

# Chlamydia infection

## Annual Epidemiological Report for 2017

### Key facts

- For 2017, 26 EU/EEA Member States reported 409 646 cases of chlamydia infection.
- The crude notification rate was 146 cases per 100 000 population.
- Notification rates of chlamydia infection varied considerably across Europe, with the highest country-specific rates more than 5 000 times higher than the lowest rates. This is believed to be mainly a reflection of the differences in chlamydia testing, case finding and reporting rather than indicative of actual differences in chlamydia prevalence.
- Notification rates continue to be highest among young adult women and heterosexuals.
- The overall trend appears stable over recent years, but there are variations at country level.

### Methods

This report is based on data for 2017 retrieved from The European Surveillance System (TESSy) on 27 November 2018. TESSy is a system for the collection, analysis and dissemination of data on communicable diseases in the EU/EEA.

For a detailed description of methods used to produce this report, refer to the *Methods* chapter [1].

An overview of the national surveillance systems is available at the ECDC website [2].

A subset of the data used for this report is available through ECDC's online *Surveillance atlas of infectious diseases* [3].

This surveillance report is based on chlamydia surveillance data collected by the European Sexually Transmitted Infections Surveillance Network for 2017. Thirty EU/EEA Member States (28 EU Member States plus Iceland and Norway) participate in this network.

In 2017, the majority of countries reported data based on the standard EU case definitions [4]. Five countries reported data based on national case definitions and four countries did not report which case definition they used [2]. Surveillance systems for chlamydia in Europe vary: 22 countries have comprehensive surveillance systems and four have sentinel systems that only capture chlamydia diagnoses from a selection of healthcare providers. Reporting of chlamydia infection is compulsory in the countries that maintain a comprehensive

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surveillance system except for the United Kingdom, while it is voluntary in countries that maintain a sentinel system.

Data from sentinel systems are not included in the calculation of rates as the population coverage is unknown and denominators are therefore not available. Cases are analysed by date of diagnosis. The use of incompatible age formats meant that data from the following countries and years were excluded from the analysis of age groups: Austria (2007–2008), Belgium (2015–2017), Hungary (2007–2008) and Poland (2006–2017). Lithuania did not report information on age from 2003–2007.

## Epidemiology

### Geographic distribution

In 2017, 26 countries reported 409 646 chlamydia infections (Table 1). The crude notification rate for the 22 EU/EEA countries with comprehensive surveillance systems was 146 per 100 000 population. The United Kingdom accounted for 56% of all reported cases in 2017, while the combined case numbers of Denmark, Norway and Sweden, and the United Kingdom amount to 79% of all cases reported in 2017. The disproportionate contribution of the United Kingdom is due to its inclusion of data from a successful screening programme targeted at 15–24-year-olds in England that has been in operation since 2008. This programme offers community-based testing services outside of sexually transmitted infection (STI) clinics and resulted in a large increase of chlamydia diagnoses from 2008 onwards.

**Table 1. Distribution of confirmed chlamydia cases by country and year, EU/EEA, 2013–2017**

Country	2013		2014		2015		2016		2017	
	Confirmed cases	Rate								
Austria	.	.	.	.	.	.	.	.	.	.
Belgium	4 983	-	5 496	-	6 159	-	7 353	-	8 093	-
Bulgaria	323	4.4	495	6.8	255	3.5	195	2.7	230	3.2
Croatia	356	8.4	386	9.1	332	7.9	217	5.2	194	4.7
Cyprus	2	0.2	0	0.0	0	0.0	0	0.0	1	0.1
Czech Republic	.	.	.	.	.	.	.	.	.	.
Denmark	27 683	494.1	30 934	549.7	31 782	561.5	33 892	593.8	32 932	572.9
Estonia	1 580	119.7	1 558	118.4	1 338	101.8	1 242	94.4	1 113	84.6
Finland	13 216	243.5	13 246	243.0	13 572	248.0	14 321	261.0	14 462	262.8
France	12 932	-	14 227	-	14 971	-	13 624	-	17 672	-
Germany	.	.	.	.	.	.	.	.	.	.
Greece	486	4.4	388	3.6	197	1.8	102	0.9	.	.
Hungary	1 130	-	1 121	11.3	965	9.8	882	9.0	923	9.4
Iceland	2 179	677.0	1 723	529.1	1 989	604.4	2 200	661.6	2 198	649.6
Ireland	6 293	136.5	6 641	143.2	6 723	143.7	6 883	145.6	7 372	154.1
Italy	953	-	940	-	776	-	992	-	600	-
Latvia	2 047	101.1	2170	108.4	1420	71.5	1382	70.2	1459	74.8
Liechtenstein	.	.	.	.	.	.	.	.	.	.
Lithuania	306	10.3	449	15.3	409	14.0	348	12.0	397	13.9
Luxembourg	2	0.4	0	0.0	9	1.6	6	1.0	39	6.6
Malta	134	31.7	98	22.8	155	35.3	274	60.8	293	63.7
Netherlands	15 794	-	17 975	-	18 635	-	20 768	-	21 444	-
Norway	22 249	440.5	24 810	485.7	25 207	487.9	26 108	501.0	25 130	477.9
Poland	406	1.1	271	0.7	364	1.0	329	0.9	258	0.7
Portugal	.	.	15	0.1	149	1.4	234	2.3	265	2.6
Romania	18	0.1	15	0.1	14	0.1	25	0.1	20	0.1
Slovakia	919	17.0	1 031	19.0	1 311	24.2	862	15.9	609	11.2
Slovenia	248	12.0	270	13.1	248	12.0	217	10.5	266	12.9
Spain	1 513	-	2 225	-	3 564	-	7 303	18.2	9 479	23.6
Sweden	34 908	365.3	36 818	381.7	37 922	389.0	35 405	359.4	33 715	337.3
United Kingdom	241 853	378.5	240 801	374.2	229 147	353.2	231 140	353.5	230 482	350.2
<b>EU/EEA</b>	<b>392 513</b>	<b>186.2</b>	<b>404 103</b>	<b>171.8</b>	<b>397 613</b>	<b>166.8</b>	<b>406 304</b>	<b>141.0</b>	<b>409 646</b>	<b>146.2</b>

Note: Twenty-one cases with unknown classification were reported by Croatia (22 between 2016 and 2017) and Portugal (36 between 2015 and 2017) and are not included in the analysis.

Rates presented only for countries with comprehensive surveillance systems.

∴ no data reported

-∴ no rate calculated

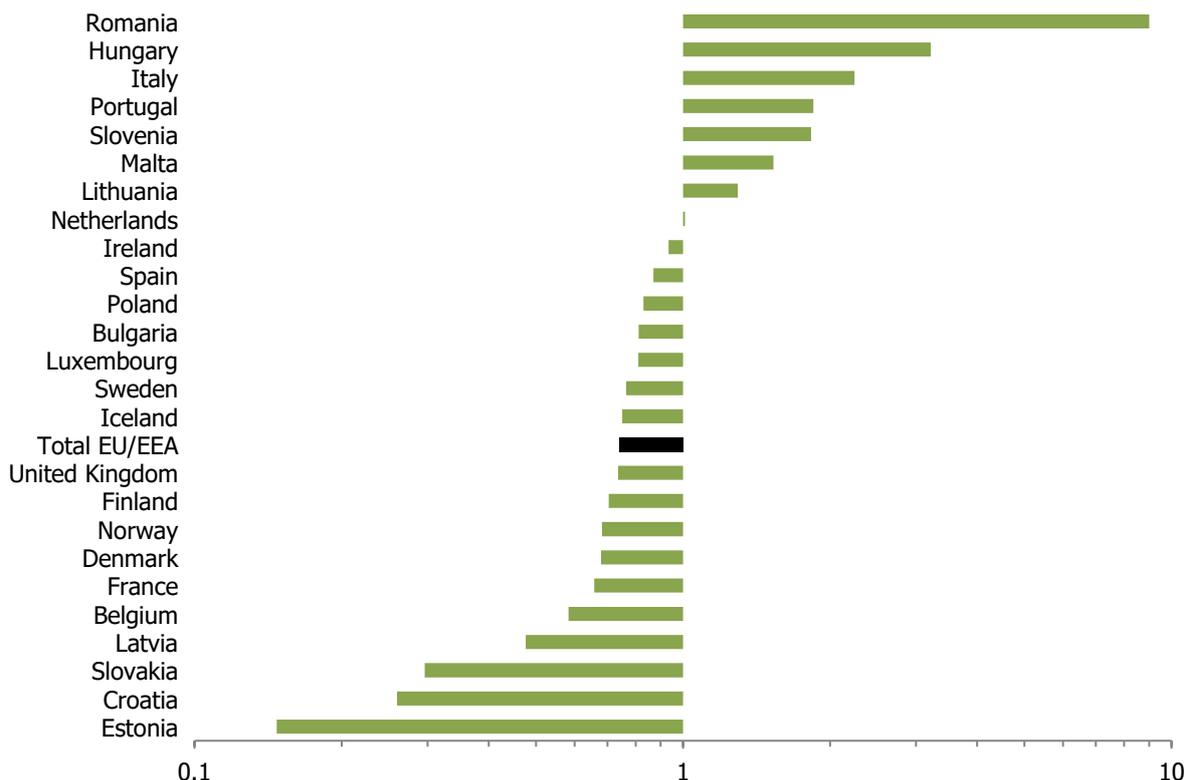
In 2017, notification rates higher than 200 cases per 100 000 were observed in Iceland (650 per 100 000), Denmark (573), Norway (478), the United Kingdom (350), Sweden (337) and Finland (263; Table 1). All countries reporting rates above 200 per 100 000 had chlamydia control strategies recommending either active screening (UK–England) or widespread opportunistic testing (Denmark, Finland, Iceland, Norway, Sweden and the rest of the

United Kingdom). Rates below 10 per 100 000 were reported by eight countries (Bulgaria, Croatia, Cyprus, Hungary, Luxembourg, Poland, Portugal and Romania).

### Gender

The overall male-to-female ratio in 2017 was 0.7 (Figure 1), with 173 347 cases reported in men compared with 233 718 cases among women. Among countries with comprehensive surveillance systems, the overall notification rate was 126 per 100 000 in men and 164 per 100 000 in women. The male-to-female ratios were below or close to 1 in the majority of countries. Male-to-female ratios above 1.5 were reported from five countries with comprehensive systems: Hungary (3.2), Malta (1.5), Portugal (1.8), Romania (9.0) and Slovenia (1.8). These countries report relatively low notification rates. The lowest male-to-female ratio was observed in Estonia (0.1) and the highest in Hungary (3.2).

**Figure 1. Chlamydia male-to-female ratio in 25 EU/EEA countries, 2017**



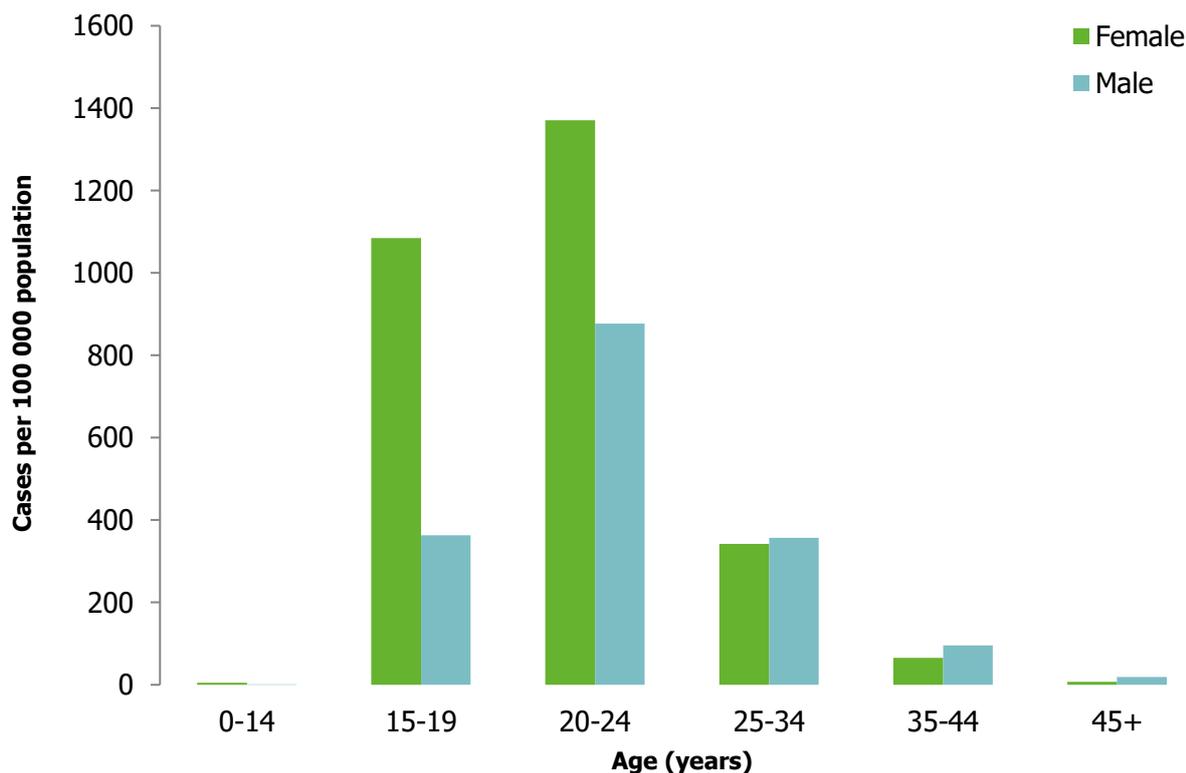
Note: Cyprus reported only one male case.

### Age

In 2017, information on age was available for 384 634 (94%) cases.

The largest proportion of cases reported in 2017 were among 20–24-year-olds, who accounted for 39.8% of cases. The second-largest group was the age group 25–34 years, accounting for 27.3% of cases while young adults aged 15–24 years accounted for 61.9% of cases with known age. This pattern was also reflected in age-specific notification rates (Figure 2). The highest rates for 2016 were seen in the 20–24-year age group, with 1 122 cases per 100 000 reported by countries with comprehensive systems. Rates among 15–19-year-olds were also very high at 718 cases per 100 000 population. The highest rates by age and gender were reported among women in the age groups 20–24 (1 370 cases per 100 000 population) and 15–19 years (1 085 per 100 000). Rates among men were highest among the age group 20–24-year (8 777 per 100 000). Rates among men over 25-years were consistently higher than among women of the same age.

**Figure 2. Distribution of confirmed chlamydia cases per 100 000 population, by age and gender, EU/EEA, 2017**

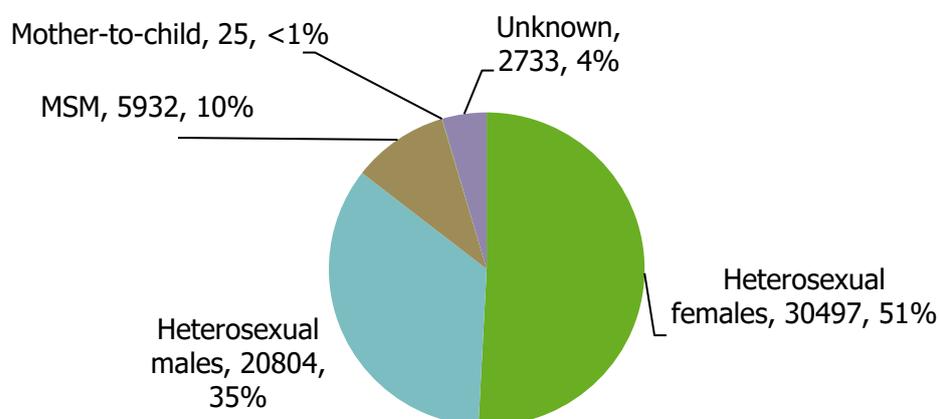


Source: Country reports from Bulgaria, Croatia, Cyprus, Denmark, Estonia, Finland, Hungary, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

### Transmission

In 2017, information on transmission category was available for 46% of reported cases of chlamydia infection (n=189 367). The main reason for the relatively low completeness for this variable is that countries reporting high numbers of cases (Denmark, Norway, Finland and France) have laboratory-based surveillance systems that are not linked to clinical surveillance and therefore do not include data on transmission. Information on transmission was available for 59 991 cases (14% of all reported cases) from the 11 countries that reported transmission information in more than 60% of their case data. Of these cases, 86% were indicated as heterosexual transmission, 10% were in men who have sex with men (MSM) and 4% were categorised as 'unknown' (Figure 3).

**Figure 3. Distribution of chlamydia infections by transmission category and gender (n=59 991), EU/EEA, 2017**



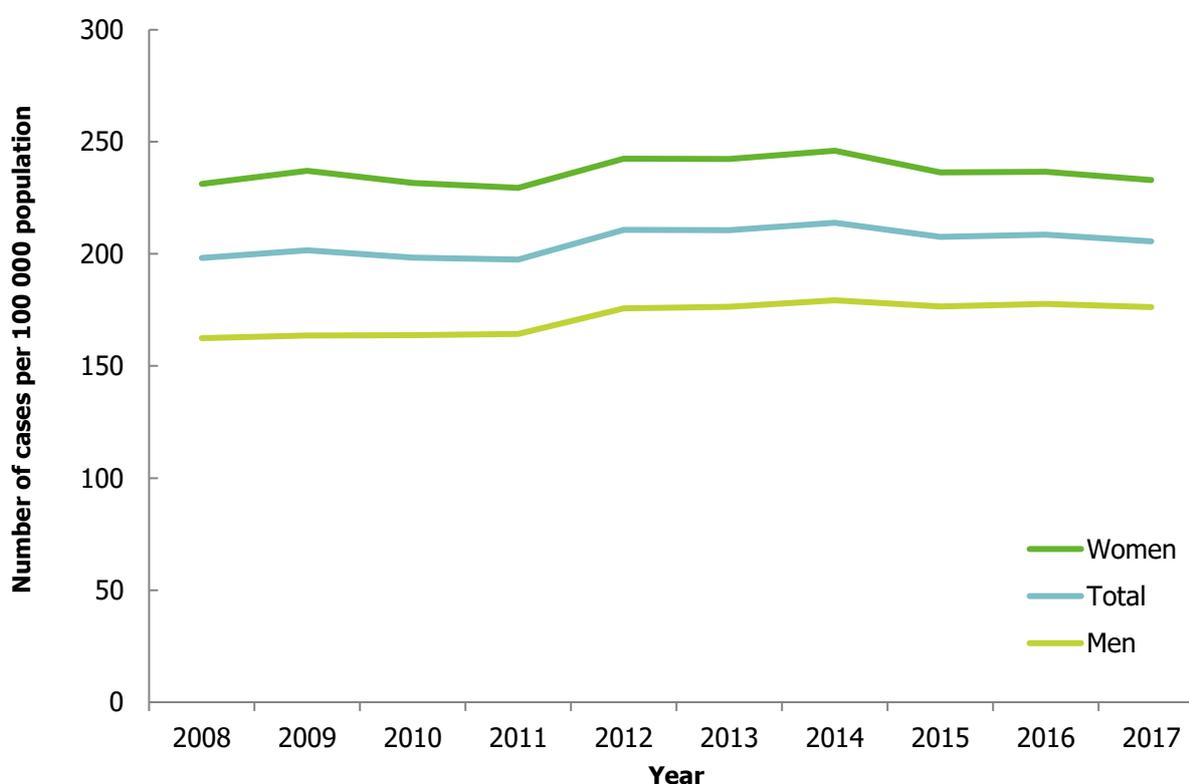
Note: EU/EEA countries with ≥60% completeness in transmission category. Data from Hungary, Italy, Latvia, Lithuania, Malta, the Netherlands, Portugal, Romania, Slovakia, Slovenia and Sweden.

## Trends 2008–2017

Between 2008 and 2017, 3 826 299 cases of chlamydia infection were reported from 27 countries. The completeness of reported data showed certain improvement over time, with several countries upgrading their surveillance systems during this period. The overall notification rate among countries with comprehensive surveillance systems varied between 172 and 186 cases per 100 000 persons between 2008 and 2014. However, since 2015, the notification rate has decreased to a minimum of 141 per 100 000 in 2016 before increasing slightly to 146 per 100 000 in 2017. These recent decreases are at least partly due to additional countries with low notification rates starting to report surveillance data. The overall rate among countries that reported consistently between 2008 and 2017 have remained relatively stable, with an increase of 3.7% from 198 per 100 000 in 2008 to 206 per 100 000 in 2017. Throughout this time period, rates among women have remained consistently higher than among men (Figure 4).

The EU/EEA notification rate remained stable from 2013–2017 (decrease by 2% overall). Among countries reporting at least 10 cases per year, the largest increases in country-specific trends over this time were seen in Malta (+101%), Lithuania (+35%) and Denmark (+16%), while the largest decreases were seen in Poland (-36%), Slovakia (-34%) and Estonia (-29%).

**Figure 4. Distribution of confirmed chlamydia cases per 100 000 population by gender and year, EU/EEA countries reporting consistently, 2008–2017**



Source: Country reports from Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Poland, Romania, Slovakia, Slovenia, Sweden and the United Kingdom.

## Discussion

In 2017, the overall rate of chlamydia diagnoses reported in the EU/EEA remained high, driven mostly by reports from countries with more intensive testing and control activities and complete reporting to surveillance systems [5]. There were two additional countries reporting data from comprehensive surveillance systems in 2017, Hungary and Spain, and their low rates resulted in a reduction in the reported overall chlamydia notification rate for the EU/EEA compared to previous reports [6]. However, when looking at rates among countries consistently reporting from comprehensive surveillance systems, it is clear that overall notification rates are unchanged at the EU/EEA level.

The differences in approaches to chlamydia screening and control as well as differences in surveillance systems are reflected in the large variation in country-specific rates that persisted in 2017: notification rates in Iceland, Denmark and Norway were more than 5 000 times higher than in Cyprus and Romania. In addition, there is also a

geographical gradient, with rates above 200 cases per 100 000 population reported by countries in the western and northern parts of the EU/EEA and rates below 30 cases per 100 000 population in many eastern and southern countries.

In contrast to this heterogeneity, the estimates of chlamydia prevalence from population-based surveys suggest a more homogenous distribution of chlamydia across EU/EEA countries [7]. Moreover, prevalence estimates from EU/EEA Member States were consistent with estimates from other non-European high-income countries. This suggests that differences in notification rates across Europe more likely reflected the extent of access to sensitive diagnostics, differences in surveillance data collection, variations in national testing policies and the level of testing policy implementation rather than actual differences in prevalence [5].

Sexually active young people between 15–24 years continued to have the highest risk of being diagnosed and reported with chlamydia infection in 2017. This is consistent with data on risk-taking sexual behaviour and testing policies frequently targeted to this group [8]. The distribution of chlamydia notifications by gender and the excess of diagnoses reported among females (in all but seven countries in 2017) most likely reflects the fact that women are prioritised by testing policies across the EU/EEA. This is in line with evidence that a single offer of chlamydia testing in the context of a screening programme may reduce the incidence of pelvic inflammatory disease by one-third (36%) after one year of follow-up [9]. One of the challenges faced in chlamydia control continues to be scaling up testing in the context of pressures on public sexual health services [10]. This has led to online provision of home testing as well as treatment services in certain countries that appear to be acceptable to users [11–13].

The large differences in testing, control policies and surveillance methods for chlamydia infection across the EU/EEA also imply that these results should be interpreted with caution, particularly when comparing at the European level.

## Public health implications

The high rate of reported chlamydia diagnoses among young adults indicates that further control efforts are required. To assist Member States in developing their chlamydia programmes, ECDC published an updated guidance document on chlamydia control [14]. The updated guidance recommends that EU/EEA Member States should have a national strategy or plan for the control of STIs (including chlamydia). The strategy should include the provision of primary prevention interventions to at-risk individuals and groups, evidence-based case management guidelines that include partner notification for each setting in which chlamydia may be diagnosed, improved systems for the surveillance of diagnosed infections and an evaluation plan for the strategy. At present, widespread opportunistic testing or screening programmes are only recommended if resources are available and suitable monitoring and evaluation is in place. The guidance also highlights that there are still gaps in the evidence base regarding population-level chlamydia control.

Further development of chlamydia surveillance at the European level needs to take into account current limitations. Member States may benefit from studies estimating the prevalence of chlamydia infection in their country, which would help to explore where testing programmes may best be introduced or expanded. Providing more information on the coverage of existing surveillance systems, as well as testing denominator data, could improve the understanding of the burden of infection across Europe. Such efforts should also take into account the effects of different testing policies in Europe.

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