Universities from Moldova

May 19, 2020

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# Regensburg – business and science location

Dr. Nicole Litzel

City of Regensburg, Dept. for Economic & Research Affairs

# **Regensburg –** Top of the Danube

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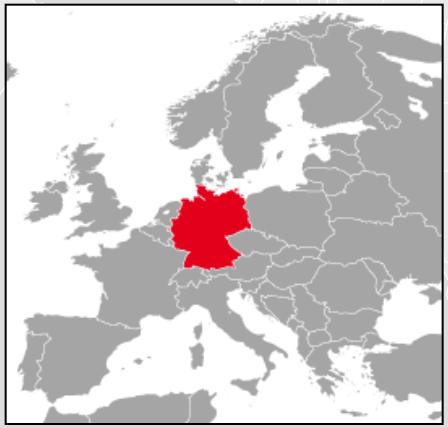

- UNESCO-World Heritage site
- **166,500** inhabitants
- **33,000** students – **3** universities
- **155,000** jobs (unempl. rate < **3%**)
- **828** jobs per 1,000 inhabitants
- **83,237 €** gross domestic product per capita
- catchment area of approx. **700,000** people
- only **60 minutes** driving time from 2 international airports (MUC, NUE)
- largest inland port in Bavaria

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# A brief survey through a long history – some photos instead of our previewed guided tour

# The Romans

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179 A.D. to 5th century

Source: Dr. Christof Flügel, document Niedermünster

# The Romans

179 A.D. to 5th century

Source: RTG Regensburg Tourismus GmbH

# First capital of Bavaria

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6th century

Source: Stadt Regensburg, Peter Ferstl

# A bishop comes…

739 (new cathedral St. Peter 13th century)

Source: Nicole Litzel

# … and a pope comes from here

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Source: dapd

# Important city for international trade

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Source: Wikimedia

# Important city for international trade

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Stone Bridge (1135-1146)

Source: Nicole Litzel

# Important city for international trade

prestigious private homes (12th-14th century)

Sources: Stadt Regensburg, Peter Ferstl, Nicole Litzel

# Imperial Diet – „German Parlament“

(1596 etc.) 1663-1806

Source: Stadt Regensburg, Peter Ferstl

# Decline – poverty – stagnation

15th century – mid-20th century

Source: Stadt Regensburg, Christoph Lang

# WWII – only minor destruction

1945

Source: Stadt Regensburg

# 1945-49 „Little Ukraine“

Source:
Helmut Wanner


Quelle: Europaeum (2014): Slawische Spuren, Regensburg europäisch

# Some political changes…

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Source: Christoph Lang

# … and bad living conditions

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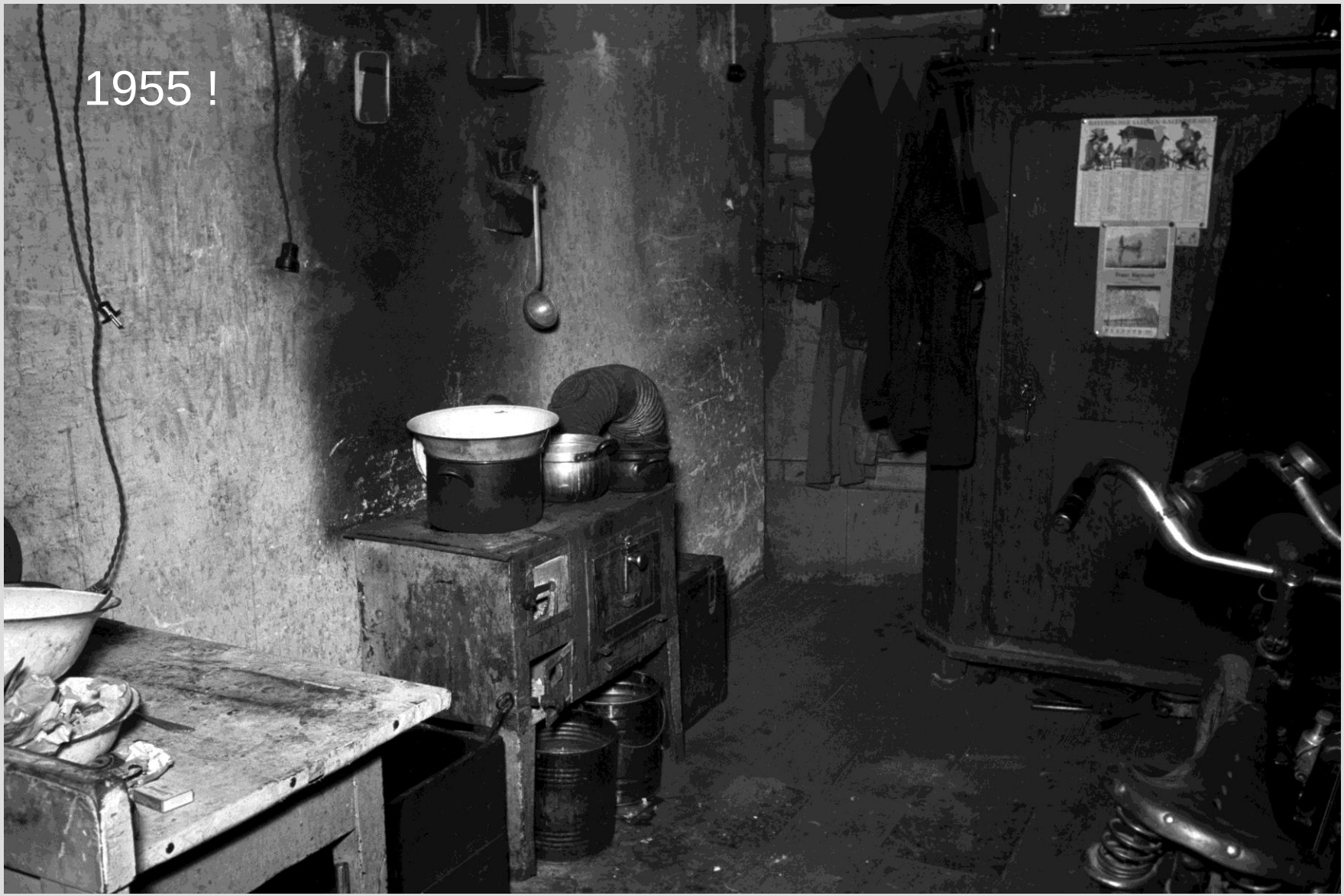


Source: Stadt Regensburg

# … and bad living conditions


Source: Stadt Regensburg

# Today – quality of life & atmosphere

Organisation der Vereinten Nationen für Bildung, Wissenschaft, Kultur und Kommunikation

**Altstadt von Regensburg mit Stadtamhof**
Welterbestätte seit 2006

Source: Stadt Regensburg

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# Economic development

# Industry during WWII

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Messerschmitt

Source: Stadtarchiv

# After WWII – slow start

Messerschmitt

no more fighter aircraft

but cars (1953-1964)

Source: Stadt Regensburg, Ernst Berger

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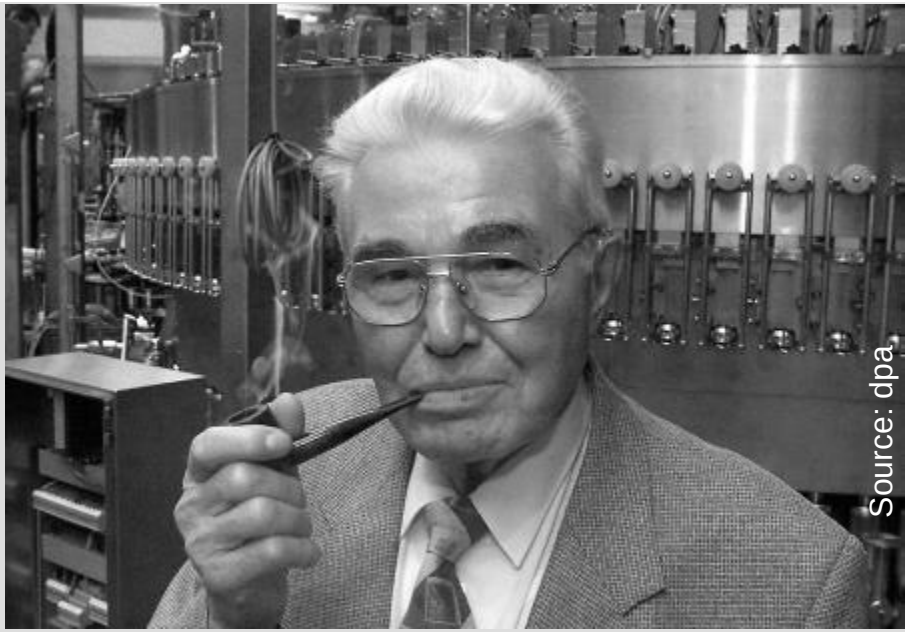
Source: Stadt Regensburg, Peter Ferstl

# Late 1940s start-ups – 1 example

- founded 1949 by Hermann Kronseder – labelling machine
- Mr. Kronseder holds 630 patents
- 1961 internationalisation
- 1984 stock market
- machines & complete lines for process, filling and packaging technology
- world market & technology leader

TODAY:

- 16,000 employees (11,000 in D)
- export share 91%


Source: dpa


Source: KRONES AG

# 1960s –
# Europe‘s first „American“ shopping mall

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Donau-Einkaufszentrum


Source: DV Immobilienmanagement GmbH

# The 1970s & 1980s – bad economic situation

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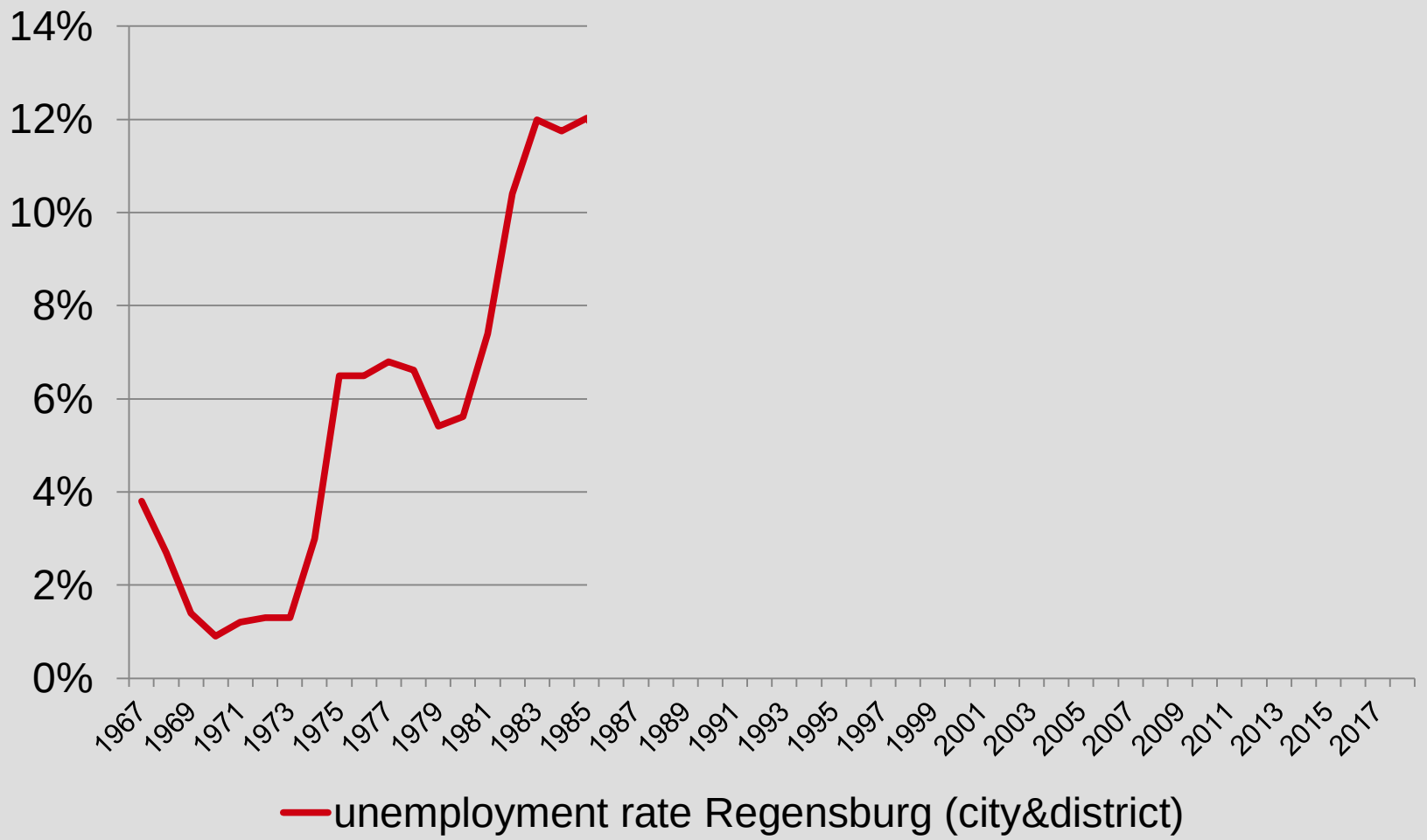
- loss of population
- one of lowest birth-rates in Germany
- low tax income
- only 4 plants with >1,000 employees
- loss of employment in the manufacturing sector

# Unemployment rate




Source: Arbeitsmarktbericht der Agentur für Arbeit Regensburg – own calculations
Stadt Regensburg, Amt für Stadtentwicklung, 03/2019

# Analysis of situation & policy reaction

Main (internal) problem at the time: no space for development →

- new structural policy
- new targets in regional economic policy
- new department in city administration: Economic Development

First action:

- annexation of several close villages (area 54 km² + 27 km²)
- flexibility for new development
  → new harbour
  → industrial zone
  → after 1990: new residential area

Source:
Stadt Regensburg

# Department for Economic Development

- no compulsory task for a municipality

  → can be designed according to own needs and ideas

today: „ Department for Economic & Research Affairs”

- with “Division for Economic Development” (6 px)
  → relocation, start-up policy, marketing
- and “Division für Science, Technology and Clusters” (3 px)
  → technology projects (new clusters? innovation strategies), office for research affairs (my job), cluster management Culture & Creative Industries (7 px), office for European affairs

# Aims

Create framework conditions to…

- … save existing jobs and create new jobs
- … ensure a balanced economic structure
- … save and generate higher tax revenue
- …improve and stabilise location factors

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# Milestones – Economy and universities

# University of Regensburg


Source: Stadt Regensburg

# University of Regensburg

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1967 official opening

Source: Stadt Regensburg

# University of Regensburg

today:

- > 21,000 students
- 11 faculties (+ 1 new in 2021)
- University Hospital

Source: Louisa Kobloch, MZ

Source: Universität Regensburg

# University of Applied Sciences

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Source: NACHT.SCHAFFT.WISSEN

HfKM Hochschule für katholische Kirchenmusik & Musikpädagogik Regensburg

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- University for Catholic Church Music and Music Pedagogy
- well-established , founded in 1874
- oldest university of its kind
- 170 students
- high share of international students

# BMW 1984

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first stone

Source: Adolf Reisinger, Stadt Regensburg

# BMW today

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- 1,100 cars/day
- 9,000 employees

Source: BMW AG

# Siemens Mega Chip Factory

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- Regensburg plant from 1948
  → transformation
- 1984: highly integrated circuits
- 1986: first mega chip
- today: Infineon Technologies

Source: SIEMENS AG

→ BMW & Siemens: positive *image* for business location

# Continental Automotive + VITESCO Technologies

Conti Group

- world‘s third largest automotive supplier
- 5 divisions (groups Rubber / Automotive)

Regensburg

- **origin: small R&D group for chips in cars**
- today: global HQ for 2 divisions:
  Powertrain (Vitesco) & Interior (Conti)
- production plant
- 8,000 employees,
  about 4,000 engineers in R&D
- **well embedded in Sensor Tech Cluster and IT-Security Cluster**
- in 09/2019 split in 2 companies


Source: www.ChristianRinger.Photography.com

# Image!

1984:

establishing BMW and expansion of Siemens

- positive signal – starting structural change
- better ***image*** of Regensburg as a business location

# Toshiba

- first European notebook production (1990 to 2007)

*Why Regensburg?*

- geography: gateway to CEE countries, motorway, proximity to international airport
- availability of high-class industrial construction ground + friendly economic policy
- infrastructure: 2 universities, workforce !
- important supplier for computer chips: Siemens Regensburg – existing **cooperation**

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# Political changes

# External influences

- Fall of the Iron Curtain 1989 → new possibilities
- integration of markets
- (international) outsourcing
- geographical proximity gets more important for efficient production and innovation


For Regensburg as border city

- strongly affected
- declining textile industry, but…
- “even as competition and economic activity globalize, (…) competitive advantage can be localized” (Enright 2003)

Source: Thinglink.com

# Innovation

key element for sustainable growth

- integrative part: knowledge spillovers
  → stimulated by cooperation between economic actors
  (e.g. Boschma 2005, Fujita & Thisse 2002, Van den Berg et al. 2001)
- innovation process gets more and more interactive and collective
  → interlinkages (vertical, horizontal, diagonal)
- R&D activities: positive externalities declining with geographical distance
  (Bottazzi & Peri 2003, Brakman et al. 2004, Funke & Niebuhr 2005)
- breeding ground for innovation: scientific environment
- well-educated population is also a booster for the innovation process and therefore a promoter for long run growth

!

*(see some more background slides in the backup section)*

# Consequences for Regensburg

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- research shows: adapt economic policy to position the region as an internationally visible location
- start of regional innovation & cluster policy

"A cluster is a geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types ".
*(Porter 2003, p. 562)*

- important: science partners, universities

→ some examples

# Cluster Biotech (1)

- mid-1990s: federal program „BioRegio“ (competition)
- in Regensburg just a few biotech companies, but high-class research at University, OTH + University Hospital incl. start-up potential !
- initiative by science, business & administration (triple helix)
- not successful for „BioRegio“ funds, but network (!) existed → own initiative
- 1999 foundation of BioPark Regensburg GmbH, start of cluster management


Source: BioPark GmbH

# Cluster Biotech (2)

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today

- BioPark I, II, III:
  18,000 sqm state of the art labs and offices for Life Science companies
- 36 companies & institutes, around 600 employees with direct access to university facilities
- BioRegio 50 firms, 3,400 employees
- Regensburg: 2nd largest biotech region after Munich
- since 2016:
  new cluster Healthcare


Source: BioPark GmbH

# Cluster Sensor Technology

Sensors Bavaria
Strategische Partnerschaft Sensorik e.V.

- cross-sectional technology, key to many innovations in Regensburg
  → Department for Economic Development starts networking process
- in 2002: endowed chair for sensor technology at OTH Regensburg (5-year-support by Scheubeck-Jansen-Foundation) !
- PLUS: Regensburg wins federal competition as „model municipality“ for strategic partnerships
  → starting point for cluster activities (City of Regensburg)
- 2006: start of cluster management for Bavaria (Strategische Partnerschaft Sensorik e.V.)
- today: Germany‘s largest and most successful sensor tech cluster
- many funded projects (applied research: companies + university partners)
- > 80 members, 150 partners
- 15 employees

# Cluster Electromobility

- launched in 2011 by the city‘s Dept. for Economic and Research Affairs
- topics: E-car, smart grid, energy supply, ICT for mobility
- 40 actors: firms, universities, applied research centres

!


- initiating of R&D-projects, finding partners
- e.g. „research bus“ EMIL – „normal“ bus in public transport, cluster members use it as mobile research platform

Source: Peter Ferstl, Stadt Regensburg

# Cluster Culture & Creative Industries

high potential in Regensburg:

- share CCI in overall economy Regensburg: 11.1 % (BY 7.9 %, D: 7.7 %, 2014)
- innovation driver for other industries
- launched in 2014 by the city‘s Dept. for Economic and Research Affairs
- in the city centre

DEGGINGER

- as space for creativity for CCI actors
- ~ 5,000 visitors/month
- ~ 400 bookings/month

Source: Stadt Regensburg

# Clusters

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- Biotech/ Life Sciences (1999)
- Information Technology (2001)
  - → IT-Security (2006)
  - → IT-Logistics (2011)
- Sensor Technology (2006)
- Energy (2009)
- Electromobility (2011)
- Culture and Creative Industries (2015)
- Health Care (2016)

→ all of them initiated or strongly shaped by municipality
→ after some time: own organisational structure
→ triple helix (business, science, administration)

# TechBase

- incubator for technology-related companies
- space for high-tech startups, university spin-offs and cluster organisations
- flexible research labs and workshops for temporary research groups
- central building for the development of the TechCampus
- venue for congresses and seminars
- launched and run by the City of Regensburg

Source: R-Tech GmbH

# Where innovation meets talents

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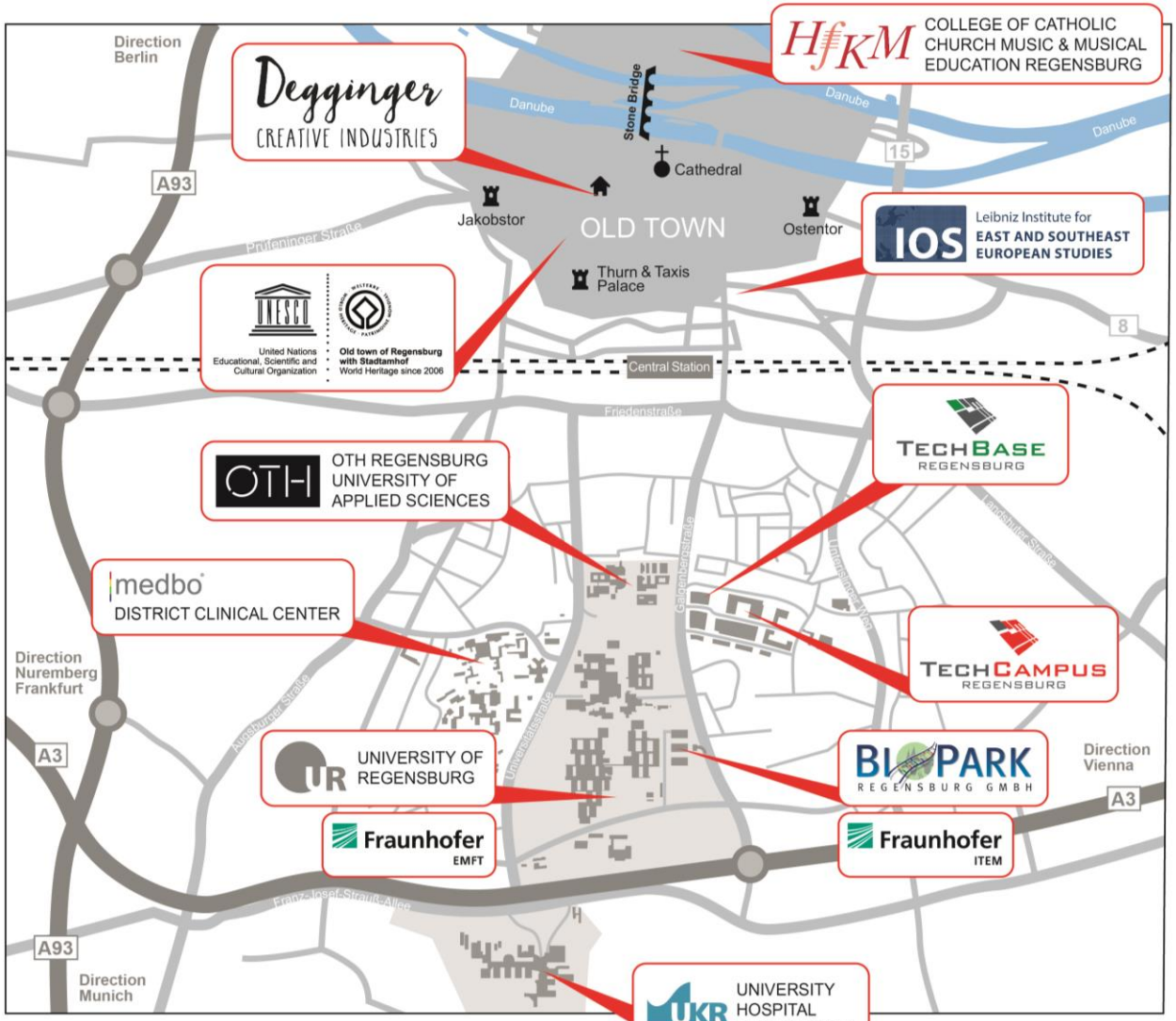


Source: Stadt Regensburg 2017

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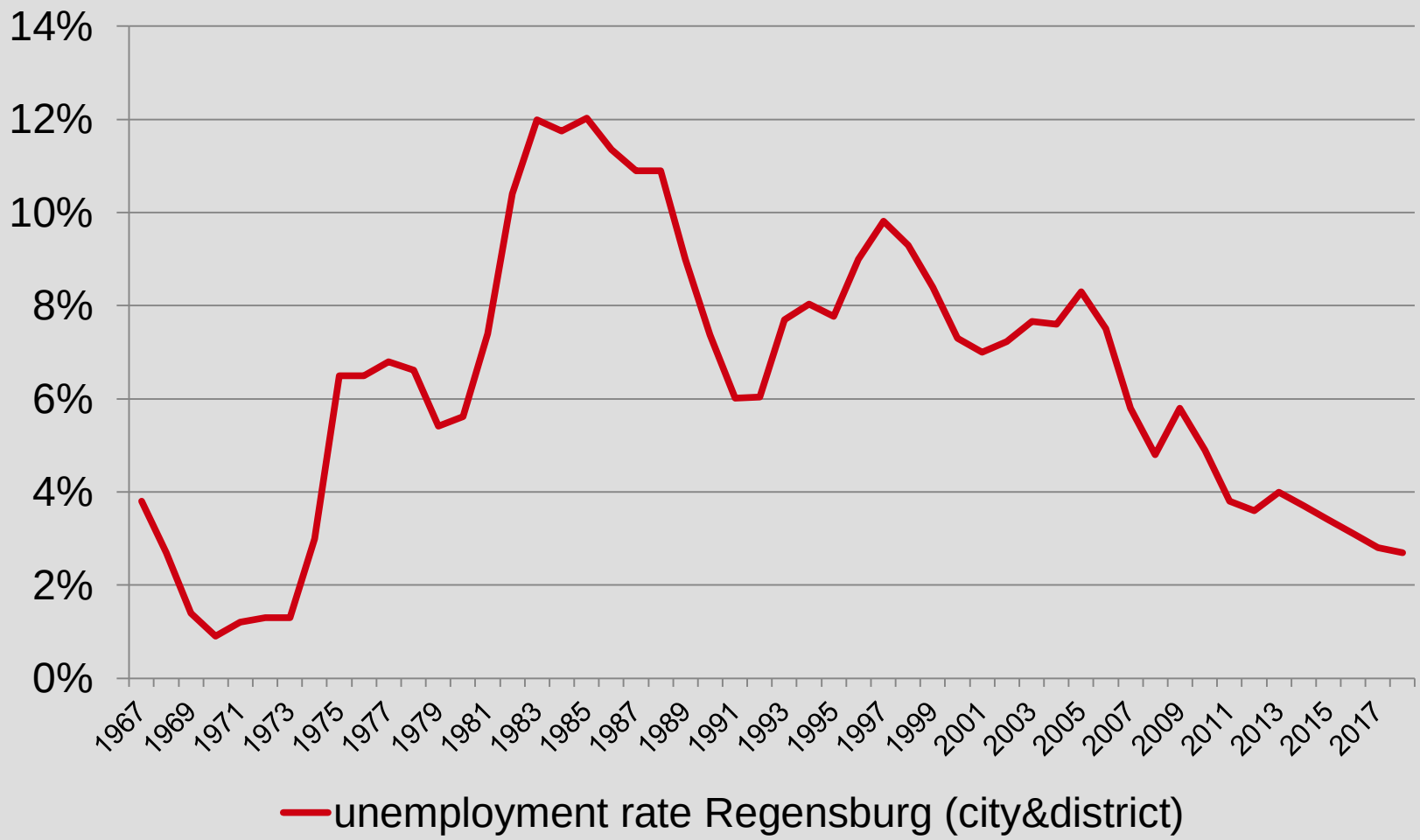
# Does it work?

# Unemployment rate




Source: Arbeitsmarktbericht der Agentur für Arbeit Regensburg – own calculations
Stadt Regensburg, Amt für Stadtentwicklung, 03/2019

# Job density

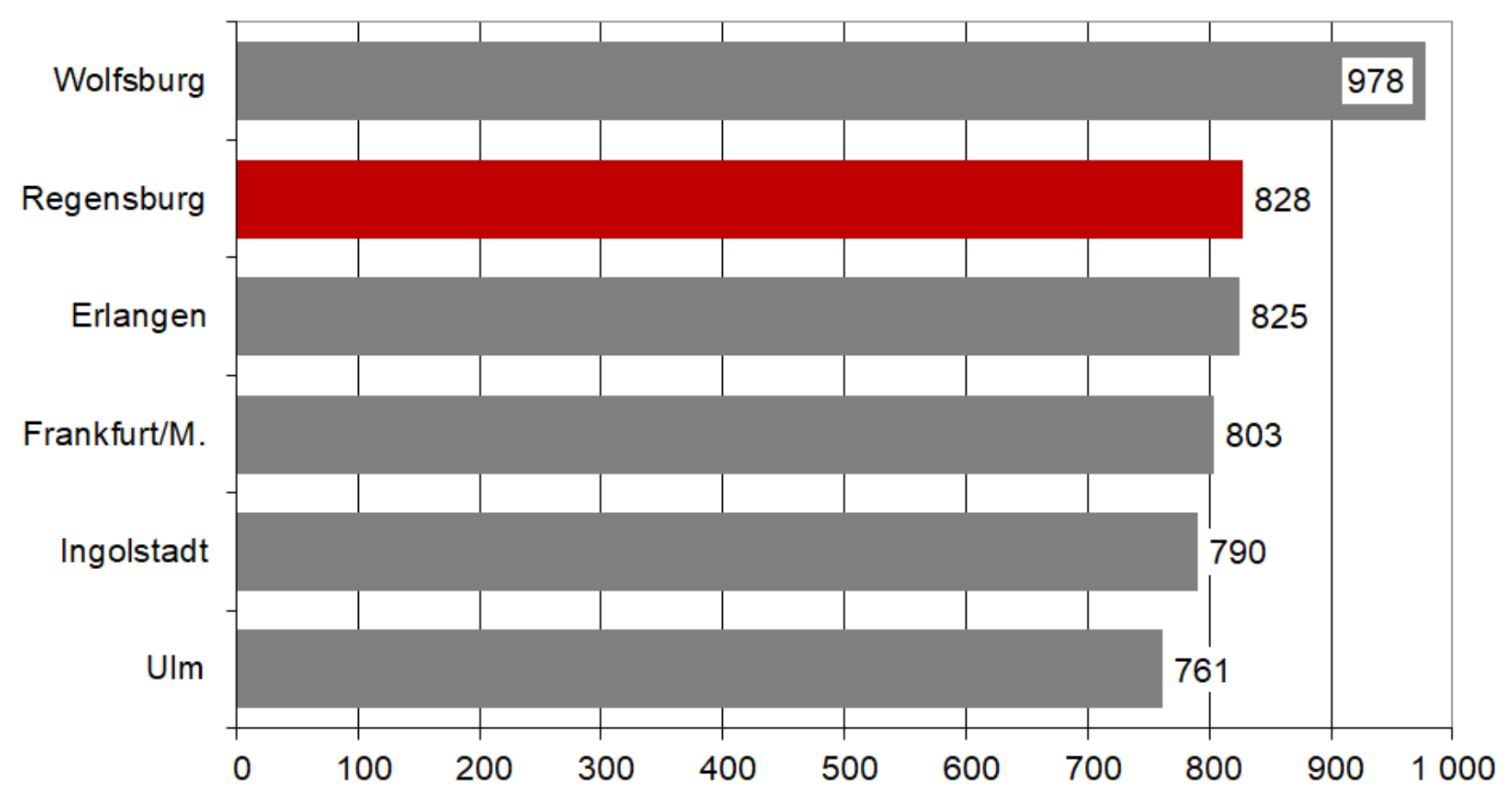
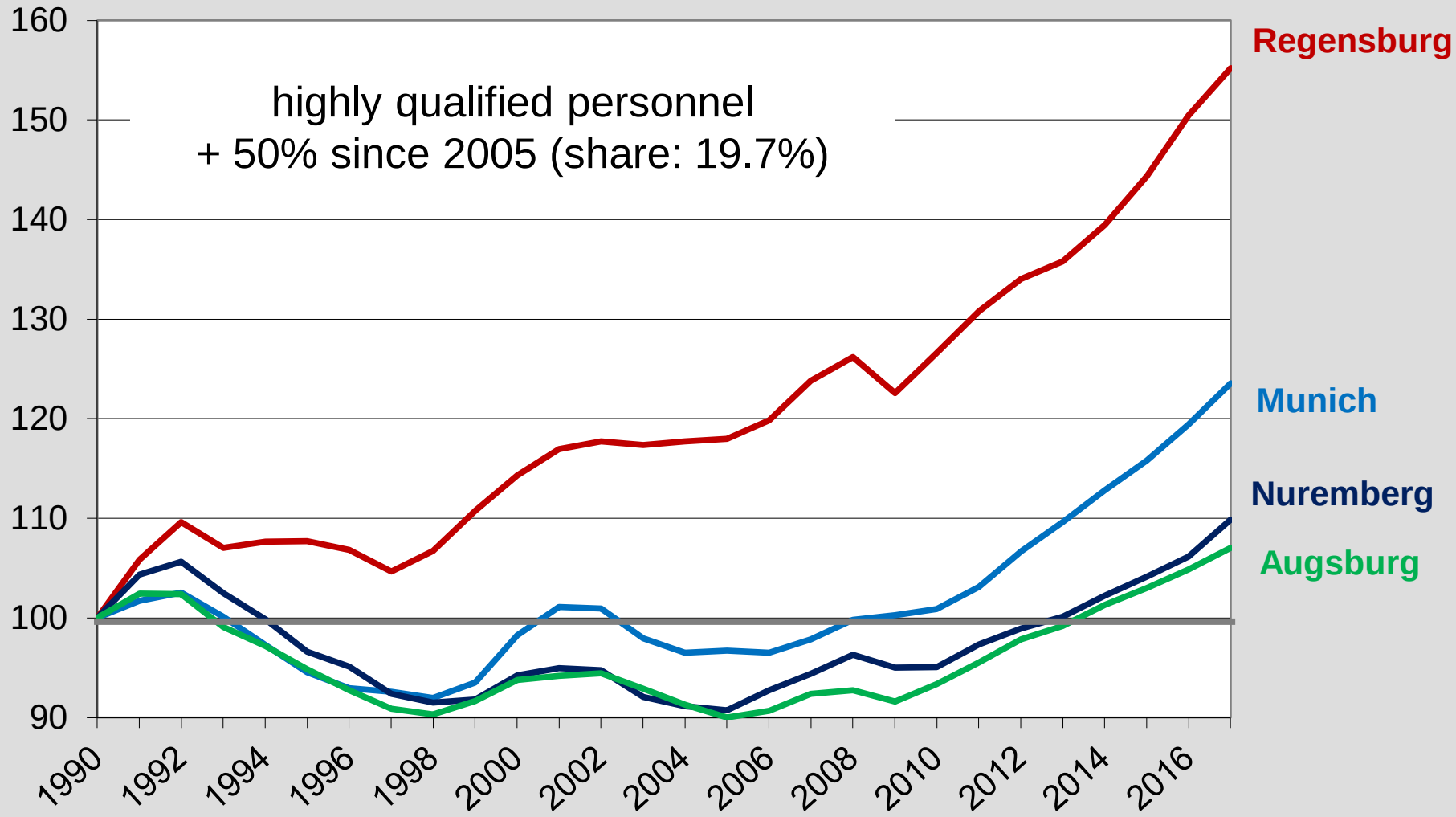



figure: only employees liable to social security (02/2020)
ALL working people (incl. self-empl. & civil servants) **Pop 166,500 : 155,800**

Source: Bundesagentur für Arbeit, Statistische Ämter des Bundes und der Länder
graph: Stadt Regensburg, Amt für Stadtentwicklung, 02/2020

# Employment subject to social security




Source: Bundesagentur für Arbeit, Statistische Ämter des Bundes und der Länder
graph: Stadt Regensburg, Amt für Stadtentwicklung, 03/2019

# Clusters – positive effects?

Analysis of establishment survival and growth with

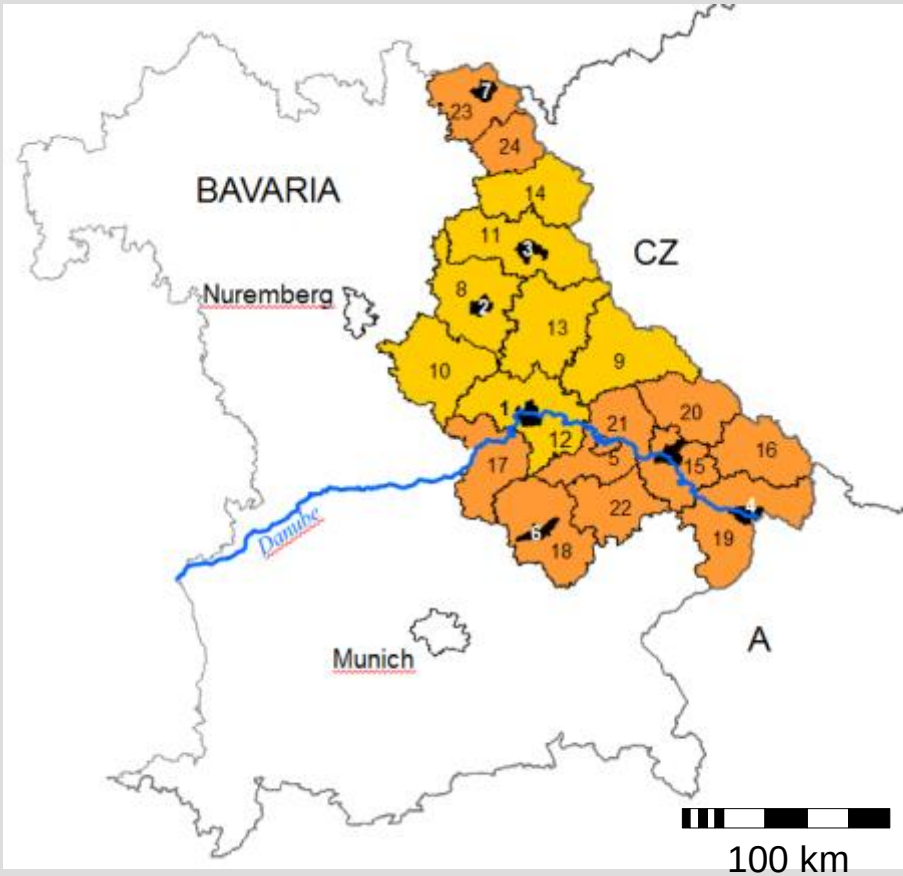
- a cluster-participating treatment group
- a non-participating control group

in Eastern Bavaria

2001 to 2010

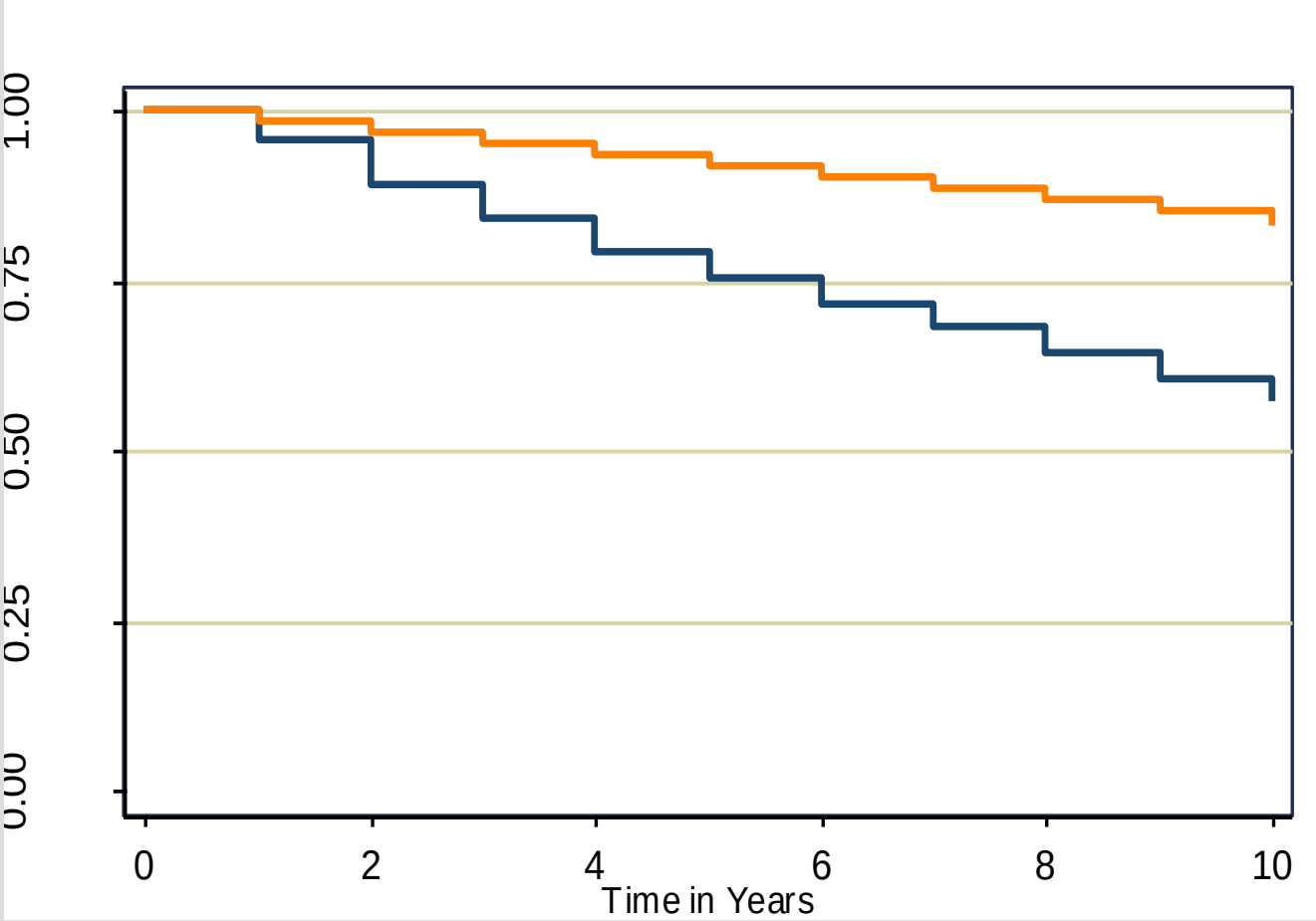
(CORIS data linked to

IAB Establishment History Panel)




Source:
Nicole Litzel (2016): Does embeddedness in clusters enhance firm survival and growth? An establishment-level analysis using CORIS data, Regional Studies

# Effects on establishment survival




survival:

83.2 % participants

57.4 % non-participants

→ cluster participation conducive to surviving in business

Source: Nicole Litzel (ibid.)

# Effects on establishment growth

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- Propensity Score Matching: a comparison of two in reality incomparable outcomes – calculating the difference between the development of establishments in the participating (treatment) group as if they were non-participants (control group) (following Caliendo/Kopeinig 2008)

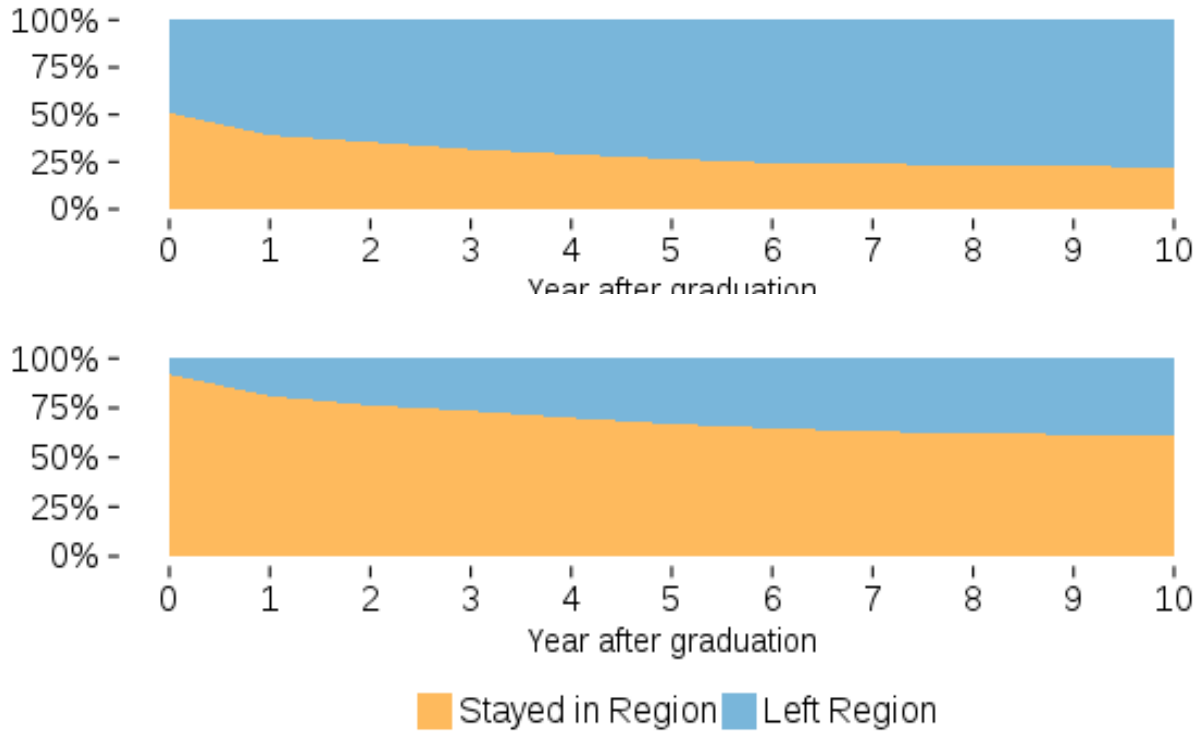
| | | Treated | Controls | Diff. | s.e. | T-stat |
|---|---|---|---|---|---|---|
| Employment growth rate 2001 to 2010 | Unmatched | 0.1772 | 0.0726 | 0.100 | 0.023 | 4.40 |
| | ATT | 0.1745 | -0.0224 | **0.197** | 0.035 | 5.70 |

→ becoming cluster aware raises the probability of growth by 19.7 percentage points

Source: Nicole Litzel (ibid.)

# University graduates stay in the region

workplace of 1995-2016 graduates (Möller/Rust 2017)




students not originating from region

students originating from region

data: all University graduates, linked to federal social security data

Source: Joachim Möller & Christoph Rust (2017): Regensburger Absolventenstudie, Universitätsverlag Regensburg

# Young people stay

Source: port01, Daniel Pielmeier

Source: Stadt Regensburg, Stefan Effenhauser

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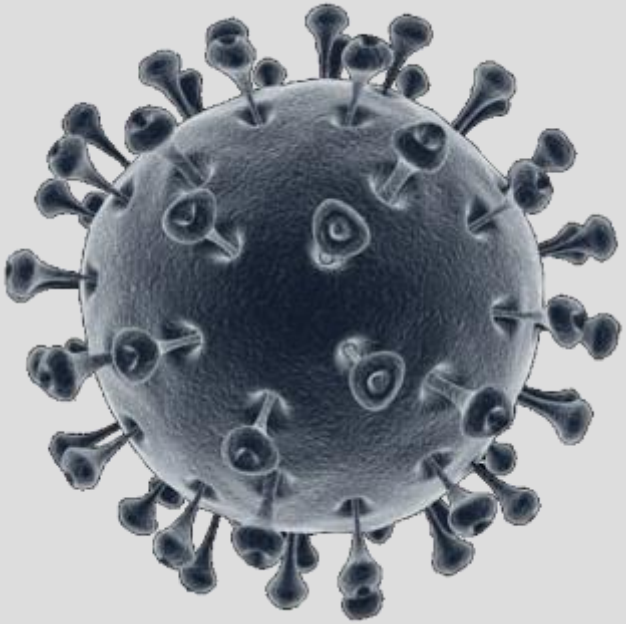
# BUT…

# The world is changing – fast!

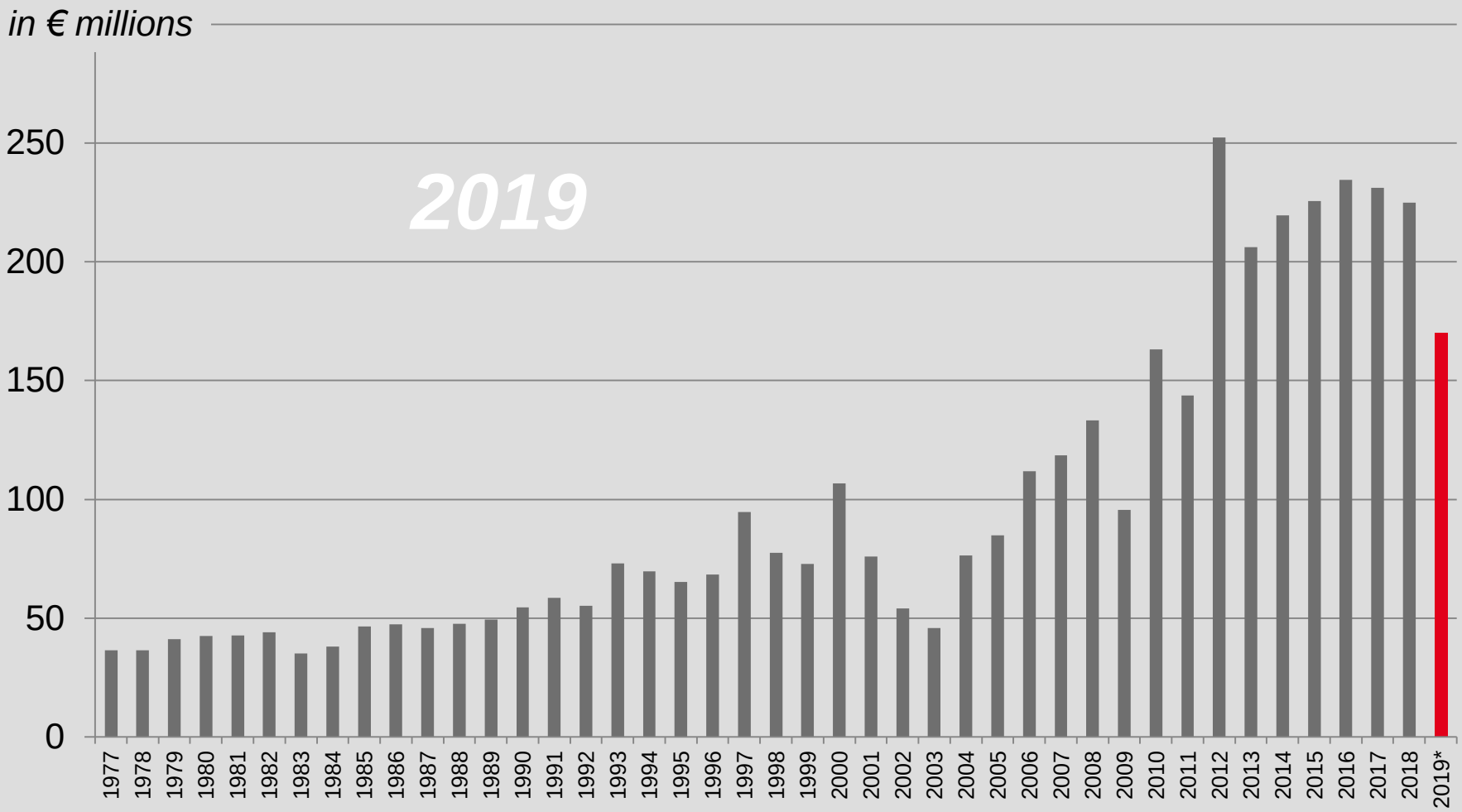
- digitalization – data as „the new oil“
- climate change
- trade restrictions
- growing international competition
- new mobility

etc.

since March:



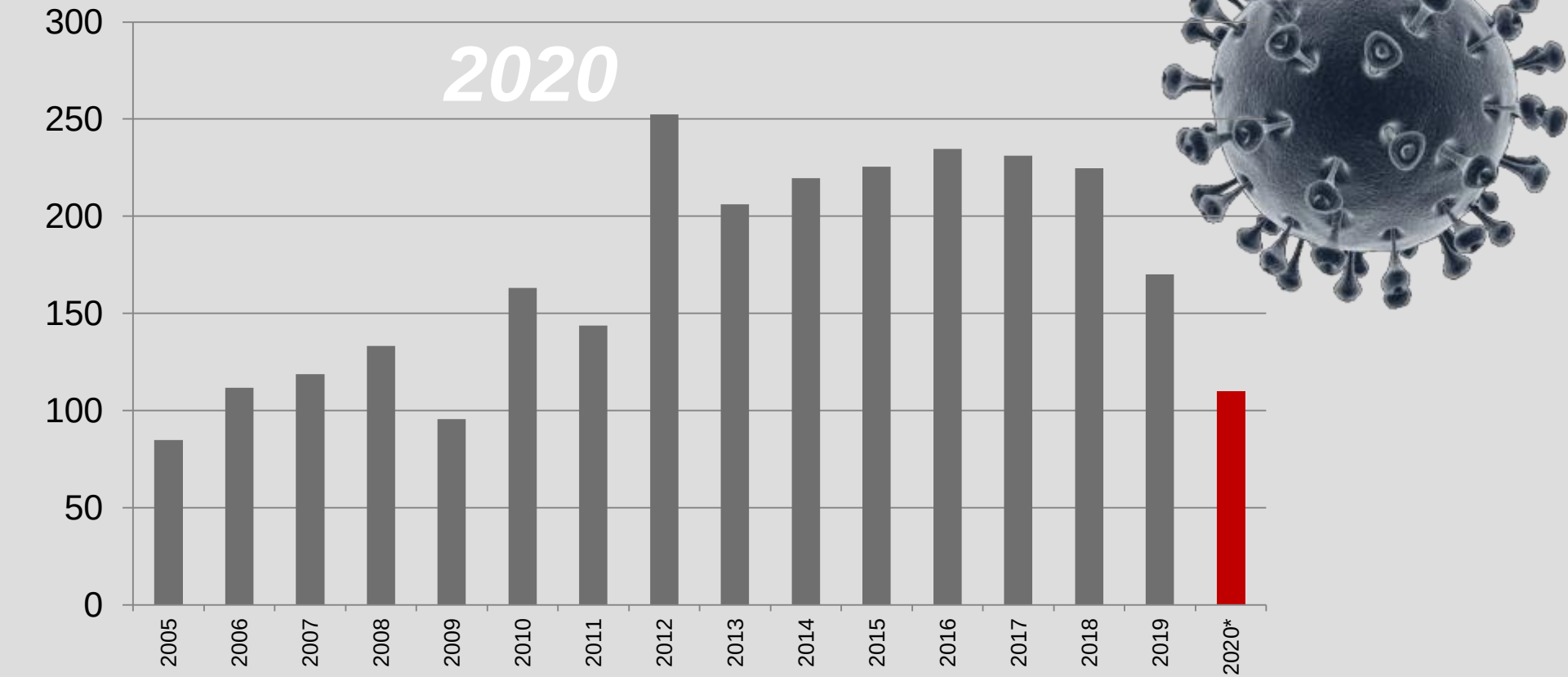
# Commercial tax development (city)

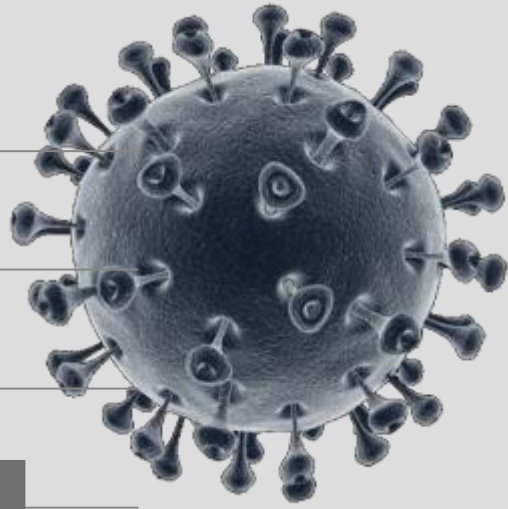



Source: Stadt Regensburg, Amt für Stadtentwicklung, 09/2019, 2019 forecast

# Commercial tax development (city)

*in € millions*



Source: Stadt Regensburg, Amt für Stadtentwicklung, 04/2020, 2020 forecast

# Vision 2030

„Economy and science in Regensburg merge into a place of knowledge and innovation.“

„The city is an attractive place for developers and an important centre for the production of high-quality goods.“

# Main strategies for the future

- High added value through production
- Strong link between research and business
- Long-term regional cluster policies
- Focus on human resources in SME
- Own responsibilities for cities in economic development issues
- Active real estate policy by the city, but limited to land and special applications

# Aim: non-university research institutions

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- IOS (Leibniz Institute for East and Southeast European Studies)
  *founded in 1930+1952, merged 2012, since 2017 part of Leibniz: historical, economic, social science expertise, transnational + comparative studies, focus on Southeast Europe + former Soviet Union*
- RCI (Regensburg Centre for Interventional Immunology) – expected for Leibniz in 2022/2023

Leibniz-Gemeinschaft

- „Personalised Tumor Therapy“ – research group of Fraunhofer ITEM
- „Cell-bases Sensors“ – research group of Fraunhofer EMFT

Fraunhofer

# New strategies

- starting STE(A)M labs for young people, age 8 to 18
- to be opened in 02/2021

Quelle: Dietrich | Untertrifaller Architekten ZT GmbH

# New strategies

- starting STE(A)M labs for young people, age 8 to 18
- to be opened in 02/2021

Source: Hands on Technology e.V.

# Strategic ideas (1)

Update the innovation ecosystem Regensburg (triple helix)

- first workshops

Source: Bertrandt

- Do we stick to the cluster policy?
- How can our clusters evolve – adapt – merge – expand?
- How can we unlock the full innovation potential in Regensburg?

# Strategic ideas (2)

first workshops for a possible „AI network“

→ 60 innovative triple helix people

- could it work?
- our strenghts?
- future focus?


Source: Philipp Berr, Stadt Regensburg

# Strategic ideas (3)

- expand the culture and creative industries → feasibility study city warehouse

Source: Stadt Regensburg

# Latest developments (1)

- 2019: The University of Regensburg  decides to establish a new faculty: Information Technology & Data Science
- 2019/2020: The University of Applied Sciences expands and creates
  - the „Regensburg School of Digital Sciences“,
  - the „Regensburg Center of Artificial Intelligence“ and
  - the master course in „Artificial Intelligence & Data Science“

# Latest developments (2)

- 2020: The Bavarian government decides to strengthen science in Bavaria (High Tech Agenda: 2 bn € overall)

  At the University of Regensburg

  → 12+3 chairs for AI
  → 35 chairs (different fields)

  At the University of Applied Sciences

  → 37+3 chairs for Artificial Intelligence, Computer Science and Health Science

Thank you!

litzel.nicole@regensburg.de

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# **Regensburg** – history meets future

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# BACKUP

# Border regions


Source:
Thinglink.com

neighbouring countries separated by barriers
→ higher trading costs

limiting factor for border regions
→ periphery, orientation of companies towards the home country

Iron Curtain as a very hard border
→ falls in **1989**

Regensburg strongly affected

# Opening of borders – consequences for regions

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- market barriers (goods and capital, partly for labour and services) are abolished
- the economic and political relevance of borders diminishes
- effects of market size
  e.g. EU-enlargement 2004: formerly peripheral regions turn into **centrally located** economic spaces

# Opening of borders – consequences for firms

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- demand side: new suppliers – efficiency gains
  supply side: new customers – market entry
- growing competition
  → forced to re-organise internal production processes
- new opportunities for international division of labour
- disintegration of production and specialisation on parts of the value-added chain
  → comparative advantages & economies of scale
  → increasing productivity
  → vertical specialisation

# Economic integration and clusters

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- slicing the value chain *(Krugman 1995)*
  „By a variety of measures, the increased use of imported inputs, and narrowing of production activities within each country, is a characteristic feature of many OECD countries over the past two decades.” *(Feenstra 1998)*
- characteristics of value-added chains: forward and backward linkages *(Hirschman 1958)*
- requirement of more active horizontal and vertical interlinkages between firms and their diagonal links to universities, institutions and service partners

→ clusters

# Cluster definitions

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Definition I :

"…industry clusters are typically defined as significant geographic concentrations of major end-market industries, their extended supply chains, other sectors that share close technological or human capital affinities, and various specialized supporting institutions".
*(Feser and Sweeney 2002, p. 111)*

Definition II :

"A cluster is a geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types ".
*(Porter 2003, p. 562)*

# Glocalisation

- gradually: more complex parts are outsourced

→ partners get integrated in the innovation process

→ co-operation between partners has to be more intense

→ most efficient when in geographical proximity (trust)

„Even as competition and economic activity globalise, competitive advantage can be localised." *(Enright 2003)*

(also called 'location paradox' *(Enright 2003, Porter 1990)* or 'glo**c**alisation')

# *PLUS:* Innovation

key element for sustainable growth

- integrative part: knowledge spillovers
  → stimulated by cooperation between economic actors
  *(e.g. Boschma 2005, Fujita & Thisse 2002, Van den Berg et al. 2001)*
- innovation process gets more and more interactive and collective
  → interlinkages (vertical, horizontal, diagonal)
- R&D activities: positive externalities declining with geographical distance
  *(Bottazzi & Peri 2003, Brakman et al. 2004, Funke & Niebuhr 2005)*
- breeding ground for innovation: scientific environment
- well-educated population is also a booster for the innovation process and therefore a promoter for long run growth

# Consequences for regions

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- fierce competition over companies and highly skilled or creative workers
- EU policy Lisbon Agenda (2000): “maintain the productive capacity and competitiveness of Germany and Europe and help accelerate European integration”
  → clusters can be seen as a key element in the concept
- aim of regional economic policy:
  to create an environment favourable for innovation and knowledge spillovers
  → promotion of clusters or
  → preparation of rich soil for cluster prerequisites to grow
  *(Feser 2008)*
  **→ become visible as a location in the competition among regions**