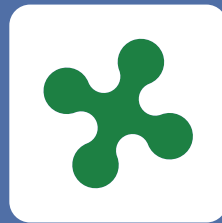


Lombardy: A Leading Region in Health Research and Innovation in Europe



Regione
Lombardia

Welfare



Lombardy is one of the Four Motors for Europe

Located in northern Italy, at the heart of the most economically advanced European area, **Lombardy** is a **bridge to the Mediterranean Sea** and has **strong diplomatic relations** (122 consulates)



24,000 km² of surface area



10 mln inhabitants: **1st** in Italy - **3rd** in Europe

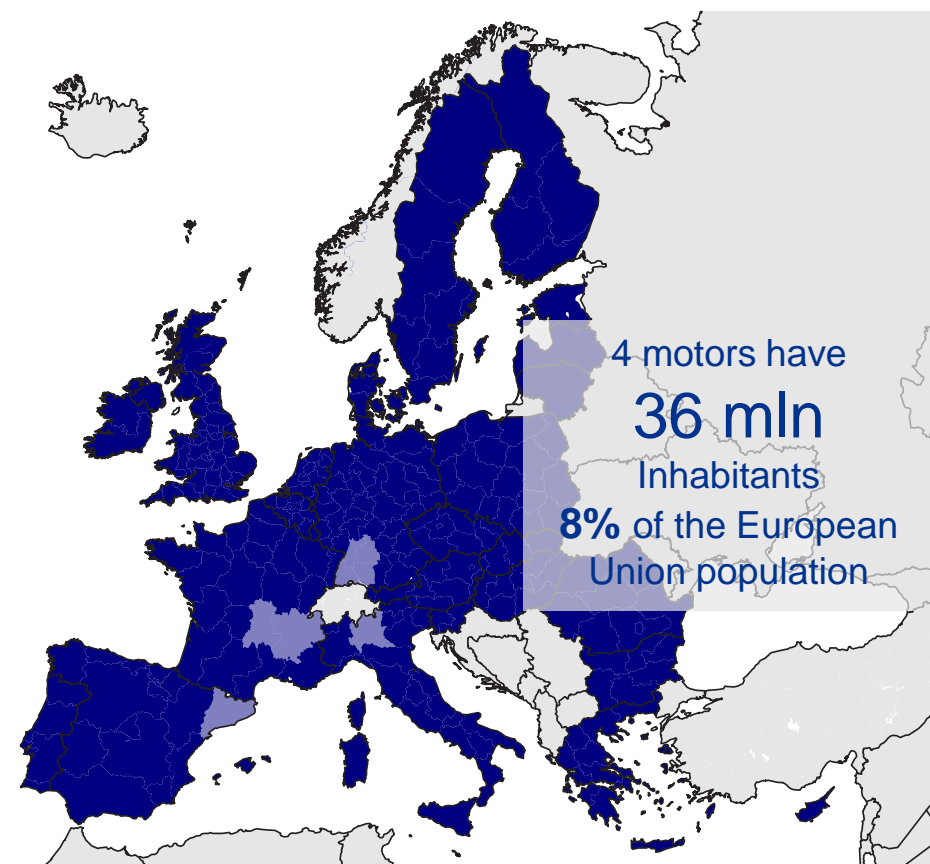
Lombardy is one of the 4 regions leader in economy and research:

- Auvergne-Rhône-Alpes (France)
- Baden-Wurttemberg (Germany)
- Catalonia (Spain)
- **Lombardy (Italy)**

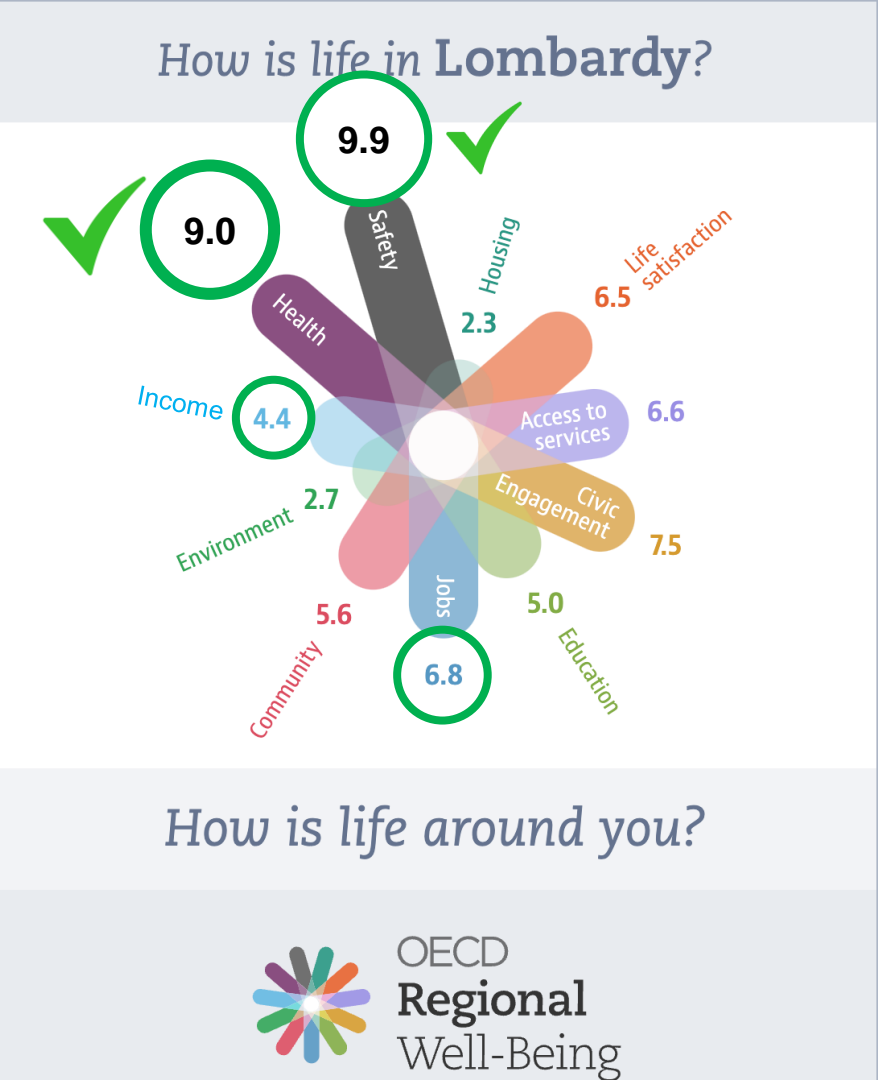
They signed a treaty of cooperation on **economic development, research** and **innovation**, and other sectors (such as **health**, higher education, environment, transport, ...).



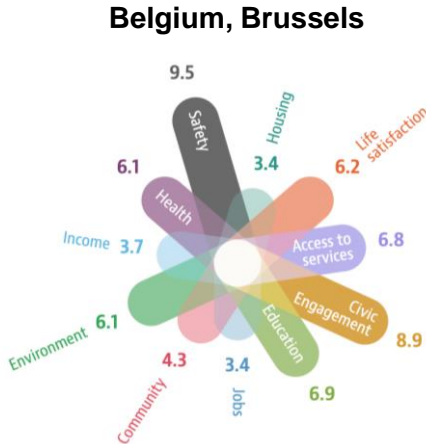
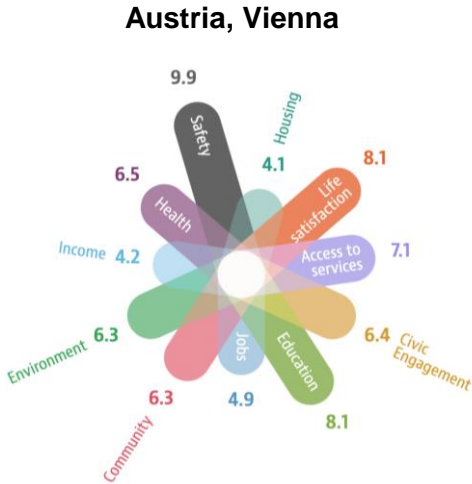
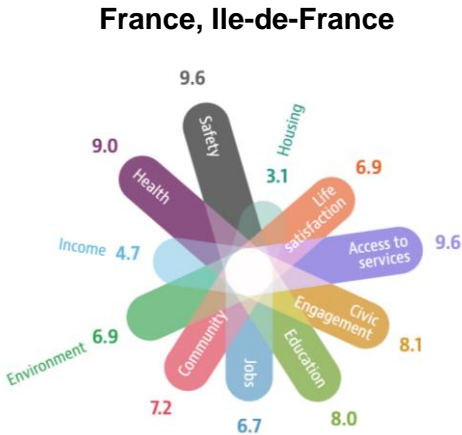
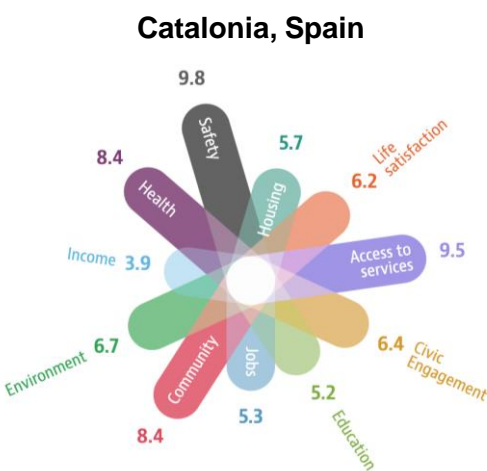
 **4 motors**



Lombardy vs other European regions



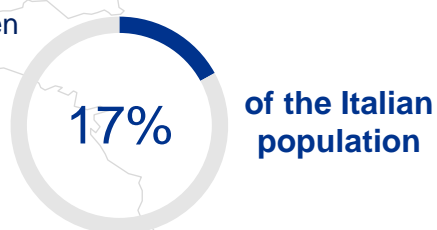
According to the **OECD Regional Well-Being index**, Lombardy has **4 main similar regions all over the world:**



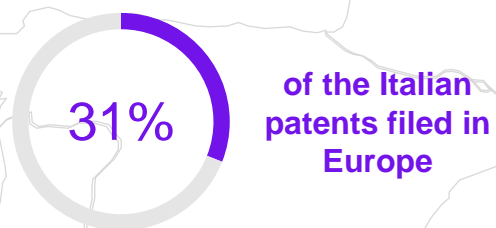
Lombardy's relevance in the Italian economy

Population: 10,1 mln

- 49% men-51% women
- 12% immigrants over the total population



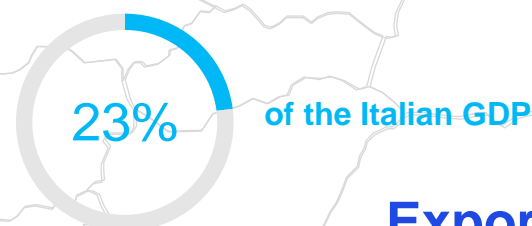
Patents



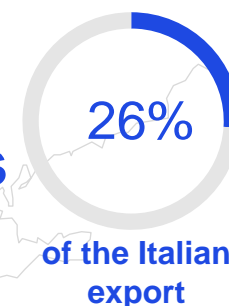
#1 Manufacturing region in Italy and #3 in Europe*

GDP 2021: 405 € billions

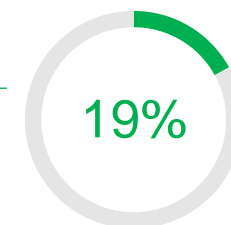
+3,8% in 2022
(Banca D'Italia's estimate)



Export: 163 € billions



Graduates: 67.000

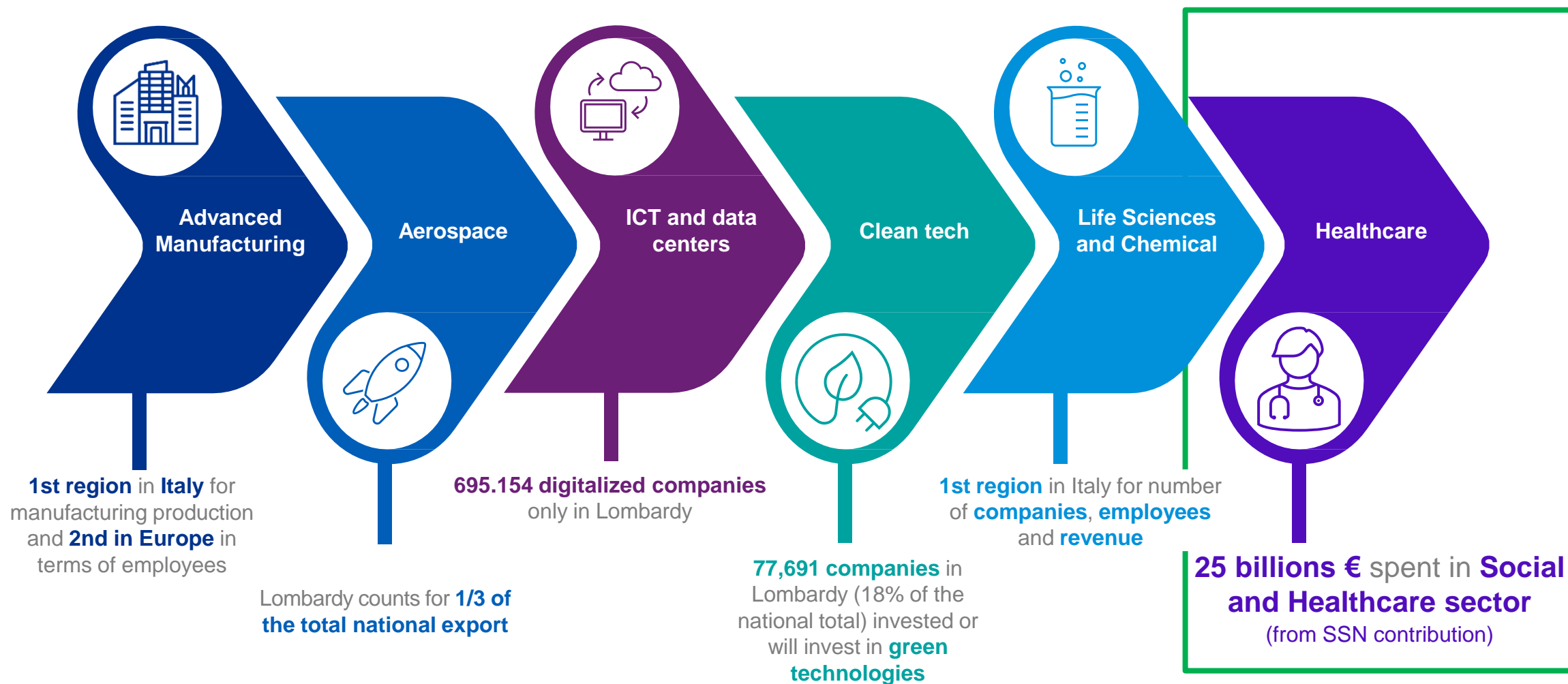


Multinational companies and Startups: 10.500

**6.800 foreign multinational companies
3.700 startups**

Lombardy's key sectors

Lombardy region is renowned for its strength in different competitive sectors, such as:



The biggest Italian companies



Welfare

| N. | Company | Income (€/bln) | Employees | HQ | Sector |
|-------------------------------|-------------------------------|-------------------|----------------|---------------|--------------------------|
| 1 | Enel | 135,6 | 78.200 | Roma | Energy |
| 2 | Eni | 132,5 | 33.000 | Roma | Energy |
| 3 | Assicurazioni Generali | 79,7 | 76.000 | Trieste | Insurance |
| 4 | Edison | 29,5 | 4.500 | Milano | Energy |
| RL-Assessorato Welfare | | 25,0 | 110.000 | Milano | Healthcare |
| 5 | A2A | 22,8 | 12.000 | Brescia | Multiple services |
| 6 | Intesa Sanpaolo | 21,4 | 90.800 | Torino | Finance |
| 7 | Unicredit Group | 20,3 | 150.000 | Milano | Finance |
| 8 | Hera | 20,1 | 8.500 | Bologna | Multiple services |
| 9 | Conad | 18,4 | 32.000 | Bologna | Large scale retail trade |
| 10 | GSE | 18,2 | 607 | Roma | Energy |
| 11 | Prysmian | 16,1 | 21.000 | Milano | Manufacturing |
| 13 | Saras | 15,8 | 2.200 | Cagliari | Oil |
| 14 | Telecom Italia | 15,7 | 66.000 | Roma | Telecommunication |
| 15 | Unipol Group | 14,9 | 15.200 | Bologna | Insurance |
| 16 | Leonardo (Finmeccanica) | 14,7 | 47.000 | Roma | Defense |
| ... | | | | | |
| 19 | Ferrovie dello Stato Italiane | 13,7 | 69.100 | Roma | Transport |
| 20 | Poste italiane | 11,8 | 119.000 | Roma | Finance and Logistics |
| ... | | | | | |
| | Marcegaglia Holding | 8,9 | 6.600 | Mantova | Engineering Steel |
| | Esselunga | 8,5 | 21.100 | Milano | Large scale retail trade |
| ... | | | | | |
| | Pirelli & C | 6,6 | 31.000 | Milano | Tyres |
| | Fincantieri | 5,0 | 21.000 | Trieste | Construction |

The Welfare Department is the **5th Italian company by 'revenue'** and the **3rd** in the group **by number of employees.**

Moreover, the department is the **only one** working in the **Healthcare Sector.**

Healthcare is therefore the leading economic sector in the region, accounting for approximately 6.6% of the regional GDP, rising to 14% of the Life Science sector.

The Lombardy system ranks first in terms of employees: 110,000 public and 40,000 private

72% budget of RL
6% employees RL (160)
32% DRG of RL (565)

Lombardy invests on education and healthcare

15 Universities (12 belonging to the **healthcare sector**; 2 belonging to the **top 10 universities of the world** – Politecnico di Milano and Università Bocconi)

Of which 11 attend international orientation events

310.000 students

21.000 international students (6%)
+13% increase from 2021

199 courses with an international nature

Of which 130 taught in English

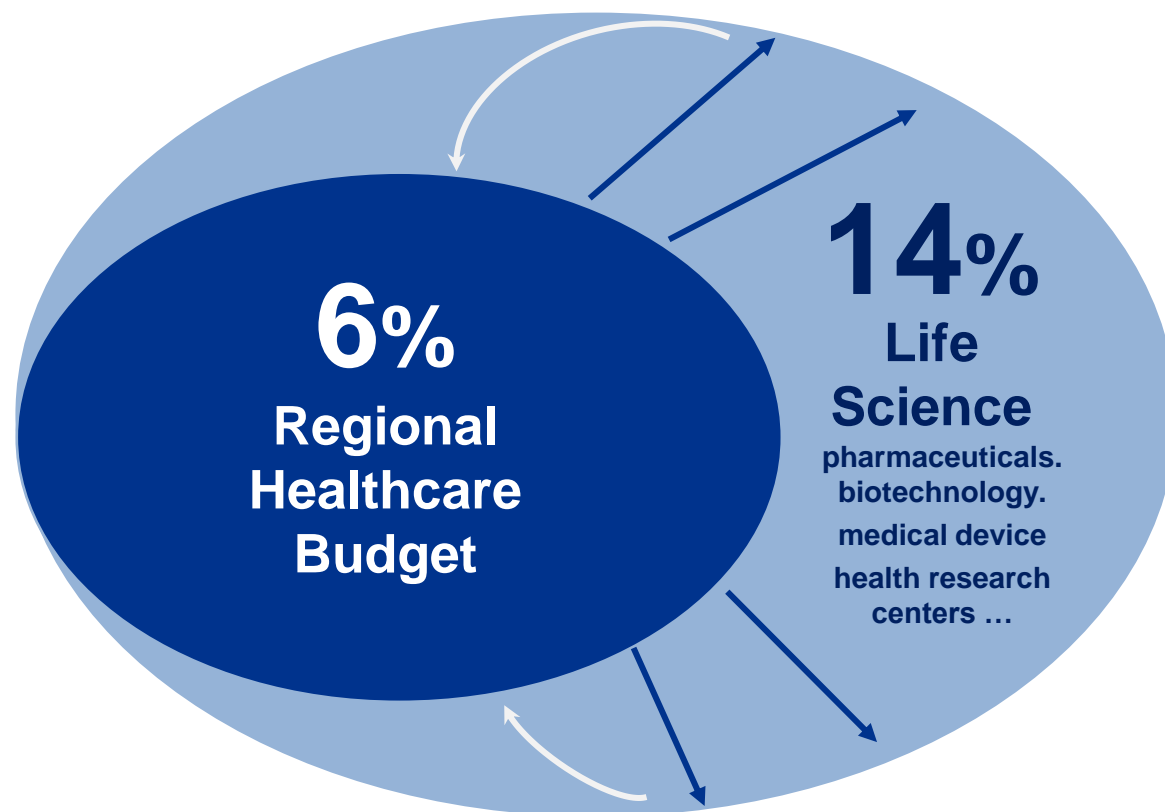
6.160 international partnerships

+2,6% increase from 2021

Scientific papers

23% of most-cited Italian scientific papers are published by Lombardy's universities

Regional healthcare budget in Lombardy contributes directly up to **6% of GDP (~25€ billion out of ~405 € billions)** which reaches up to 14% considering the **related activities in the life science sector**



Healthcare in Lombardy Region in 2022



205

Hospitals



102

Accredited
Private hospitals



20

IRCCS^[1]



27

ASST^[2]

Lombardy is the 1° Region in Italy for IRCCS and ASST actively involved in international pharmacological clinical trials, by the adoption of the 536/2014 EU regulation

5 Public IRCCS specializations (funded by Lombardy)

IRCCS OSPEDALE MAGGIORE POLICLINICO:

(Repair and replacement of cells, organs, and tissues; emergency care)

IRCCS POLICLINICO SAN MATTEO:

(Transplantation; Internal medicine at high biomedical complexity)

IRCCS ISTITUTO NAZIONALE TUMORI MILANO:

(Oncology)

IRCCS ISTITUTO NAZIONALE NEUROLOGICO CARLO BESTA:

(Neurological diseases)

IRCCS SAN GERARDO DEI TINTORI DI MONZA:

(Pediatric care)

6 ASST with University Hospitals

ASST NIGUARDA

ASST SETTE LAGHI

ASST FBF SACCO

ASST SANTI PAOLO E CARLO

ASST PAPA GIOVANNI XXIII

ASST LARIANA

[1] IRCCS stands for «Istituti di Ricovero e Cura a Carattere Scientifico», Scientific Institutes for Research, Hospitalization and Healthcare

[2] ASST stands for «Aziende Socio Sanitarie Territoriali», Health and Social Territorial companies

Relevant research centers in Lombardy



Fondazione IRCCS
Policlinico San Matteo



Fondazione IRCCS
Istituto Nazionale dei Tumori



FITT
FONDAZIONE INNOVAZIONE E
TRASFERIMENTO TECNOLOGICO



Fondazione I.R.C.C.S.
Istituto Neurologico Carlo Besta



Fondazione IRCCS Ca' Granda
Ospedale Maggiore Policlinico



Ministero dell'economia
e delle Finanze



Ministero della Salute



*Ministero dell'Istruzione,
dell'Università e della Ricerca*



INGM
ISTITUTO NAZIONALE GENETICA MOLECOLARE
"Romeo ed Enrico Invernizzi"



Regione
Lombardia



Ministero della Salute



Fondazione IRCCS Ca' Granda
Ospedale Maggiore Policlinico



Regione
Lombardia

Healthcare Investments in Lombardy

250 €/Mln per year

Investment in Research

... more than 4 €/Billion ongoing investments
in other healthcare areas

**~ 2.3
Billion
EUR**

**New hospital &
enhancement of
existing facilities**

**~ 637
Million
EUR**

**Country Health
Facilities**

**~ 340
Million
EUR**

**Safety of facilities
(fire-fighting,
earthquake proof)**

**~ 327
Million
EUR**

**ICU & Semi-ICU &
ER**

**~ 275
Million
EUR**

**Digitalization of
DEA &
telemedicine
services**

**~ 219
Million
EUR**

**Diagnostic
equipment**

Main research areas, where ASST and IRCCS in Lombardy focus on



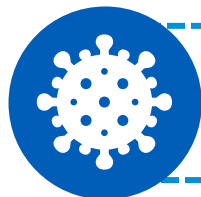
Oncology



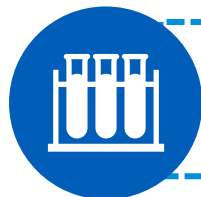
Pediatrics



Neurology



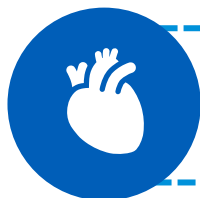
Infectious
Diseases



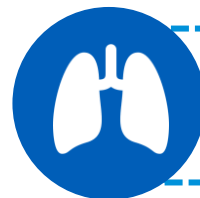
Hematology
and Immunology



Rare Diseases



Cardiovascular
Diseases



Respiratory
Diseases

Examples of advanced technologies in Lombardy

Robotic Surgery: Da Vinci Xi System

Surgical console equipped with **3D vision**, **remotely** operated by surgeons, controlling fiber optics and instruments using manipulators and pedals.

- ✓ **Patient cart:** Features four mobile, interchangeable arms supporting fiber optics and instruments.
- ✓ **Vision cart:** HD image processing unit for surgical visualization.



Digestive System: Treatments for rectal tumors, colon tumors, gastric tumors, liver diseases, bile duct diseases, pancreatic diseases.



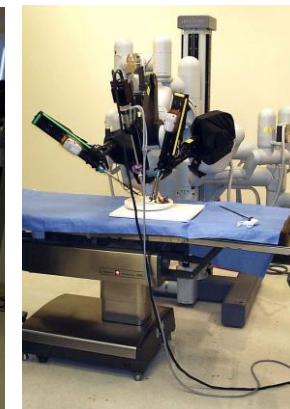
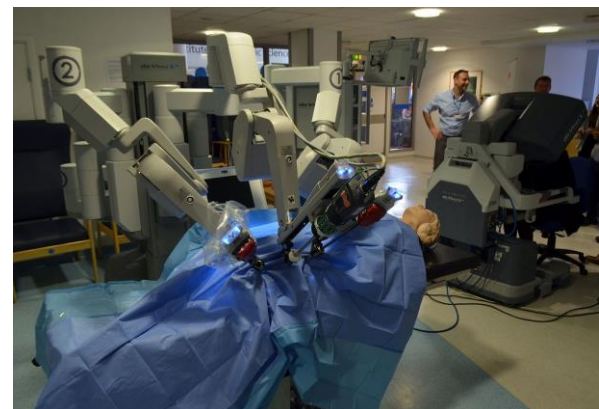
Gynecology: Treatments for uterine tumors, fibroids, vaginal prolapse, and endometriosis.



Urology: Treatments for prostate cancer, kidney cancer, adrenal gland tumors, bladder cancer.

Other Advanced Technologies:

- ✓ Radiomics and Omics-NGS UNIT Laboratory
- ✓ Cutting-edge immune control platform for infection and vaccine response
- ✓ Cell factory for regenerative medicine
- ✓ Cry EM and NMR 700 MHz-cryoprobe
- ✓ Micro CT for disease modeling
- ✓ High-throughput sequencing systems like Affymetrix and Mini ION



Examples of research Projects in Lombardy

Main research projects

- “Validation and sharing of standardized and homogeneously employed protocols for **monitoring the persistence and expansion of CAR-T cells** and their detection in different biological fluids”
- “**Bipolar disorder integrative staging**: incorporating the role of biomarkers into progression across stages”
- “In depth **analysis of salivary gland cancers**: from cell lines and genomic evaluation towards clinical trials in locally advanced and recurrent/metastatic diseases”
- “Use of **Artificial Intelligence and Machine Learning techniques** for the analysis of complex data, instrumental in identifying specific response profiles to treatments in patients with **neuropsychiatric disorders**”
- “Analysis with advanced technologies (e.g., **spatial proteomics**) of the intracellular, intercellular, and molecular mechanisms promoting post-transplant organ rejection, aimed at long-term graft survival”
- “Development of **personalized diagnostic and therapeutic strategies** for **congenital or acquired thrombotic, hemorrhagic, and microangiopathic diseases**”
- “Experimental **gene therapy** used in patients with **Crigler-Najjar syndrome**”
- “Pathogenesis of neurological diseases and **precision medicine**”

Research projects with EU funding in Lombardy

2014-2020

- **28** funded projects (**23%** of the 120 proposals)
- Overall **European contribution** obtained: **€14.3 million**

2021-2027 (up to January 2024)


- **8** funded projects (**57%** of the 20 proposals)
- Overall **European contribution**: **€11.6 million**

- ✓ **10 healthcare projects** with EU funding in Lombardy
- ✓ **1.852.389,32 €** total **European contribution**






Focus in the next slide



Healthcare projects with EU funding in Lombardy in details

| Project | Description | Total project cost | European contribution | EU Program |
|--|--|--------------------|-----------------------|---|
| RESPOND Preparedness of health systems to reduce mental health and psychosocial concerns resulting from the COVID-19 pandemic | Project focusing on the mental health impact of the COVID-19 epidemic | 6.172.028,25 € | 176.500,00 € |  |
| UNICOM Up-scaling the global univocal identification of medicines | Project focusing on health, economic growth, and sustainable healthcare systems, particularly addressing digital transformation in health and care | 20.730.965,50 € | 670.662,50 € | |
| HSMonitor Pre-commercial Procurement of innovative ICT-enabled monitoring to improve health status and hypertension care | Project focusing on digital transformation in health and care | 6.592.200,00 € | 237.937,50 € | |
| Joint Action ImpleMental Joint Action EU - 1.2.1.4 Support for the implementation of best practices in the area of mental health | Support for the implementation of best practices in the area of mental health | 6.748.030,04 € | 510.298,29 € | Other |

Healthcare projects with EU funding in Lombardy in details

| Project | Description | Total project cost | European contribution | EU Program |
|--|--|--------------------|-----------------------|--|
| ITA NCPeH Plus | Project aimed at extending current cross-border Patient Summary and ePrescription services to new sites and new document types | 11.320.900,27 € | 33.769,20 € |  EU4Health programme for a healthier and safer Union National Focal Points |
| PATHED - Enabling Patient Access to their Health Data | Project aimed at activating access services to health information for Italian citizens, usable both in Italy and abroad | 2.319.221,90 € | 15.319,83 € |  EU4Health programme for a healthier and safer Union National Focal Points |
| NCPeH 3 - Expansion of MyHealth@EU Digital Service Infrastructure (eHDSI) with new services and to more Member States | NCPeH 3 aims to extend current cross-border Patient Summary and ePrescription services to new sites and new document types | 1.700.000,00 € | 52.903,00 € | Other |
| eSTANDARDS - eHealth Specification Convergence 2014 | Project focusing on interoperability and standardization in e-Health among states in Europe and towards the USA | 999.769,00 € | 41.249,00 € |  |

Healthcare projects with EU funding in Lombardy in details

| Project | Description | Total project cost | European contribution | EU Program |
|--|--|--------------------|-----------------------|---|
| ASSESS-CT - Assessing Health Terminology Alternatives for Large Scale eHealth Deployments in Europe | Project focusing on interoperability in healthcare, particularly on terminology and clinical case coding | 939.717,00 € | 33.125,00 € |   |
| OPENMEDICINE Europe an ePrescription Specification Convergence | Project focusing on transnational cooperation in pharmaceutical classification | 997.938,00 € | 80.625,00 € | |

Call for Researchers: Import Intellectual Capital to the Lombardy



IRCCS, Hospital cutting-edge science aims to **support technology for start-up company** or for **bench-to-bed translational science for the Hospital**



The call aims to **hire “ad hoc” scientists** that want to **return to their Country**

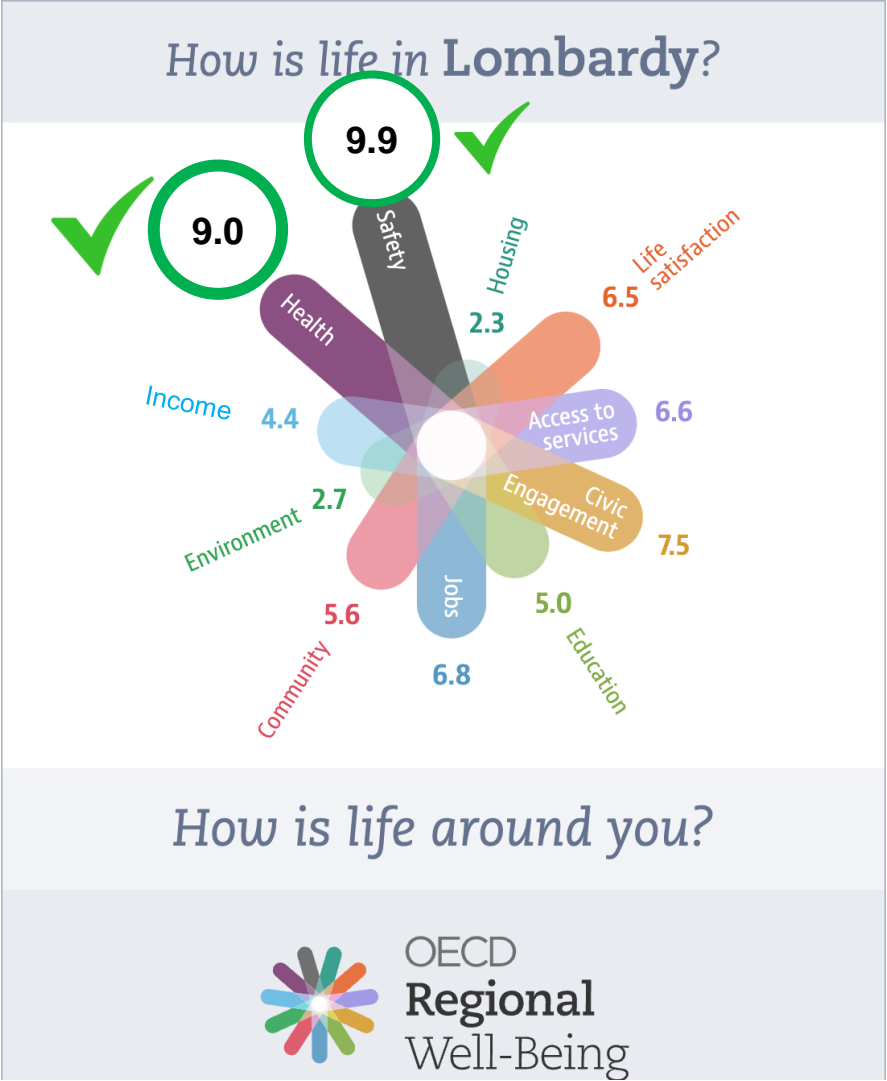


Applicants' criteria are based on **merit/performance** based on **career level** and ability to foster **collaborations with USA**

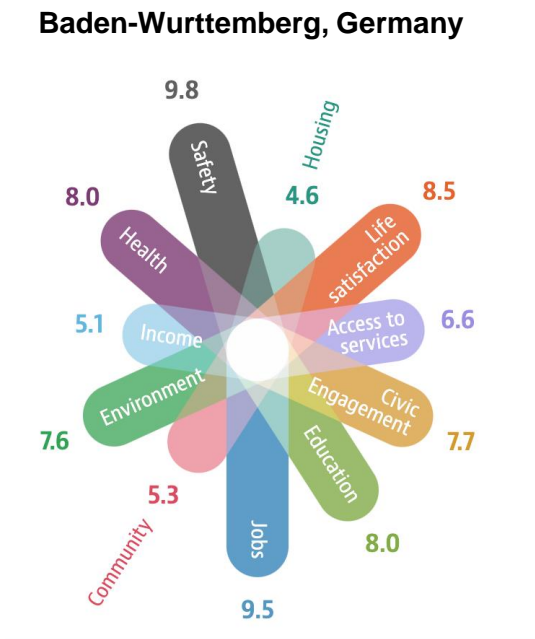
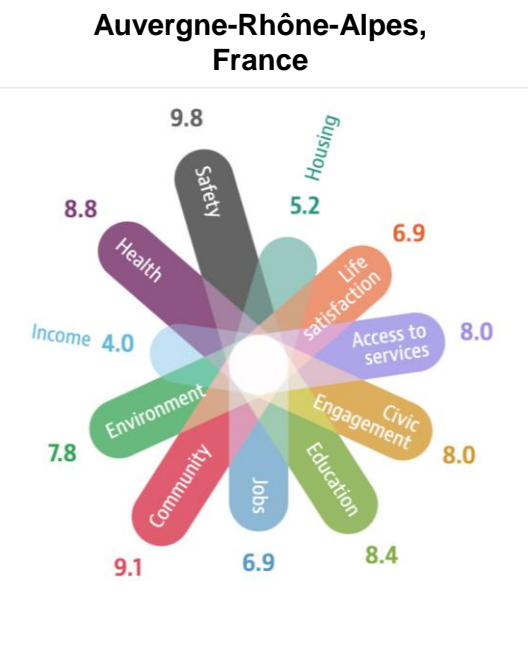


Every Scientist needs to maintain a **track record of peer reviewed publications**, apply to **European Fundings, teaching/training at the university and local IRCSS**

Lombardy vs other three Motors for Europe regions



Comparison between **Lombardy region** and the other **3 regions leader in economy and research**:

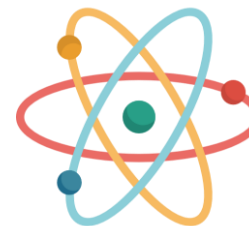


Lombardy's efforts in R&D



5,3 bln

€ Invested in R&D in 2019



3

Sections of the **National
Institute of Nuclear Physics**



75.000

Workers in R&D



1.300

**Research and technology
transfer centers**



12

NRC Institutes

Incubators, accelerators and innovation hubs

More than **100** Incubators, accelerators and innovation hubs



Fintech District



Italian Brand Factory



B4i BOCCONI FOR INNOVATION



PTP SCIENCE PARK

Openzone
science oxygen business

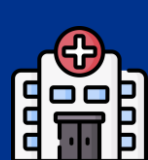


PLUGANDPLAY



They support startups by acting as a bridge between universities, innovative enterprises, and companies, accelerating Economic development in the area

Healthcare in Lombardy Region in 2022



205
Hospitals



102
Accredited
Private hospitals



20
IRCCS
(Scientific Institutes for Research,
Hospitalization and Healthcare)



27
ASST



HOSPITALIZATIONS

1,3 mln ~ **5,2 € bln**
Total

12.000 ~ **39 € mln**
Patients not residing in Italy



AMBULATORY SERVICES

189 Mln ~ **3,4 € Mld**
Total

436.000 ~ **8,5 € mln**
Patients not residing in Italy



EMERGENCY ROOM ACCESSSES

3,4 Mln
Total

19.000
Patients not residing in Italy

Lombardy is the **1° Region** for **IRCCS** and **ASST** actively involved in **international pharmacological clinical trials**, by the adoption of the **536/2014 EU regulation**

Main European Research Programmes in Healthcare sector

Horizon Europe

EU's **key funding programme** for **research and innovation** with a budget of **€95.5 billion**

The first Horizon Europe strategic plan defines the **strategic orientations for research and innovation investments** over the period **2021-2024**

The **objective** is to **finance research and innovation activities** to achieve a scientific and technological impact in research and innovation



EU4Health

The **fourth and largest** of the EU **health programmes** since their launch in 2003, with a **budget of €5.3 billion**

It is in force for the period **2021-2027** and it integrates the policies of the Member States to improve human health in line with the **One Health approach**

It goes beyond an ambitious response to the COVID-19 crisis to address the resilience of European healthcare systems

