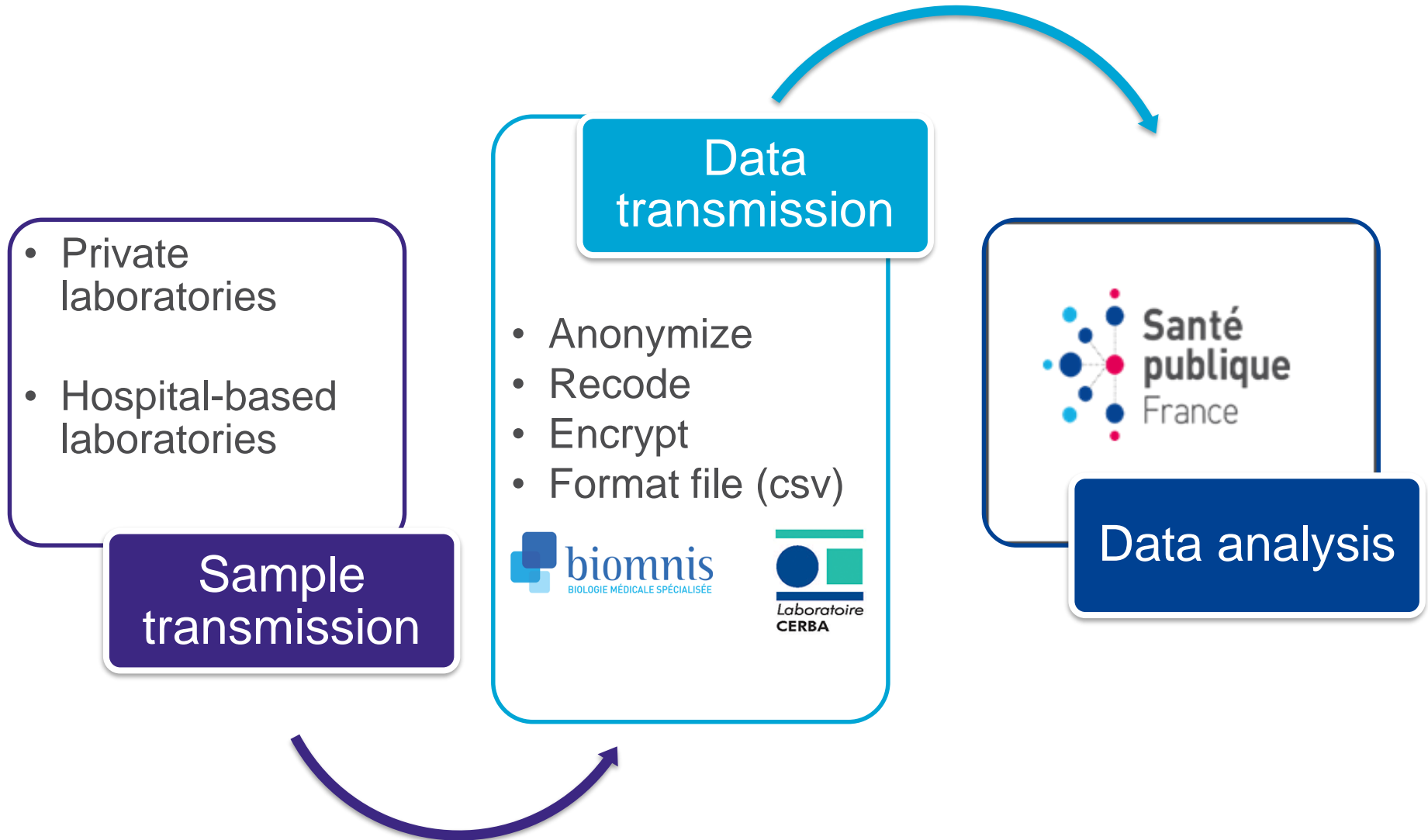


DEVELOPMENT OF A DIGITAL LABORATORY-BASED SURVEILLANCE SYSTEM FOR COVID-19 IN FRANCE

- A partnership was established in 2012 with 2 private groups leader in specialized biology : Eurofins-Biomnis and Cerba (Inovie in 2020)
- Set-up a machine-to-machine surveillance system for the automatic transmission of data from laboratories to Santé publique France :
 - Collection of individual data and biology results for 20 infectious diseases
 - Used in epidemiological surveillance and/or alert and investigation, in addition to other surveillance systems
 - Flexible system that allows the integration of emerging diseases in a timely manner (vector-borne diseases ; covid-19)

Laboratory-based Surveillance : Before COVID-19



- Collection of covid-19 data in 2020 for epidemiological surveillance:
 - Early use for epidemiological trends at a national level
 - Lack of representativeness at sub-national level
 - Unsuitable for contact-tracing due to lack of exhaustivity
- Necessity to build a national system including all the laboratory results for contact tracing and epidemiological use
- Partnership between French ministry of Health, private and public laboratories, Software publishers, public health agencies and Public assistance-Hospitals of Paris
- → Building of a national information system for biological results (SI-DEP)

Objectives

- 1 Timely contact-tracing
Regional health agencies, health insurance, medical staff
- 2 Epidemiological Surveillance
Santé publique France, DREES
- 3 Research
Health Data Hub
- 4 Digital health (machine-to-machine reporting)

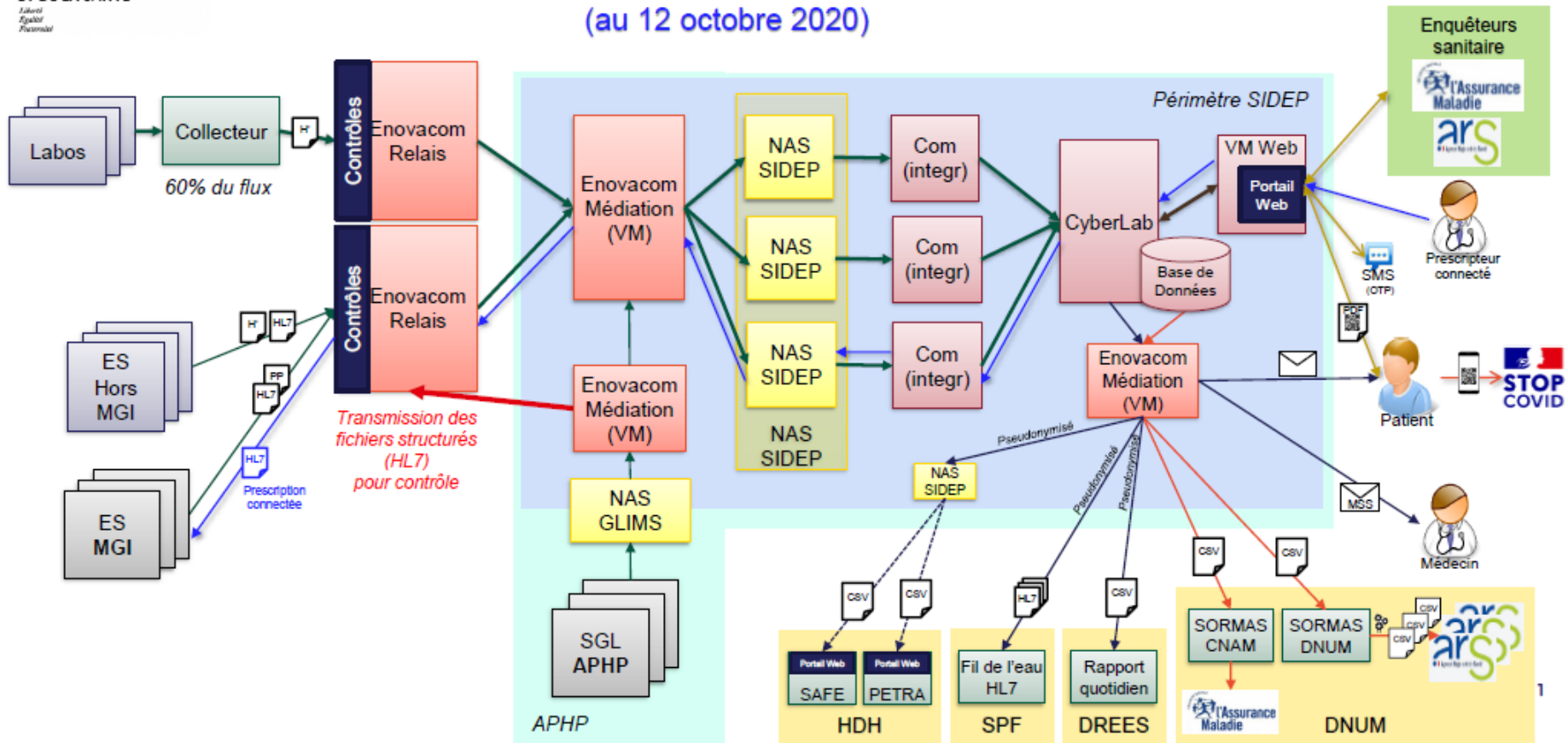
SI-DEP in numbers

- 2 Months from development to deployment
- 5,000 Laboratories connected (private & public) : 5000 centers for sampling, 600 technical platforms)
- 13/05 Information System operational
- >3,5 M Tests per week

SI-DEP – Laboratory-based Surveillance for COVID-19

Flux SIDEp – Schéma global

(au 12 octobre 2020)

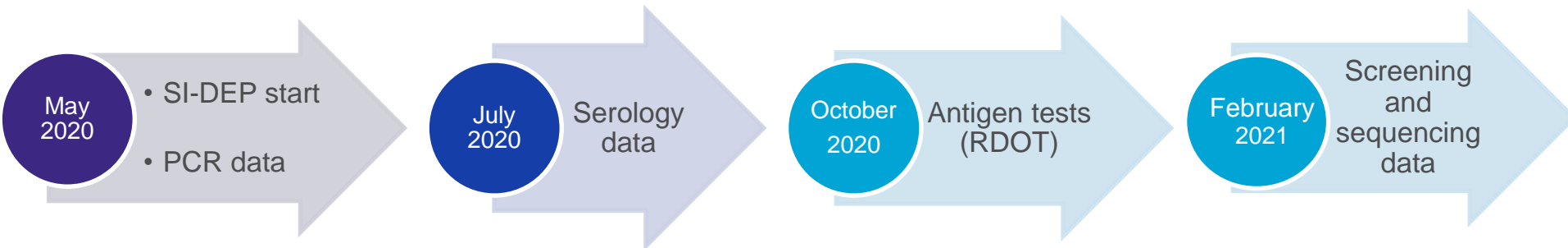


• Technical overview

- Automated transmission from the medical laboratories IT system to the Sidep Datawarehouse
- Use of HL7 standard for data exchange
- Use of LOINC standard to code the biological information
- Use of Nexstrain standard for variant coding
- Real-time / daily transfer to the Public health authorities

• Data collected : a unique form for all laboratories

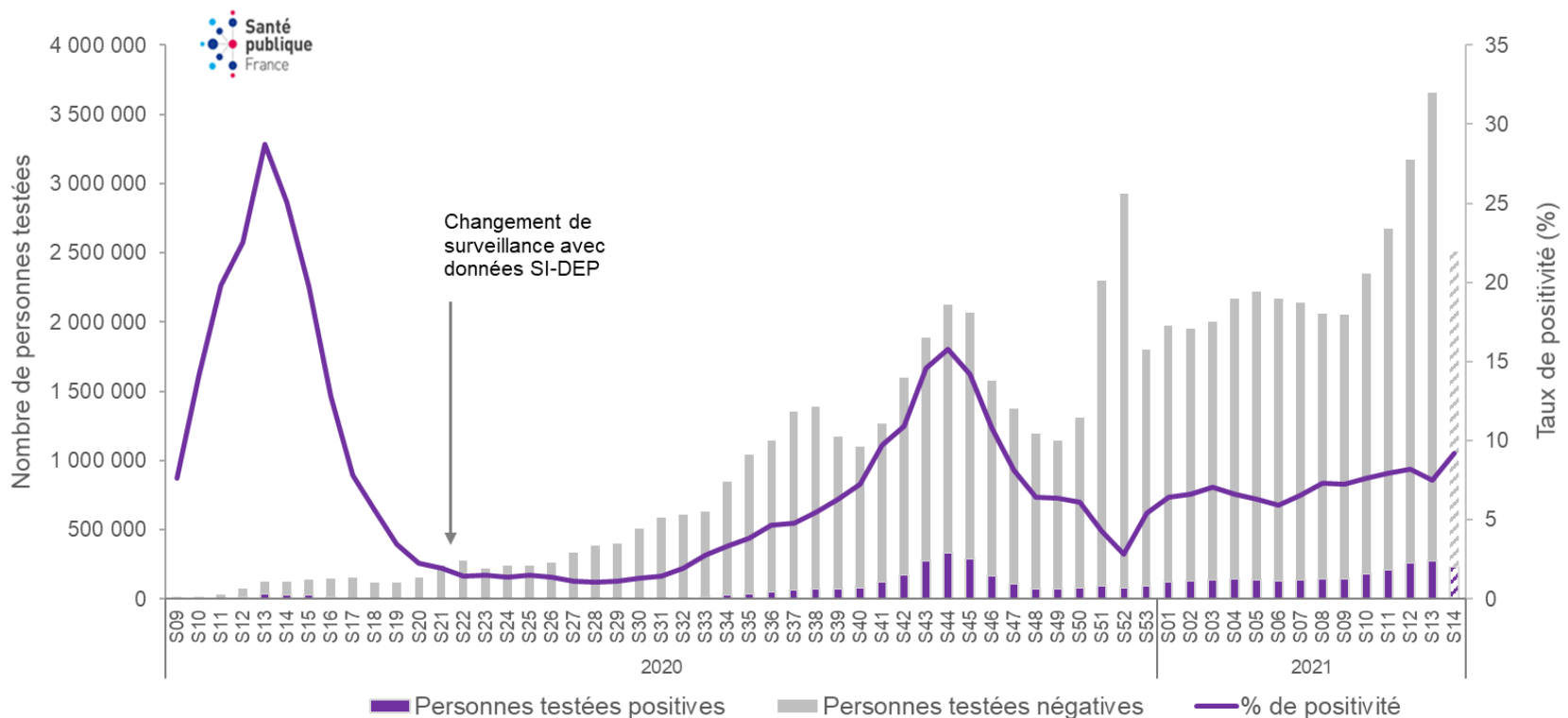
- **Individual data** : name, age, sexe, adress, phone number , e-mail, type of residence, health professional, presence or absence of symptoms
- **Test results** : PCR , serology , antigenic , sequencing



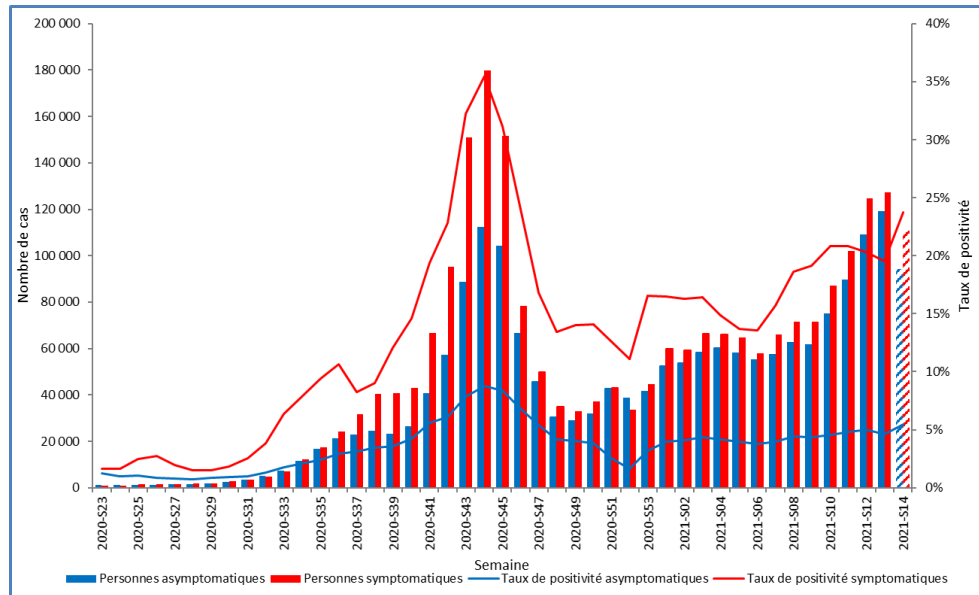
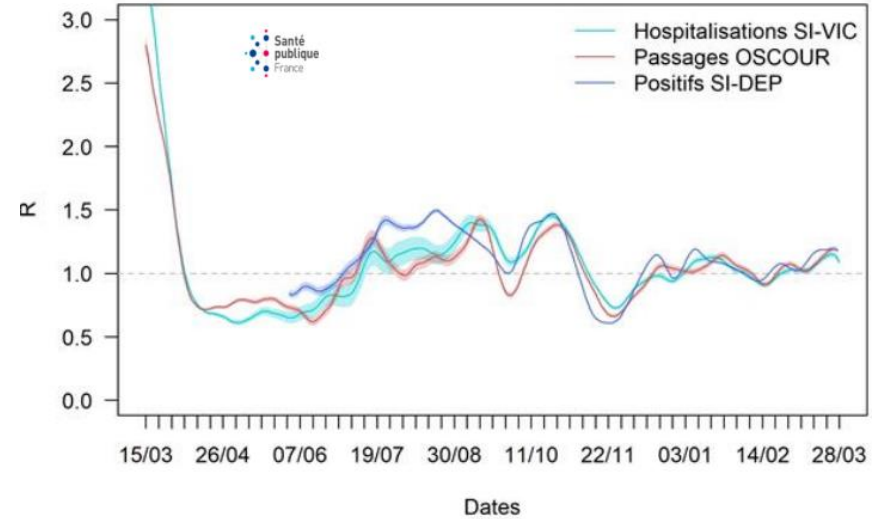
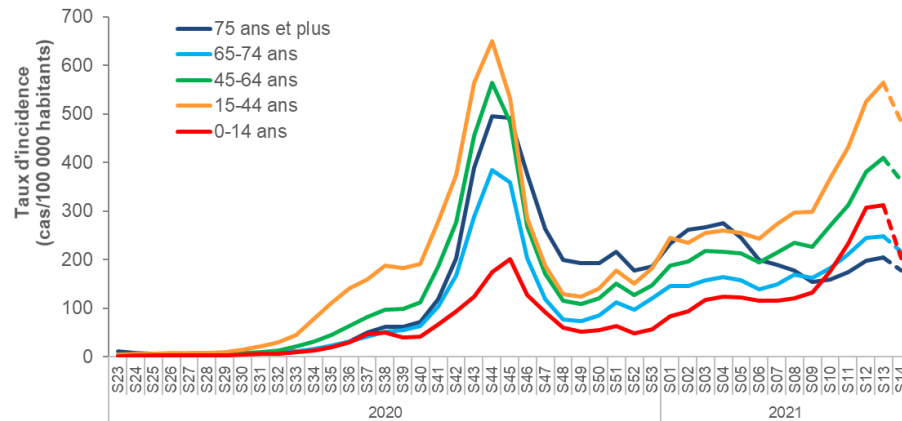
- Use for epidemiological surveillance

- Daily / weekly reports transmitted to the national and local authorities :

<https://www.santepubliquefrance.fr/dossiers/coronavirus-covid-19/coronavirus-chiffres-cles-et-evolution-de-la-covid-19-en-france-et-dans-le-monde#block-266151>



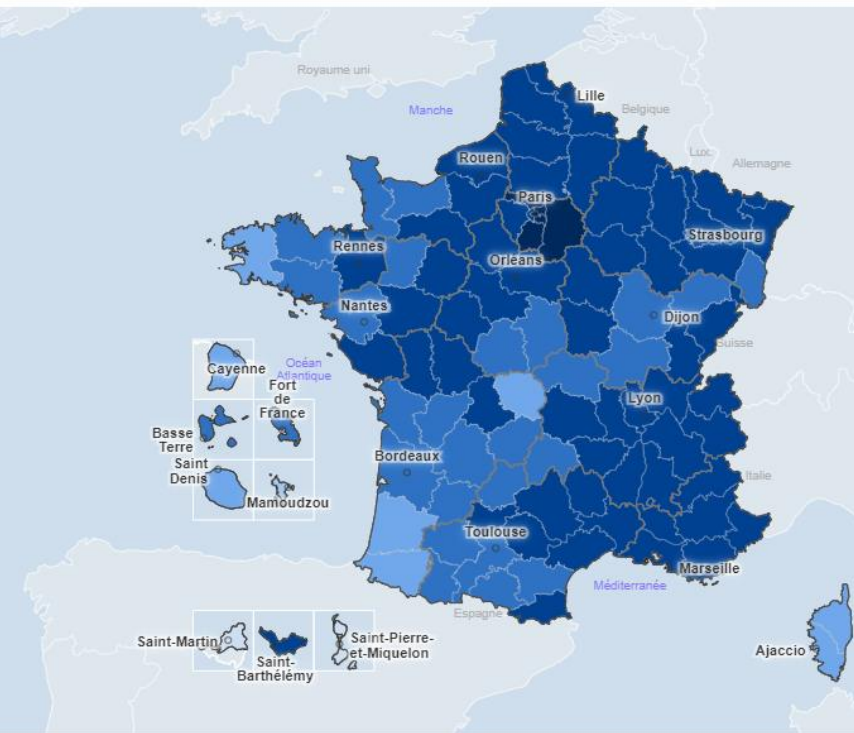
SI-DEP – Laboratory-based Surveillance for COVID-19



SI-DEP – Laboratory-based Surveillance for COVID-19

- Collect of Covid-19 data in 2020 for epidemiological surveillance
 - Data available on GEODES : <https://geodes.santepubliquefrance.fr>
 - Cartographic observatory for Santé public France data

Taux d'incidence - Hebdomadaire - tous âges, 2021-S14 (pour 100 000 hab.) - Source : Base de données SI-LAB issue de SI-DEP



10,0 20,0 50,0 150,0 250,0 500,0 1 000,0

Santé publique France ©EOD

Taux d'incidence, tous territoires - Semaine glissante - tous âges, 2021-04-10-2021-04-16 (pour 100 000) - Source : Base de données SI-LAB issue de SI-DEP



10 20 50 150 250 500 1 000 N/A

Santé publique France ©EODES / © 2019 - IGN-Admin Express - IGN-Insee

- **SI-DEP :**

- Young surveillance system in constant evolution/maintenance with many challenges
- Up to 1 million tests /day : Daily stress for IT infrastructures
- « Big data » requires new tools and habits for data-managers / data-scientists
- Need top adapt the surveillance system in real time with the pandemic evolution and gestion (New actors, new tests, new databases etc.)
- Operational for Covid-19 but not for other diseases

- **After Covid-19**

- Take advantage of the partnership with laboratories to build a national laboratory-based surveillance system beyond COVID-19 for other diseases