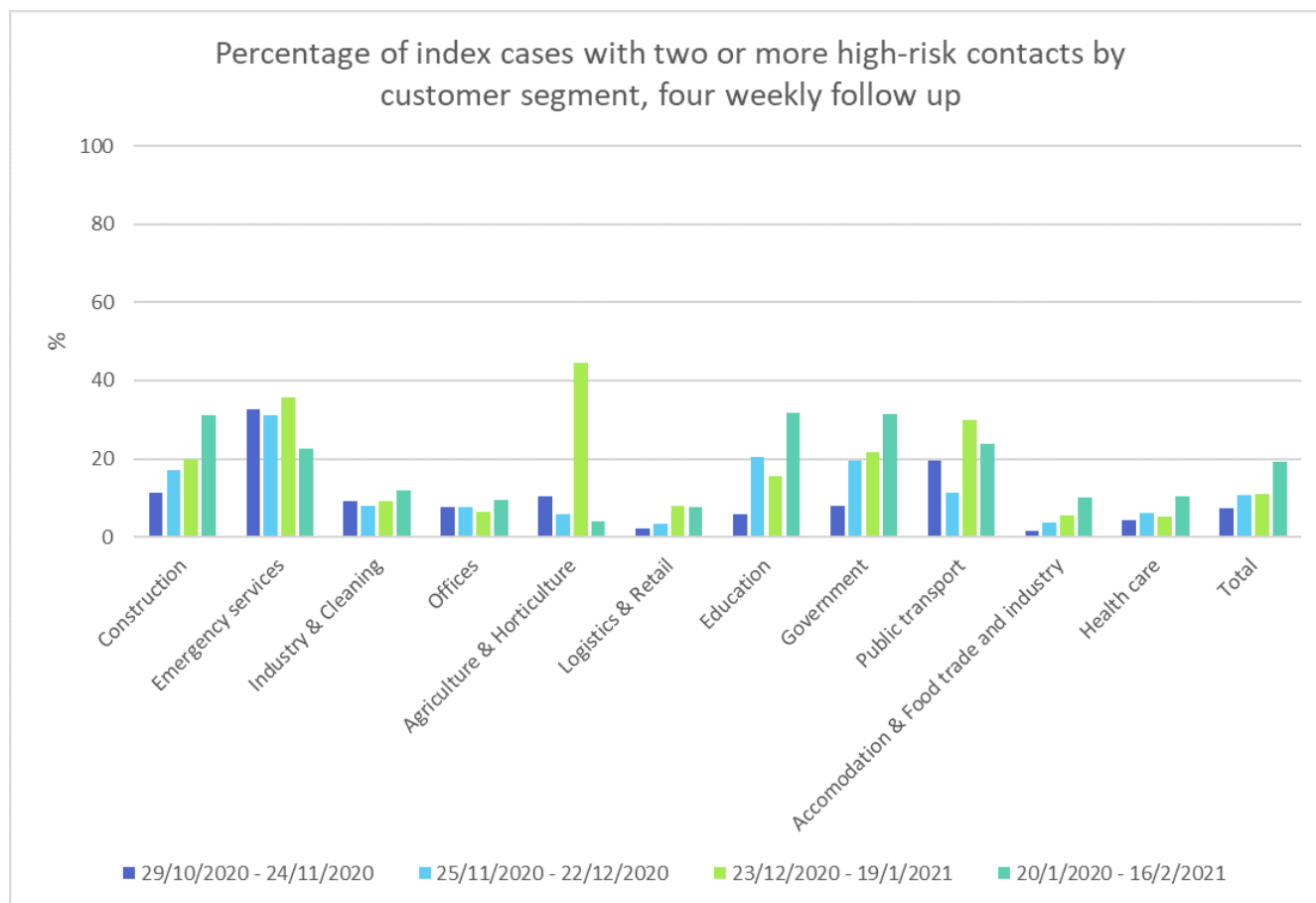


Figure 13: Four weekly percentage of index cases with two or more high-risk contacts by segments under surveillance

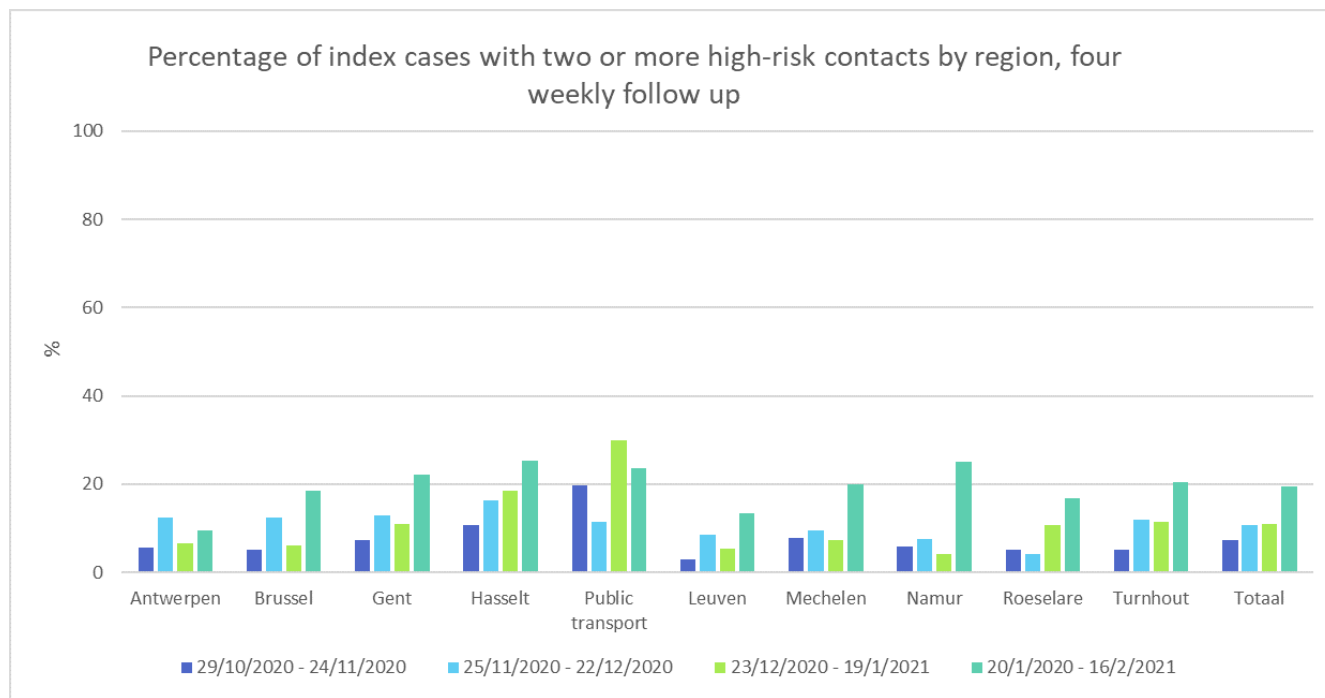


Figure 14: Four weekly percentage of index cases with two or more high-risk contacts by region



#### D. Conclusion

Despite the limitations of the data, it is clear that the 14-days incidence of COVID-infections among employees in the sport sectors was the highest in all sectors in the weeks before the COVID measures of 19 October. No conclusions can be drawn regarding the location of infection (workplace or elsewhere) nor the location of employment (at work, homework or temporarily unemployed) of the employees in this sector, but it reflects the behavior and potential risk of infection in these locations. Striking is that employees in sport sector have 14-day incidences well above high risk of infection sectors such as hospitals and nursing homes or sectors with a high level of come and go of individuals (retail workers).

The peak of COVID-19 14-day incidence in most sectors is in the period 20/10-2/11, reflecting the effect of the COVID-measures. After the COVID measures, sectors presented with high risk contacts, such as hospitals and nursing homes show a 14-day incidence above most sectors. But also the incidences in the sectors of other forms of job placement (sector 78300) and activities of football clubs (sector 93121) remain elevated, well above sectors that remained active or re-opened after the COVID measures, such as secondary schools and retail workers.

Contact tracing information shows a small peak of index cases since mid January 2021, especially in the region Hasselt and in the segment education. The latter may be due to the increased testing of students in schools, since there is no indication of increased infection in educational staff in the RSZ/ONSS data. The mean number of high-risk contacts of an index case in the regions Hasselt and public transport were high in the period 29 Oct 2020- 18 Feb 2021, as well as for index cases in emergency services and education. In many segments and most regions the percentage of index cases with 2 or more high-risk contacts is increasing over time.

Further insights on the COVID-19 incidence in the work sectors can be gained from including information on self-employed workers and by longitudinal analyses of the data from January 2021 onwards.



## Annex 5. International situation

Geert Molenberghs, 21/02/2021

### A. Incidences, stringency, and proportion of B.1.1.7

Let us compare recent incidences in Belgium, its neighbours, countries with high circulation of the British variant B.1.1.7, and Israel. Incidents are taken on 15/02/2021, and three weeks earlier, i.e. 26/02/2021. We also present the stringency index.

Country	14-day incidence <sup>42</sup> (per 100k)		Stringency index <sup>43</sup> (17/02/2020)	B.1.1.7
	26/01/2021	20/02/2021		
Belgium	250	242	60	55%
France	415	397	64	35%
Luxembourg	273	353	57	~60%
Germany	262	131	83	21%
Netherlands	464	294	88	75%
United Kingdom	887	293	86	39%
Ireland	917	250	88	90%
Portugal	1440	490	79	43%
Spain	973	500	71	~20%
Czech Republic	1059	1014	72	
Denmark	242	101	67	
Israel	1271	812	87	

Note that Belgium's incidence takes a middle position in the ECDC ranking, as presented on Friday, 26 February 2021, in the weekly Sciensano report.

It is striking that our relatively stable figures reached with measures that correspond to a comparatively low stringency. Indeed, among the countries listed, only Luxembourg has a slightly lower stringency. France scores slightly higher. Countries that had a very severe recent peak needed to resort to very stringent measures, such as the UK, Ireland, the Netherlands. Israel, in spite of its advanced vaccination campaign, has rounded a recent high peak and its fighting this with very stringent measures. Evidently, such measures as school closure and (early) curfews are very invasive.

### B. Rationale for a strict international travel policy

Our border control policy consists of two pillars:

- Testing policy for incoming and outgoing travelers, supplemented with quarantine policy for incoming travelers;
- Prohibition for non-essential travel.

Maintaining this form of travel ban is not evident in a EU context. Nevertheless, reintroduction has shown to be problematic at many instances. The spread of the Spanish variant over northern and western Europe has been well documented (Hodcroft et al. 2020), and for Ireland in particular (Mallon et al. 2020), based on phylogenetic

<sup>42</sup> [COVID-19 Data Dashboard \(gibex.github.io\)](https://gibex.github.io)

<sup>43</sup> [COVID-19: Government Stringency Index, Feb 18, 2021 \(ourworldindata.org\)](https://ourworldindata.org)

analysis. The Robert Koch Institute epidemiological reports<sup>44</sup> indicated that, by mid-August (prior to schools reopening), about half of the newly detected infection were among people that sojourned abroad in the two weeks prior to establishing infection. In Belgium, the epidemic curve in late August and throughout the first half of September showed a steep increase that only slowed a little around 20 September, to then increase again early October, upon opening higher education. Equally, in late August and early September, the Belgian map showed the effects of seeding (relatively sudden occurrence over the map without a treelike pattern, typical for community transmission). In December and early January 2021, the effect of returning travelers was clearly seen from PLF data. For example, in the first week of January, the number of positive cases in the Brussels Capital Region was attributable for 50% to returning travelers.

Especially in view of variants of concern, a strict border control is relevant.

We observe that several European countries and the UK established travel restrictions:

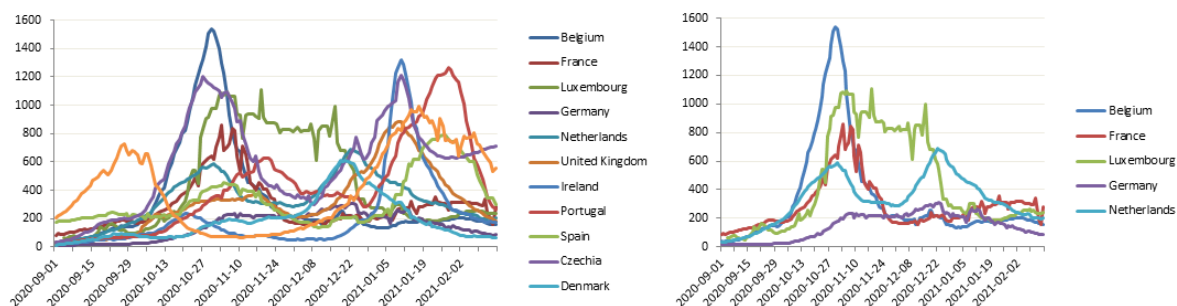
- In the UK, mandatory hotel quarantine is required for people returning from selected countries; in Scotland, this is mandatory for all returning travelers;
- Ireland bans visitors from UK (with exception for Northern Ireland, which provides a leak), South Africa, and Brazil;
- Hotel quarantine is employed for foreigners traveling to Norway;
- Norway keeps its border with Sweden closed, including for transborder commuters in either direction;
- Germany established severe restrictions for travel to and from countries with high circulation in general and/or substantial circulation of variants of concern in particular; for example, the border with the Czech Republic is virtually closed (for example, travel to and from the Czech Republic from a third country, with passage through Germany, is not allowed except for goods);
- Portugal prohibits non-essential travel for its residents in metropolitan Portugal.

We advise a careful discussion with our neighboring countries, as a mutually agreed regional policy, to the benefit of all countries involved, may be highly effective and easier to digest for both authorities and populace.

Note that some studies downplay risk associated with travel. It is true that, when a country's incidence is (very)high, travelers may pose a comparatively mild additional risk if there are not variants of concern. But in all other cases, the risk is high. This is especially true when circulation is (very) low. Various countries, such as Denmark, Germany, Italy, and Finland point to international travel as an important reason why their figures, excellent until a certain point in the summer, considerably deteriorated.

### C. International comparison

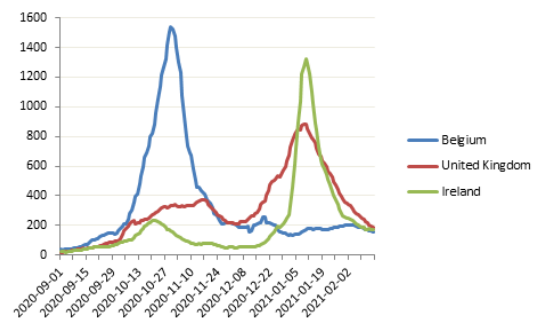
Smoothed daily number of cases per million for Belgium, neighboring countries, and selected countries with high B.1.1.7 circulation. We will zoom in on Belgium and some of these countries each time in subsequent graphs.



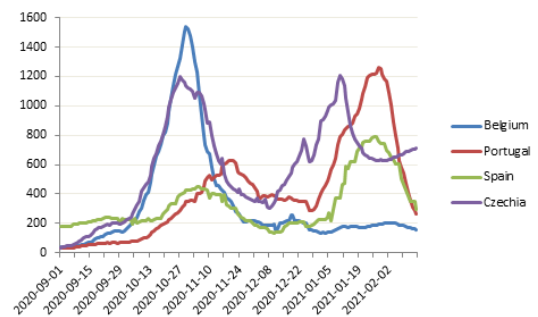
<sup>44</sup> [https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/Situationsberichte\\_Tab.html](https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/Situationsberichte_Tab.html)

Zoom on neighboring countries. The Netherlands had a lower second peak than Belgium, but reached a third peak, higher than the second, in the meantime. Both of these were roughly two months apart. Currently, the Netherlands has measures in place to allow for absorption of the B.1.1.7 (British) variant. France had a second peak, lower than Belgium's, hovered around Belgian levels for several weeks, but in 2021 has reached higher incidences than Belgium. The Netherlands is ahead of Belgium in terms of B.1.1.7 roll out; France is behind. Germany installed a strict lockdown, including school closure, because of a rapidly increasing curve. Nevertheless, they never went up to a clear peak, were above Belgium for a certain time, but have been below Belgium again for 2-3 weeks as of now.

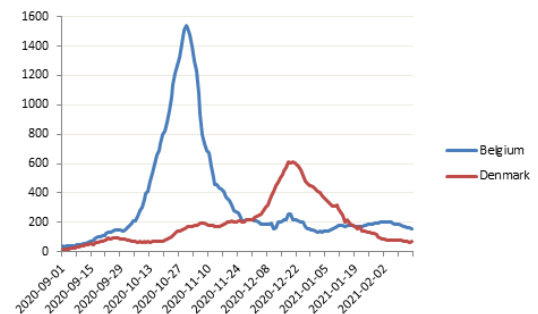
**Belgium and countries with early B.1.1.7 circulation.** Ireland was able to control its curve during our second peak, with strict (Level 5) lockdown, but schools open. It relaxed measures importantly before and during Christmas break, exactly at the time with increasing B.1.1.7 circulation, leading to an extremely steep curve. The UK showed, evidently, an earlier rise, but less steep and with a lower summit. This is explained by the size of the country, consisting of several nations.



**Belgium, and countries with more recent B.1.1.7 circulation.** Spain and Portugal saw a rise around Christmas. Also here, beginning circulation of B.1.1.7 was coupled with relaxations. Like with the UK and Ireland, the smaller of the two countries (Portugal) showed a more pronounced peak. Czechia is a special case: it had a peak nearly as high as the Belgian peak in the Fall of 2020, to then exhibit a second peak early January; the country might be on its way towards a fourth peak.



**Belgium and Denmark.** While Denmark has high circulation of B.1.1.7, its prudent measures have ensured a relatively well controlled peak around Christmas, with its curve below the Belgian curve again at this time.



Country	Selection of measures taken and remarks
Germany	<ul style="list-style-type: none"> <li>o Incoming travel restricted for high-risk countries and countries with variants of concern (including a policy based on testing and quarantine); exceptions for transportation, logistics, border regions</li> <li>o Non-essential shops closed</li> <li>o One contact per household</li> <li>o Cultural sector closed</li> <li>o Horeca closed</li> <li>o Non-medical contact professions closed</li> <li>o Schools closed</li> <li>o B.1.1.7 estimated at around 6%</li> <li>o Relaxations when the 7day incidence of new cases reaches 35</li> <li>o Germany enforces its border control on the Czech Republic, given the dire epidemiological situation in the latter country: this implies that railway routes are interrupted; apart from freight transportation (drivers need to have a negative test), no transit is possible (e.g. going by car from Belgium to and from Czech Republic via Germany is prohibited)</li> </ul>



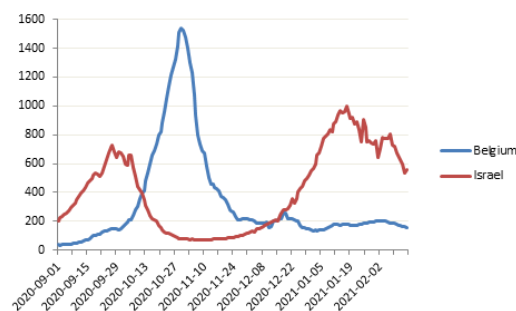
The Netherlands	<ul style="list-style-type: none"> <li>○ Infections at work increased</li> <li>○ British variant estimated around 75%</li> <li>○ Curfew at 21:00</li> <li>○ Schools closed</li> </ul>
United Kingdom	<ul style="list-style-type: none"> <li>○ Schools closed, except for vulnerable children</li> <li>○ Non-essential shops closed</li> <li>○ 1 meter to 2 meter</li> <li>○ Scotland has a strict stay-at-home policy</li> <li>○ Non-essential travel forbidden</li> <li>○ Hotel Q compulsory for returning travelers from red zones (for all travelers in Scotland); testing on day 2 and day 8.</li> </ul>
Ireland	<ul style="list-style-type: none"> <li>○ Level 5 (highest level), with in addition school closure and no visitors at home (neither inside nor outside)</li> <li>○ Note that Level 5 includes a perimeter</li> <li>○ Negative test required for incoming travelers; quarantine</li> <li>○ Severe travel restrictions for visitors from UK, South Africa, Brazil (exception = Achilles heel = Northern Ireland)</li> <li>○ On February 5, 2021: 75% British variant</li> <li>○</li> </ul>
Portugal	<ul style="list-style-type: none"> <li>○ On 11 February 2021, B.1.1.7 estimated to circulate around 43%.</li> <li>○ Universities closed</li> <li>○ Schools closed</li> <li>○ Telework mandatory (those present at work should be registered with government)</li> <li>○ Stay within hometown during weekends</li> <li>○ Restricted opening non-essential shops</li> <li>○ On 26 January 2021: highest incidence in the world</li> <li>○ Patients brought to other countries (including Germany); Belgium offered to take patients</li> <li>○ Portuguese citizens are not allowed to travel outside metropolitan Portugal (does not apply to islands)</li> <li>○ International travel strongly discouraged, except for essential reasons; PCR test needed for travelers.</li> </ul>
Czech Republic	<ul style="list-style-type: none"> <li>○ Hotels open for business people only</li> <li>○ No markets</li> <li>○ No visitors in hospitals</li> <li>○ Travelers can enter only with negative tests</li> <li>○ Essential travelers coming in: Q</li> </ul>
Denmark	<ul style="list-style-type: none"> <li>○ Border closure (one can enter with negative test)</li> <li>○ No non-essential incoming travelers, applies to all countries</li> <li>○ 1 meter à 2 meter</li> <li>○ At most 5 people can gather</li> <li>○ Schools closed; primary school reopened on 8 February 2021</li> </ul>
Luxembourg	<ul style="list-style-type: none"> <li>○ End of January: British variant 39%, South African variant 5.6%</li> <li>○ Measures extended until 14 March 2021 (curfew, limited visit at home, horeca closed)</li> <li>○ Luxembourg shows understanding for Belgian measures regarding international travel</li> <li>○ Luxembourg finds that German measures, when applied to itself, would be going too far</li> </ul>
Austria	<ul style="list-style-type: none"> <li>○ Severe outbreak of South African variant in Tyrol (280 cases)</li> <li>○ Intra-Austrian travel restrictions</li> <li>○ Increased stringency of measures viz. nursing homes</li> <li>○ Not only HRC tested (C1), but also contacts-of-contacts (C2)</li> </ul>
Norway	<ul style="list-style-type: none"> <li>○ Norway keeps the border with Sweden closed; this includes cross-border workers in either direction</li> </ul>

**Belgium and Israel.** In addition to boasting the most advanced vaccination out roll to date, the country exhibited a now gently decreasing mid-January peak. It does underscore that we have to be careful even when a vaccination campaign is in full swing.

We should place this against information on hospitalization and mortality statistics for Belgium.

The following table displays hospitalizations from week 12 in 2020 to week 2 in 2021 (Scienscano dashboard):

Age category	%	Number
0 – 5 year	1.4%	688
6 – 19 year	0.9%	447
20 – 39 year	6.3%	3,144
40 – 59 year	19.1%	9,578
60 -79 year	37.5%	18,753
80+ year	34.8%	17,390



Note that 72% of all hospitalizations take place in the 60+ group, hence 28% the 60- population. Even when the older age bracket will be vaccinated, hospital burden could be considerable in the 60- group.

For information, the loss in life expectancy, when comparing 2020 with 2019 (Federaal Planbureau) amounts to about 10 months. At provincial level:

- Brussel, Luik: approximately 20 months
- Henegouwen: approximately 15 months
- West-Vlaanderen, Waals-Brabant: approximately 8 months
- Limburg, Namen, Antwerpen: approximately 7 months
- Vlaams-Brabant: approximately 5 months
- Oost-Vlaanderen: approximately 4 months
- Luxemburg: approximately 1 month

Turning to COVID-19 mortality, according to nursing home/non-nursing home and location of death (Sciensano report on nursing home monitoring, and daily reports):

- On 6 February 2021: total of 21295 deaths, split as follows:
- (a) 44% NH residents that die in NH
- (b) 13% NH residents that die in hospital
- (c) 43% members of general population that die in hospital
- (a)+(b): 57% deaths among NH residents
- (b)+(c): 56% deaths take place in hospitals

#### Excess mortality, ascertained by comparison with total mortality (StatBel)

Year	Total number of deaths
2017	109,629
2018	110,645
2019	108,745
2020	127,278





Note that, against the background of the mean of 2017 – 2019, we observe excess mortality in 2020 that amounts to 17,605 units. Evidently, this is lower than the COVID-19 mortality, because of competing risks. A number of people will have died with a COVID-19 positive diagnoses, but with high frailty and hence reduced life expectancy. Note also that mortality in January and February 2020 was relatively low, because of a mild flu season. 17,605 corresponds to an excess mortality of 16% relative to the average over the years 2017 – 2019. This should be seen against the background of stringent measures in place during a good part of 2020. The death toll is large and was never seen since 1918, not even in World War II. Without non-pharmaceutical interventions, death toll would have been considerably much higher.

**COVID-19 mortality, broken by ages (until and including 6 February 2021; Sciensano dashboard and Open Data)**

Age category	%	Number
Unknown	0.1%	28
0 – 24 year	0.0%	8
25 – 44 year	0.4%	94
45 – 64 year	5.6%	1188
65 – 74 year	12.0%	2559
75 – 84 year	28.7%	6113
85+ year	53.1%	11305

Note that 94% of deaths is 65+, hence 6% is younger than 65 years of age.



## References

- Andronico, A., Kiem, C. T., Paireau, J., Succo, T., Bosetti, P., Lefrancq, N., Nacher, M., Djossou, F., Sanna, A., Flamand, C., Salje, H., Rousseau, C., & Cauchemez, S. (2020). Evaluating the impact of curfews and other measures on SARS-CoV-2 transmission in French Guiana. MedRxiv. <https://doi.org/10.1101/2020.10.07.20208314>
- Baunez, C., Degoulet, M., Luchini, S., Pintus, P.A., Teschl, M. (2020). An early assessment of curfew and second COVID-19 lock-down on virus propagation in France. MedRxiv. <https://doi.org/10.1101/2020.11.11.20230243>
- Bo et al. (2021). Effectiveness of non-pharmaceutical interventions on COVID-19 transmission in 190 countries from 23 January to 13 April 2020. International Journal of Infectious Diseases 102: 247-253.
- Chen, B., Vansteenkiste, M., Beyers, W., Boone, L., Deci, E. L., Duriez, B. Lens, W., Matos, L., Mouratidis, A., Ryan, R. M., Sheldon, K. M., Soenens, B., Van Petegem, S., & Van der Kaap-Deeder, J., Verstuyf, J (2015). Basic psychological need satisfaction, need frustration, and need strength across four cultures. Motivation and Emotion, 39, 216-236
- Chetty, R., Friedman, J. N., Hendren, N., Stepner, M., and the Opportunity Insights Team (2020). How did COVID-19 and stabilisation policies affect spending and employment?, Working Paper n°27431, National Bureau of Economic Research, June 2020, and revised November 2020. The Economic Impacts of COVID-19: Evidence from a New Public Database Built Using Private Sector Data.
- [COVID-19 Data Dashboard \(gjbex.github.io\)](https://gjbex.github.io/)
- [COVID-19: Government Stringency Index, Feb 18, 2021 \(ourworldindata.org\)](https://ourworldindata.org/)
- [Culture statistics - cultural participation - Statistics Explained \(europa.eu\)](https://european-culture-statistics.europa.eu/)
- [Eurostat: Toerismestatistieken](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&code=sdg-11-6-1)
- ECDC. (2020). Guidelines for the implementation of non-pharmaceutical interventions against COVID-19 Key messages General considerations on NPI to control COVID-19. <https://www.ecdc.europa.eu/sites/default/files/documents/covid-19-guidelines-non-pharmaceutical-interventions-september-2020.pdf>
- ERMG dashboard report, 22 December 2020
- [Fondation Roi Baudouin: Le volontariat en Belgique - Chiffres-clés](https://www.fondation-roi-baudouin.be/fr/le-volontariat-en-belgique-chiffres-cles)
- Fuller, J. A., Hakim, A., Victory, K. R., Date, K., Lynch, M., Dahl, B., & Henao, O. (2021). Mitigation Policies and COVID-19–Associated Mortality — 37 European Countries, January 23–June 30, 2020. MMWR. Morbidity and Mortality Weekly Report, 70(2), 58–62. <https://doi.org/10.15585/mmwr.mm7002e4>
- GEMS-MAG report (19/02/2020)
- [Guidelines for the implementation of non-pharmaceutical interventions against COVID-19 \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&code=sdg-11-6-1)
- Grigoli, F. & Sandri, D. (2020). COVID's Impact in Real Time: Finding Balance Amid the Crisis, IMF Blog, 8 October 2020.



Haug, N., Geyrhofer, L., Londei, A., Dervic, E., Desvars-Larrive, A., Loreto, V., Pinior, B., Thurner, S., & Klimek, P. (2020). Ranking the effectiveness of worldwide COVID-19 government interventions. *Nature Human Behaviour*, 4(12), 1303–1312. <https://doi.org/10.1038/s41562-020-01009-0>

Horemans J., Kuypers S., Marchal S., Marx I. (2020). [De kwetsbare werkende. Een profielschets van armoede en financiële bestaanszekerheid bij werkende Belgen](#). Centrum voor Sociaal Beleid Herman Deleeck, Universiteit Antwerpen.

Li, Y., Campbell, H., Kulkarni, D., Harpur, A., Nundy, M., Wang, X., & Nair, H. (2021). The temporal association of introducing and lifting non-pharmaceutical interventions with the time-varying reproduction number (R) of SARS-CoV-2: a modelling study across 131 countries. *The Lancet Infectious Diseases*, 21(2), 193–202. [https://doi.org/10.1016/S1473-3099\(20\)30785-4](https://doi.org/10.1016/S1473-3099(20)30785-4)

Liu, Y., Morgenstern, C., Kelly, J., Lowe, R., CMMID COVID-19 Working Group, Jit, M. (2021) . The impact of non-pharmaceutical interventions on SARS-CoV-2 transmission across 130 countries and territories. *BMC Medicine* 19:40.

Martela, F., & Steger, M. F. (2016). The three meanings of meaning in life: Distinguishing coherence, purpose, and significance. *The Journal of Positive Psychology*, 11(5), 531–545. <https://doi.org/10.1080/17439760.2015.1137623>

Maslow, A. H. (1954). *Motivation and personality*. New York: Longman.

Phillips, N. (2021). The coronavirus is here to stay — here’s what that means. *Nature*, 590(7846), 382–384. <https://doi.org/10.1038/d41586-021-00396-2>

Piovani, D., Christodoulou, M. N., Hadjidemetriou, A., Pantavou, K., Zaza, P., Bagos, P. G., Bonovas, S., & Nikolopoulos, G. K. (2021). Effect of early application of social distancing interventions on COVID-19 mortality over the first pandemic wave: An analysis of longitudinal data from 37 countries. *Journal of Infection*, 82(1), 133–142. <https://doi.org/10.1016/j.jinf.2020.11.033>

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. New York: Guilford Publishing

[Nonpharmaceutical Interventions \(NPIs\) | CDC](#)

[Report #6 from the motivation barometer](#), [Report #15 from the motivation barometer](#), [Report #20 from the motivation barometer](#)

Schulz, P., Schulte, J., Raube, S., Disouky, H., & Kandler, C. (2018). The role of leisure interest and engagement for subjective well-being. *Journal of Happiness Studies*, 19(4), 1135–1150.

Sheridan, A., Andersen AL, Hansen ET & Johannesen (2020). Social distancing laws cause only small losses of economic activity during the COVID-19 pandemic in Scandinavia. *Proc Natl Acad Sci U S A*. 2020 Aug 25;117(34):20468-20473. doi: 10.1073/pnas.2010068117.

[STATBEL: Structure de la population](#)

[Steunpunt Werk | Werk en Sociale Economie](#)

Vansteenkiste, M., Ryan, R. M., & Soenens, B. (2020). Basic Psychological Need Theory: Trends, critical themes, and future directions. *Motivation and Emotion*, 44, 1–31.



Vermote, B., Waterschoot, J., Morbée, S., Van der Kaap-Deeder, J., Schrooyen, C., Soenens, B., Ryan, R., & Vansteenkiste, M. (in revision). Do psychological needs play a role in times of uncertainty? Associations with well-being during the corona crisis. *Journal of Happiness Studies*

Williamon, A., & Antonini Philippe, R. (2020). Wellbeing in and through performance: perspectives from sports and music. *Frontiers in psychology*, 11, 399.

[https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/Situationsberichte\\_Tab.html](https://www.rki.de/EN/Content/infections/epidemiology/outbreaks/COVID-19/Situationsberichte_Tab.html)