Exploring Dynamics and Trends in Distance Education

Insights from Global Web Search Queries in the Post-Pandemic Era

8TH INTERNATIONAL CONFERENCE ON EDUCATION AND DISTANCE LEARNING

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Data and codes available at: https://github.com/pridiltal/CARMA2024_Analysis

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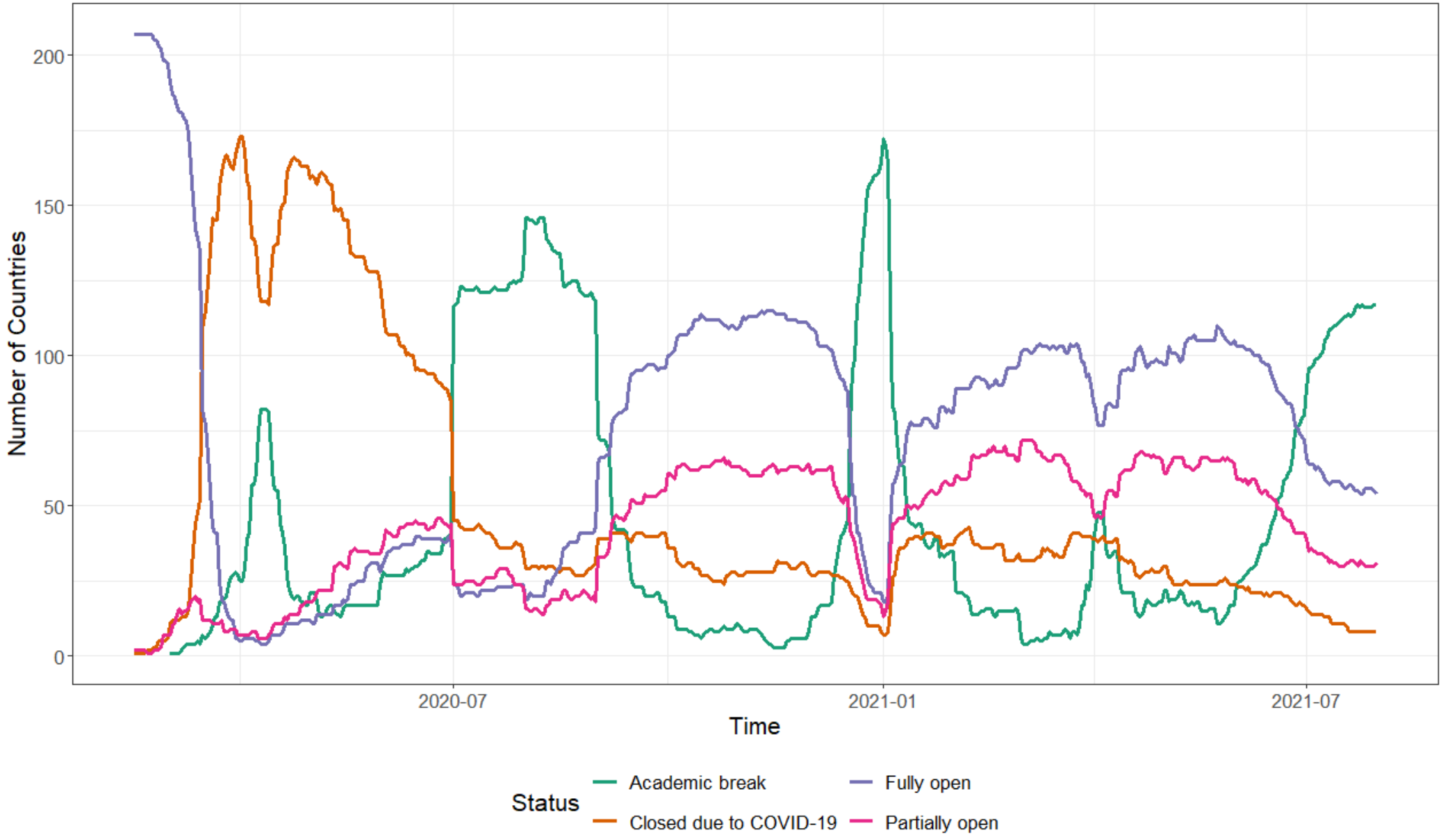
Global tracking of COVID-19 caused school closures and re-openings



Source: UNESCO (2020). COVID-19 educational disruption and response. [Online; accessed 13-May-2020]. https://en.unesco.org/covid19/educationresponse

From chalk-talk to virtual walk

The speed of these school closures demanded a rapid move from traditional classroom learning to online learning.

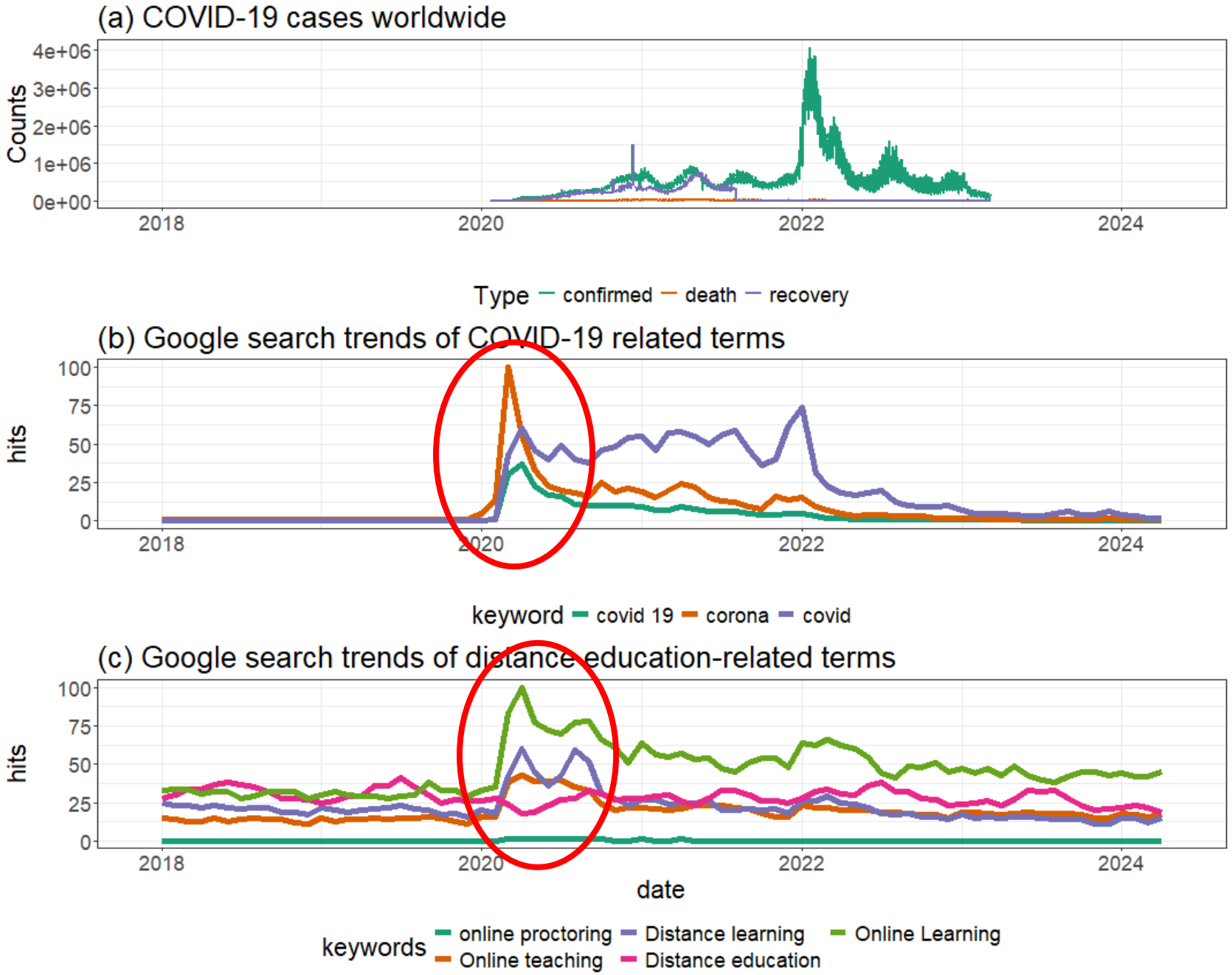
Image Credit: pixabay.com

- Distance education has a long history.

- COVID-19 marked a new era of distance education.

- Because during this pandemic, every single step, including, planning, developing new tools and techniques, conducting awareness programs about online learning and shifting towards online learning, happened online, due to the unexpected massive global shutdown.

- This lack of experience, lack of awareness and lack of readiness caused millions of distance education related internet searches during the COVID-19 pandemic.


(a) COVID-19 cases worldwide
Counts
4e+06
3e+06
2e+06
1e+06
0e+00
2018
2020
2022
2024
Type confirmed death recovery
(b) Google search trends of COVID-19 related terms
hits
100
75
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25
0
2018
2020
2022
2024
keyword covid 19 corona covid
(c) Google search trends of distance education-related terms
hits
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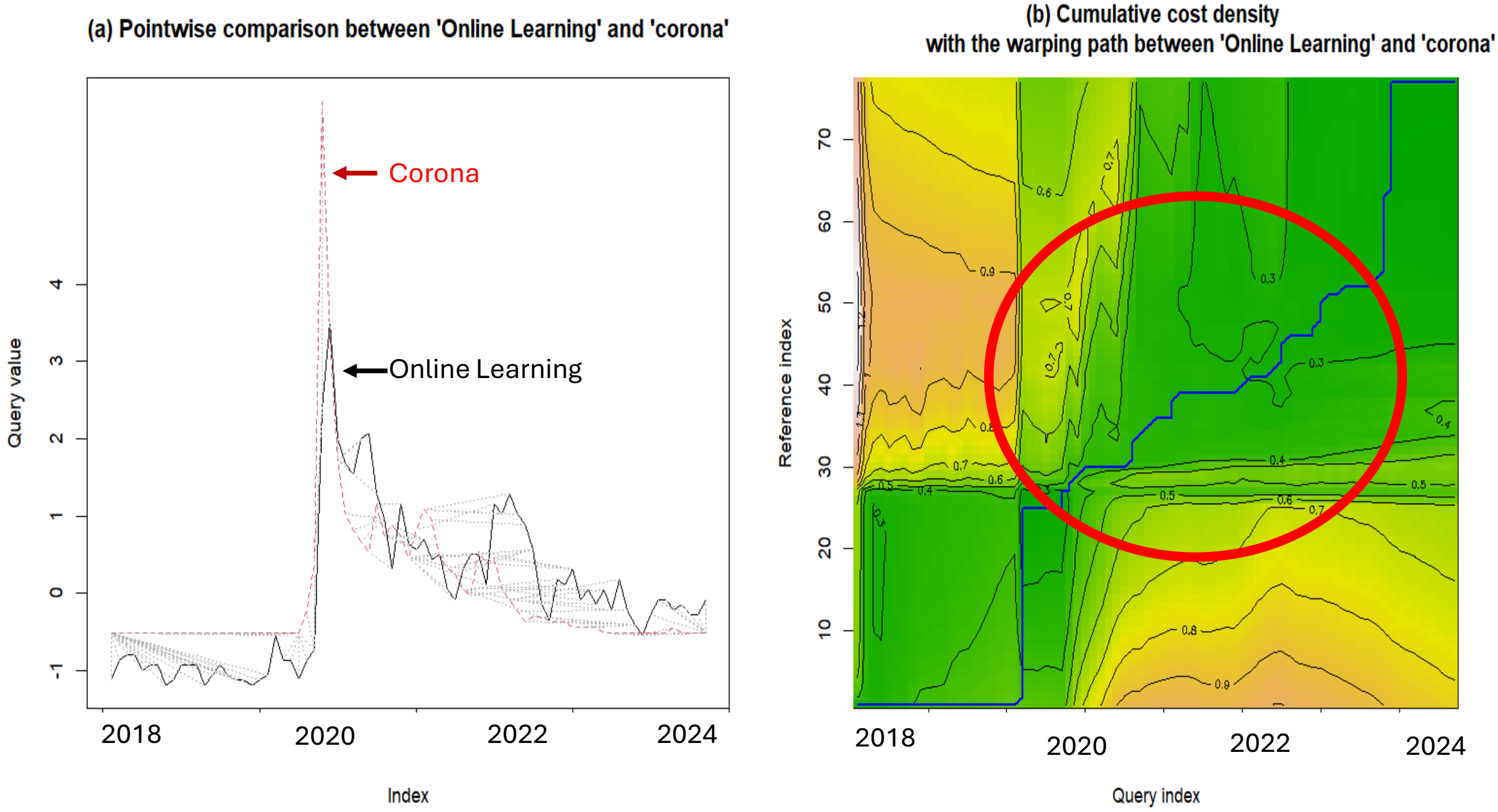
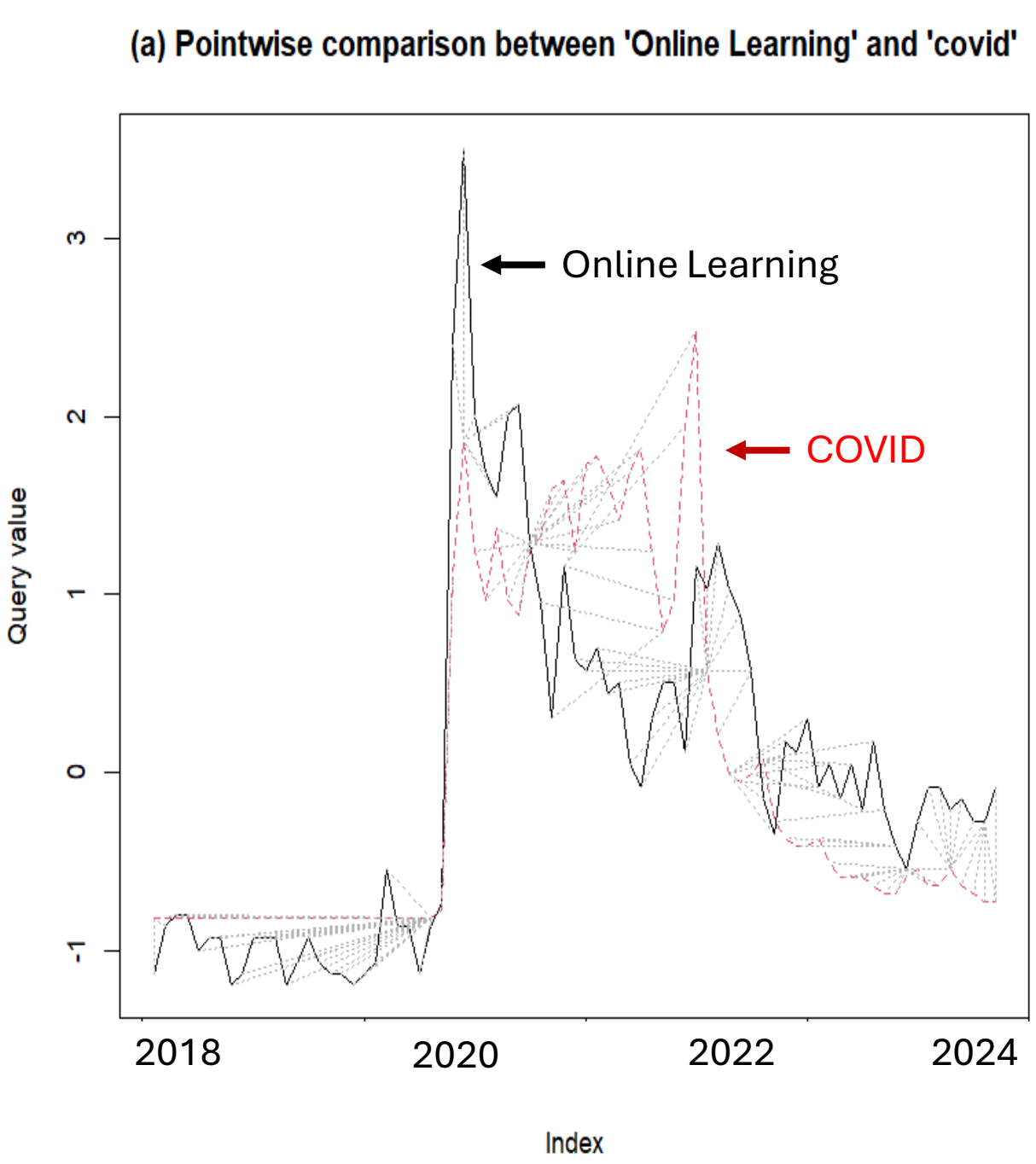
keywords online proctoring Distance learning Online Learning
Online teaching Distance education


(a) Pointwise comparison between 'Online Learning' and 'corona'
Corona
Online Learning
Query value
Index
2018
2020
2022
2024
(b) Cumulative cost density
with the warping path between 'Online Learning' and 'corona'
Reference index
Query index


(a) Pointwise comparison between 'Online Learning' and 'covid'
Online Learning
COVID
Query value
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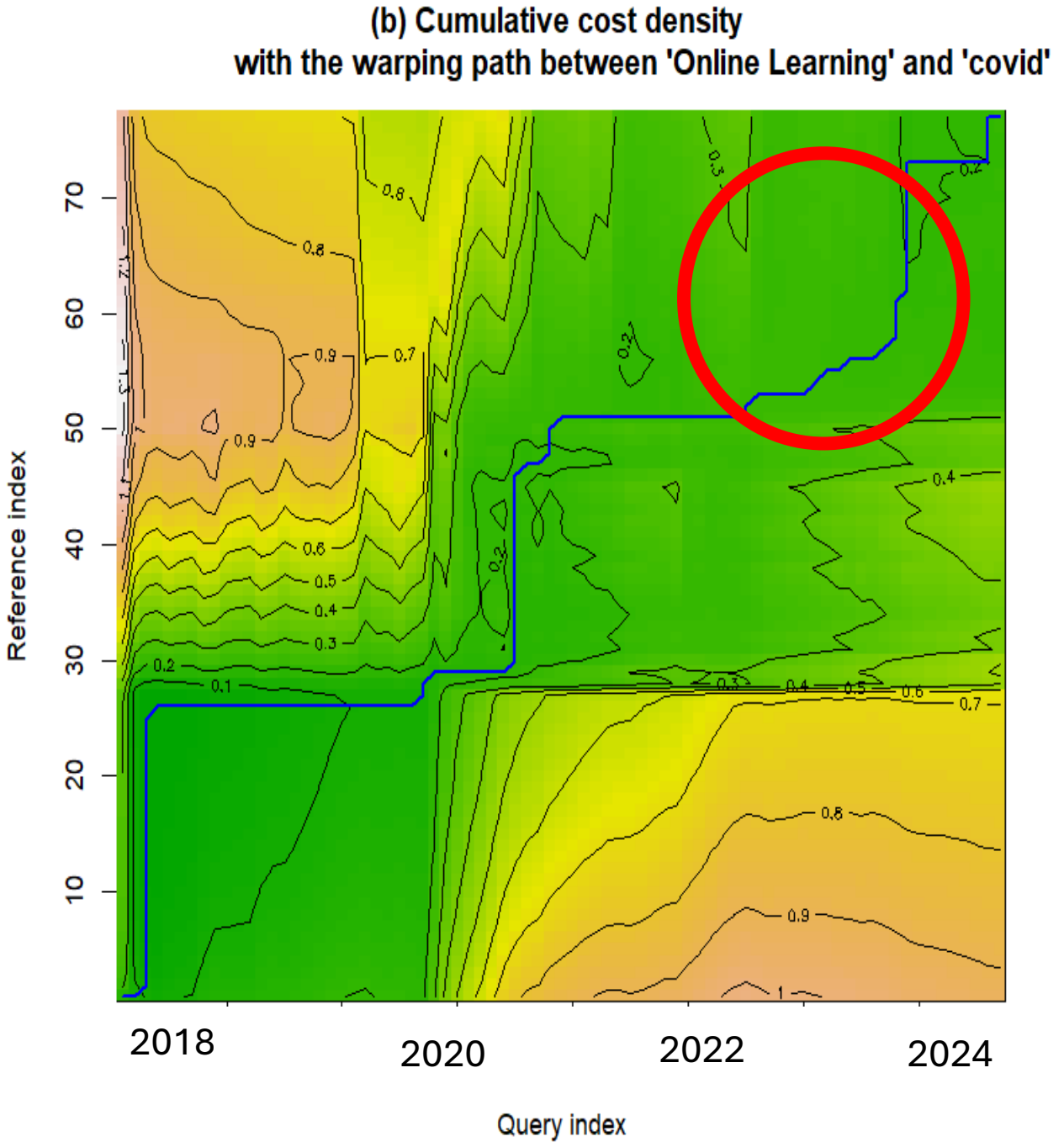
2022
2024
Index


(b) Cumulative cost density
with the warping path between 'Online Learning' and 'covid'
Reference index
70
60
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40
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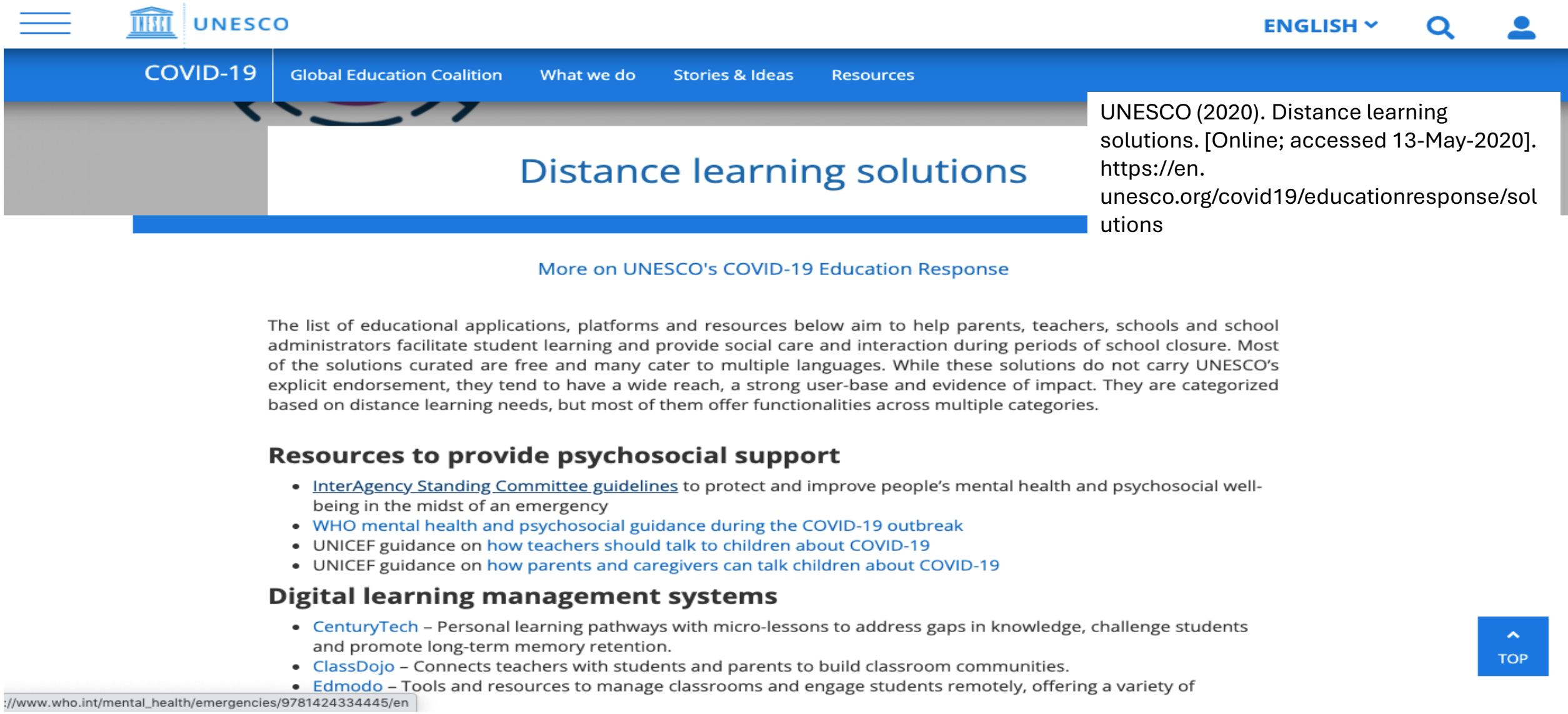
2018
2020
2022
2024
Query index

In response to this sudden massive transfer from traditional classroom learning to online learning, UNESCO took immediate action by publishing a list of existing tools to facilitate distance education during the period of school closure.



UNESCO ENGLISH

COVID-19 | Global Education Coalition | What we do | Stories & Ideas | Resources

Distance learning solutions

More on UNESCO's COVID-19 Education Response

The list of educational applications, platforms and resources below aim to help parents, teachers, schools and school administrators facilitate student learning and provide social care and interaction during periods of school closure. Most of the solutions curated are free and many cater to multiple languages. While these solutions do not carry UNESCO's explicit endorsement, they tend to have a wide reach, a strong user-base and evidence of impact. They are categorized based on distance learning needs, but most of them offer functionalities across multiple categories.

Resources to provide psychosocial support

- InterAgency Standing Committee guidelines to protect and improve people's mental health and psychosocial well-being in the midst of an emergency
- WHO mental health and psychosocial guidance during the COVID-19 outbreak
- UNICEF guidance on how teachers should talk to children about COVID-19
- UNICEF guidance on how parents and caregivers can talk children about COVID-19

Digital learning management systems

- CenturyTech – Personal learning pathways with micro-lessons to address gaps in knowledge, challenge students and promote long-term memory retention.
- ClassDojo – Connects teachers with students and parents to build classroom communities.
- Edmodo – Tools and resources to manage classrooms and engage students remotely, offering a variety of

TOP

://www.who.int/mental_health/emergencies/9781424334445/en

UNESCO (2020). Distance learning solutions. [Online; accessed 13-May-2020]. https://en.unesco.org/covid19/educationresponse/solutions

Google Trends Analysis in Distance Education

- **Aim:** To explore if Google Trends search queries can be used as a proxy to quantify the popularity and public interest in various distance education options during and after the COVID-19 pandemic.

- **Google Trends:** An open-source web analytics tool offering insights into internet search behaviour.
- Provides a **relative search volume** scaled from 0 to 100, indicating interest relative to the highest point in the series for the chosen region and time.
- A value of 100 indicates the peak popularity of a term within the specified time frame.

Google Trends Analysis in Distance Education

- **Timeframe:** December 2019 to April 2024
- **Key Questions:**
  - What solutions have emerged to meet the demands of distance education during and post COVID-19? (Emergent Solutions)
  - Which distance learning solutions have garnered widespread attention and public interest? (Public Interest)
- Selected search terms based on UNESCO's list of distance learning solutions (UNESCO, 2020).
- Concentrated on the education category to improve data relevance and accuracy (Vaughan & Romero-Frías, 2014).
- Avoided acronyms to prevent confusion, focusing on specific tools and techniques in the market (Vaughan & Romero-Frias, 2014).

Segmentation of Analysis

- Digital learning management systems
- Systems designed for basic mobile phone usage
- Systems with strong offline functionalities
- Massive Open Online Course (MOOC) platforms
- Self-directed learning resources
- Mobile reading apps
- Collaboration platforms facilitating live-video communication
- Tools for educators to create digital learning content
- External repositories of distance learning solutions
- Tools for Online proctoring
- Psychosocial support

Handling Google Trends Query Limitations

- In Google trends, it is possible to search for only up to five queries at a time.
- Under each segmentation, we entered up to five distance learning tools at a time and recorded their relative ranking scores.
- An iterative pairwise comparison was used to identify tool with the highest relative ranking score during the study period.
- Used this highest-ranked tool as a reference point for obtaining the relative ranking scores of other tools.

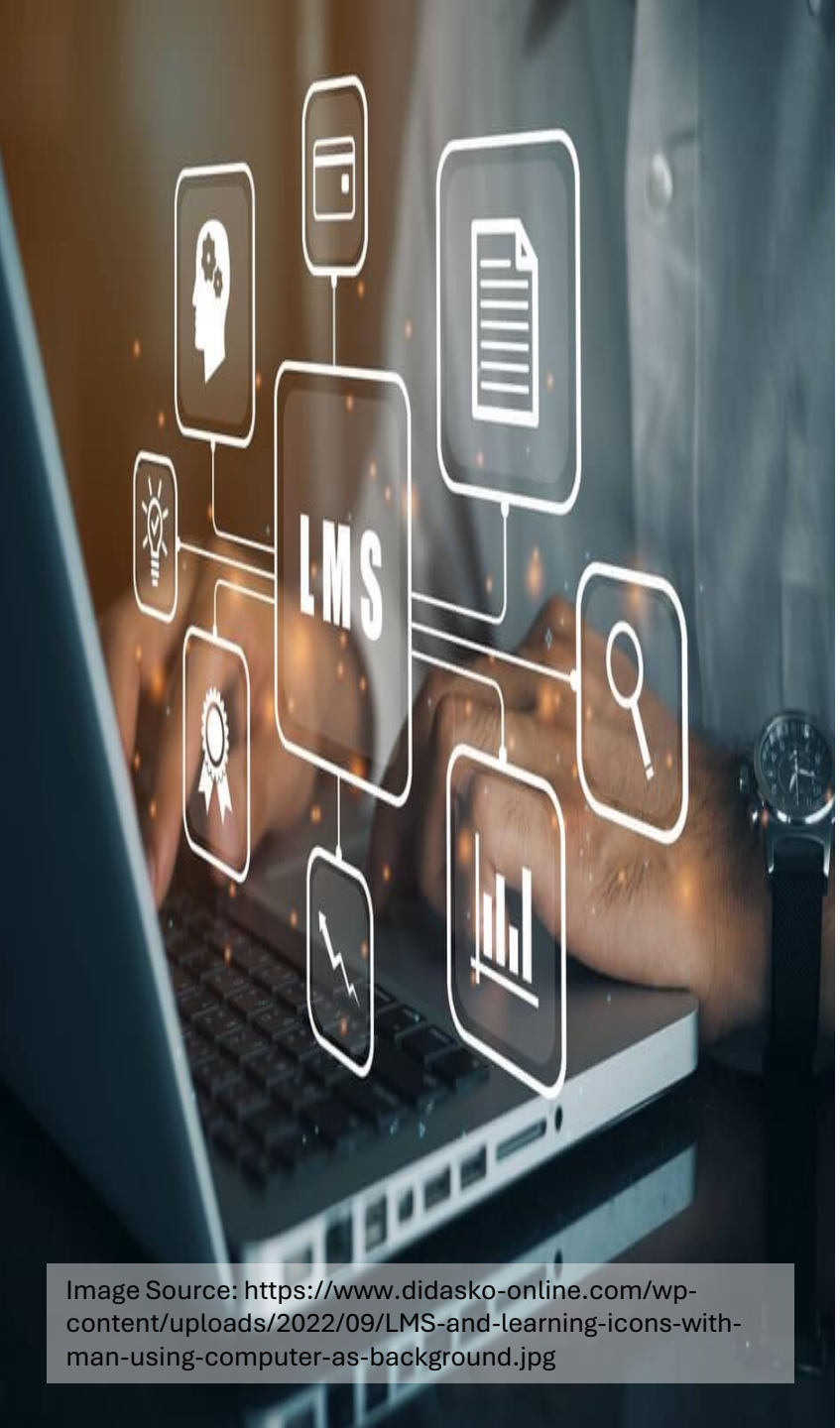


Image Source: https://www.didasko-online.com/wp-content/uploads/2022/09/LMS-and-learning-icons-with-man-using-computer-as-background.jpg

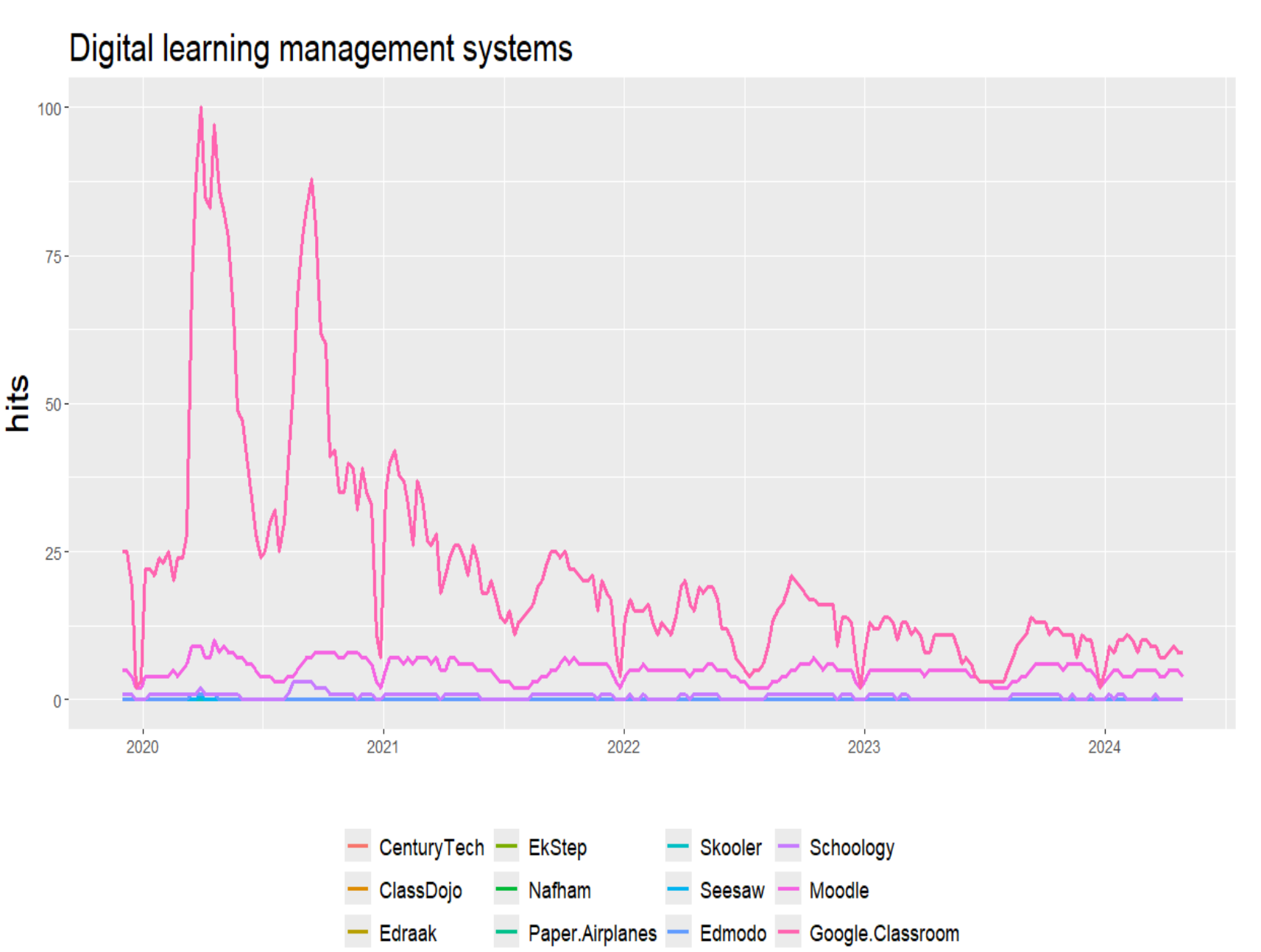


Image Source: https://www.intelligenthq.com/wp-content/uploads/2018/06/Online-course-certificates.jpg

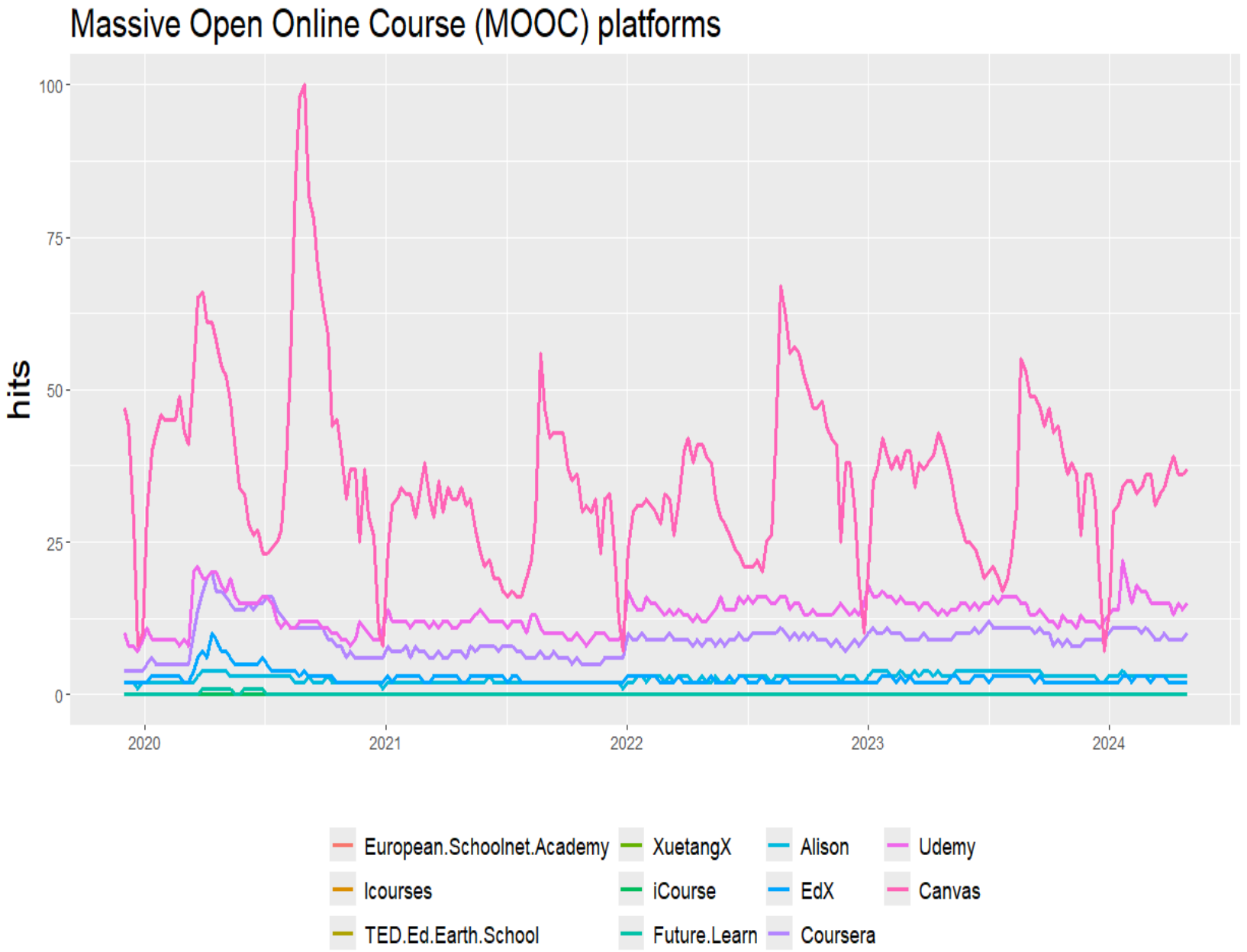
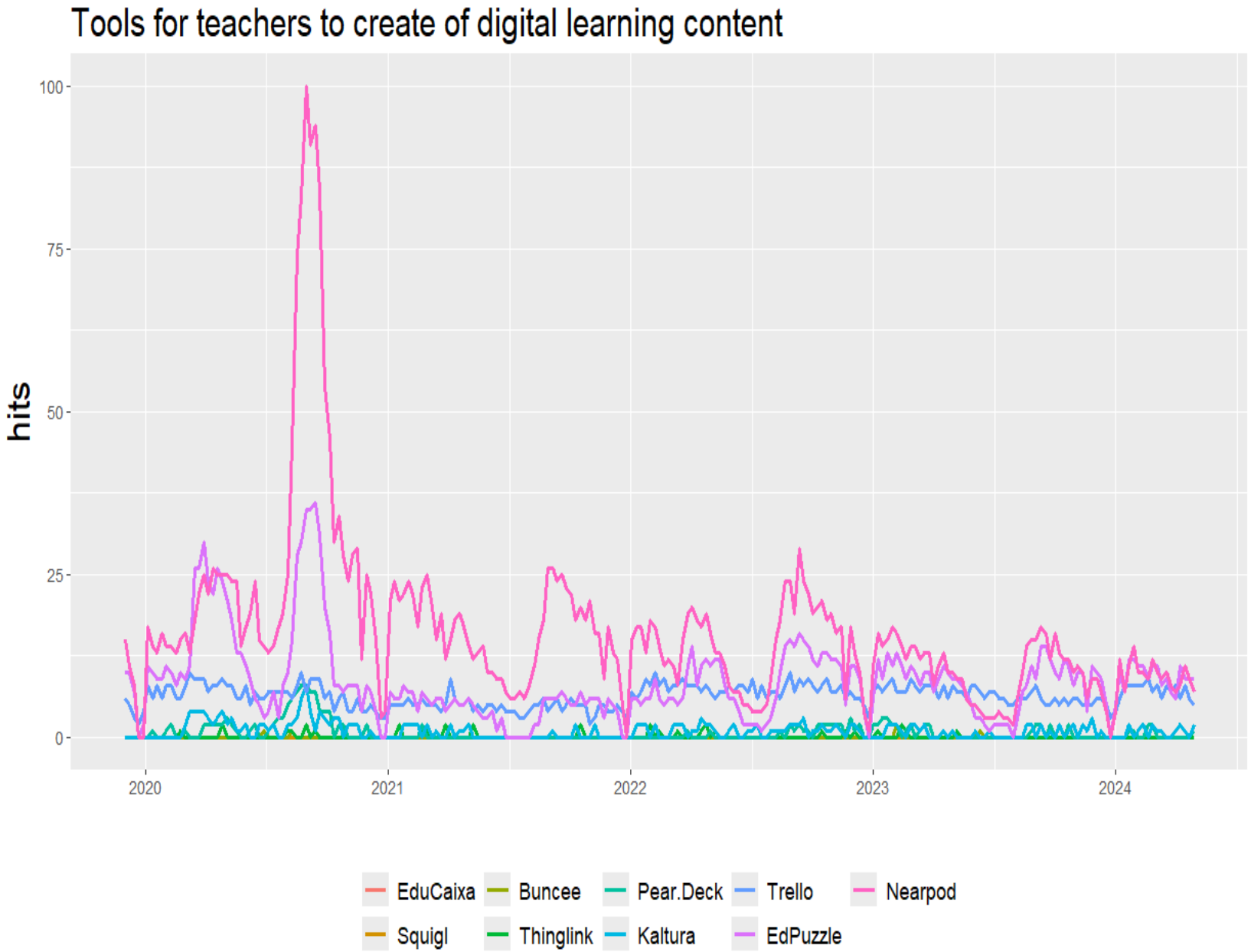


Image Source: https://www.linkedin.com/pulse/lack-training-teachers-use-new-technologies-why-our-education-/



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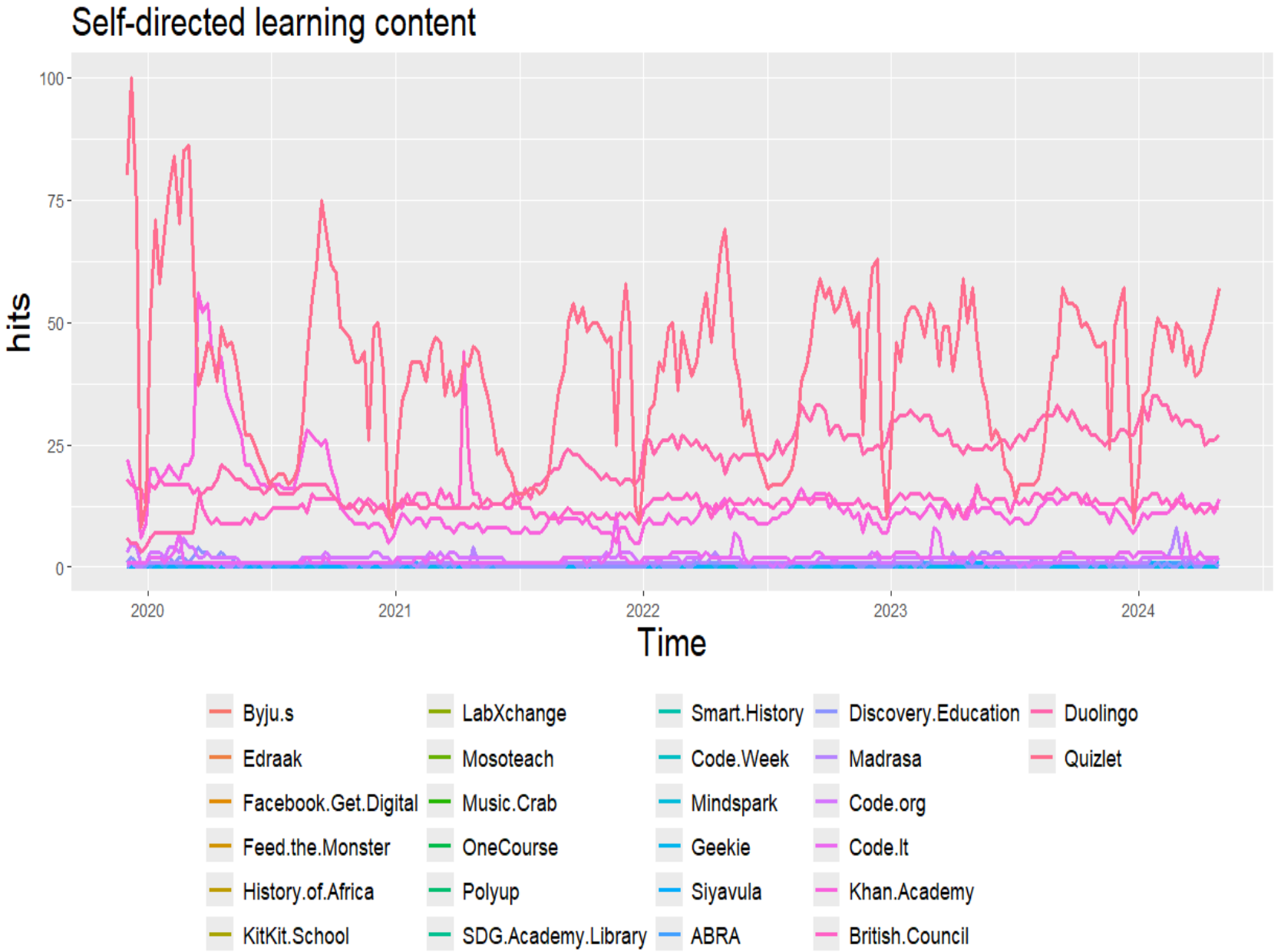

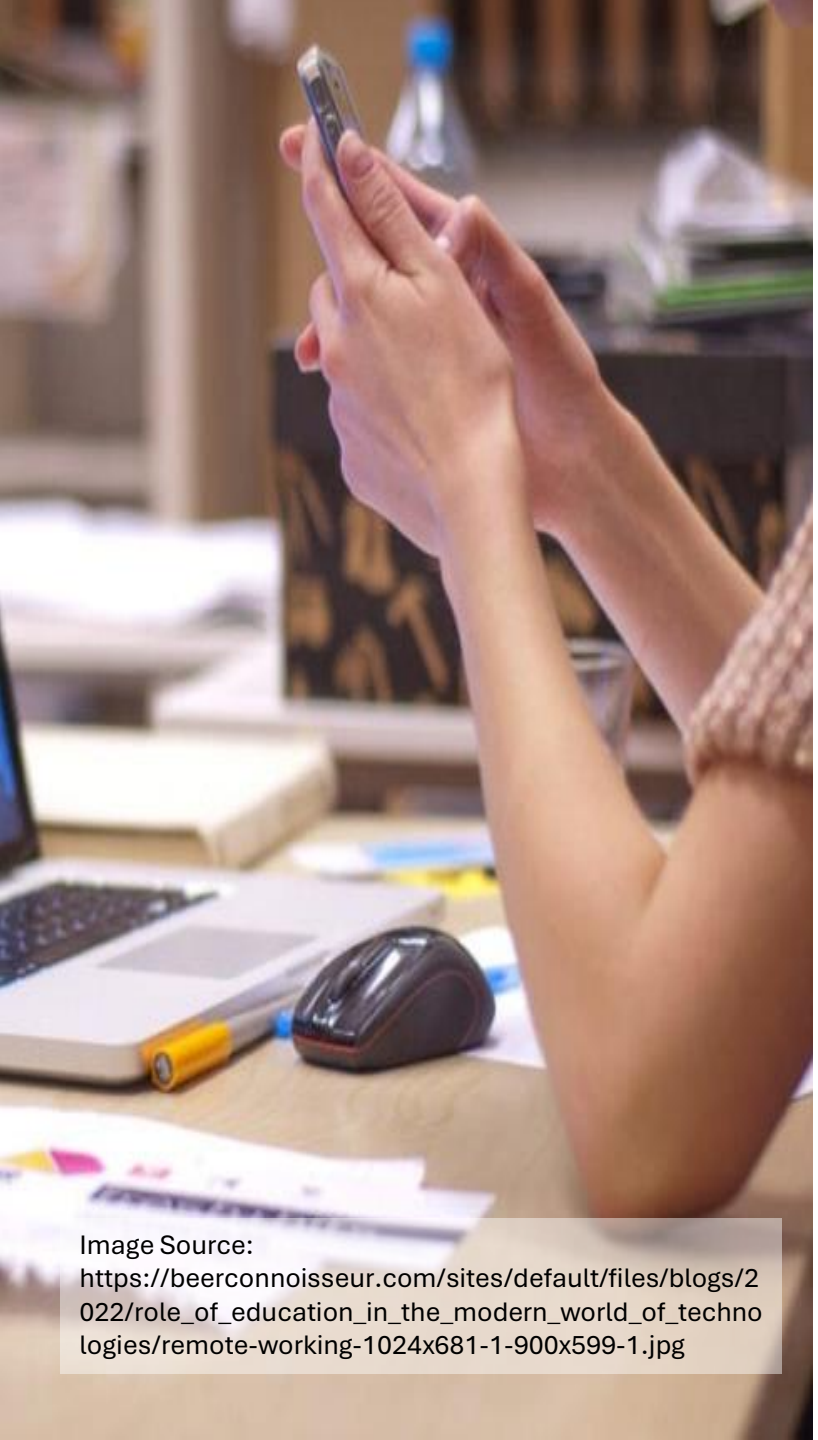

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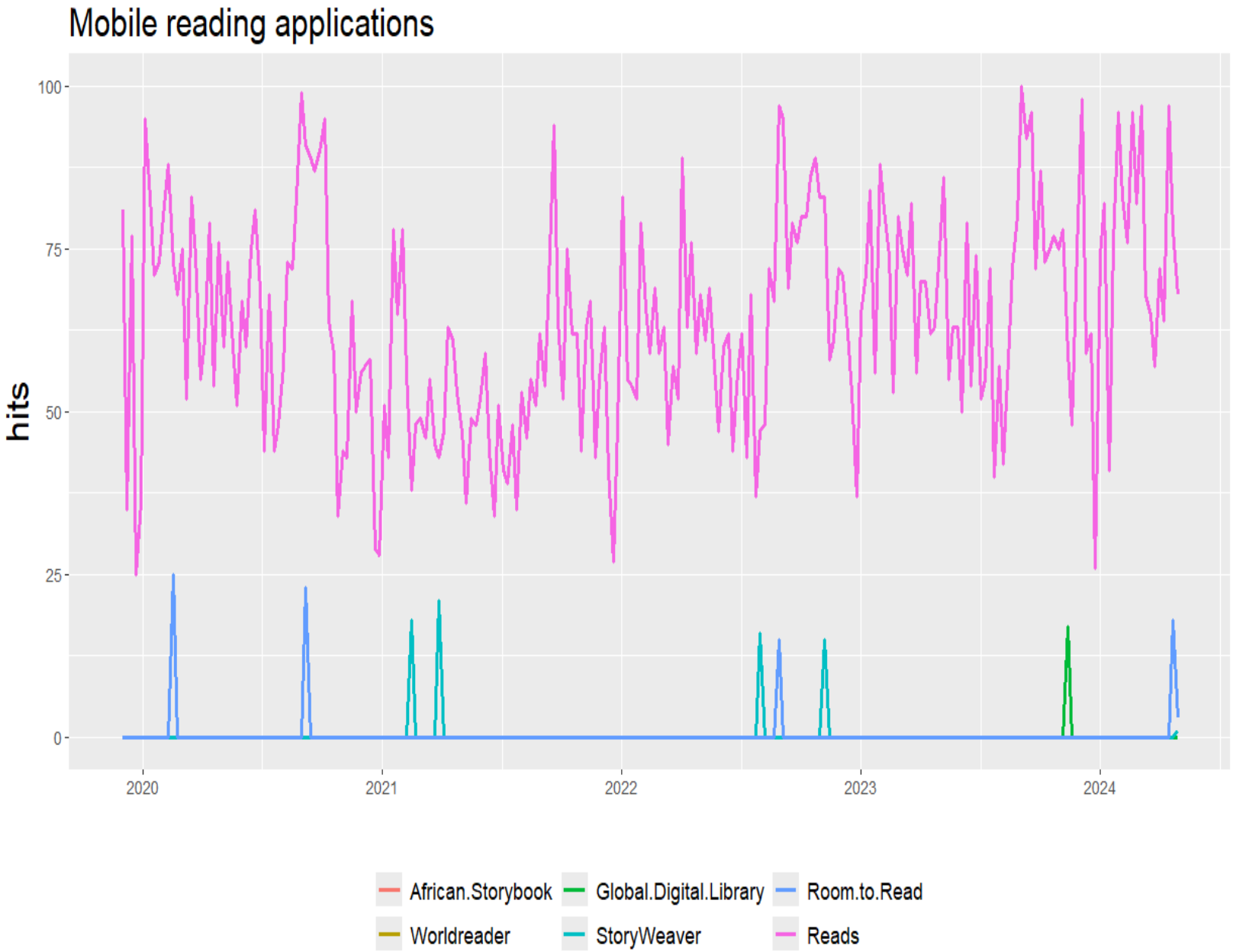

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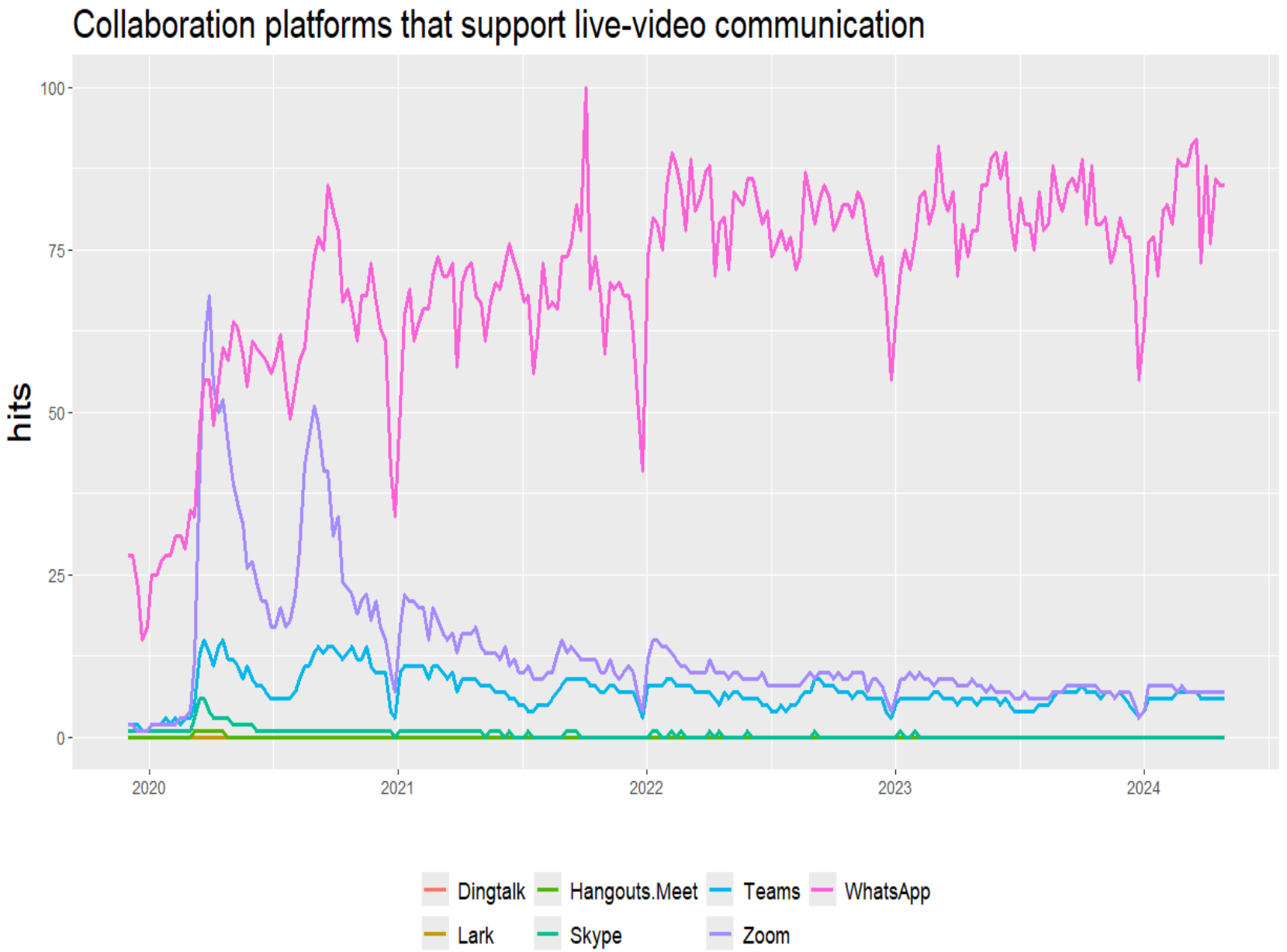
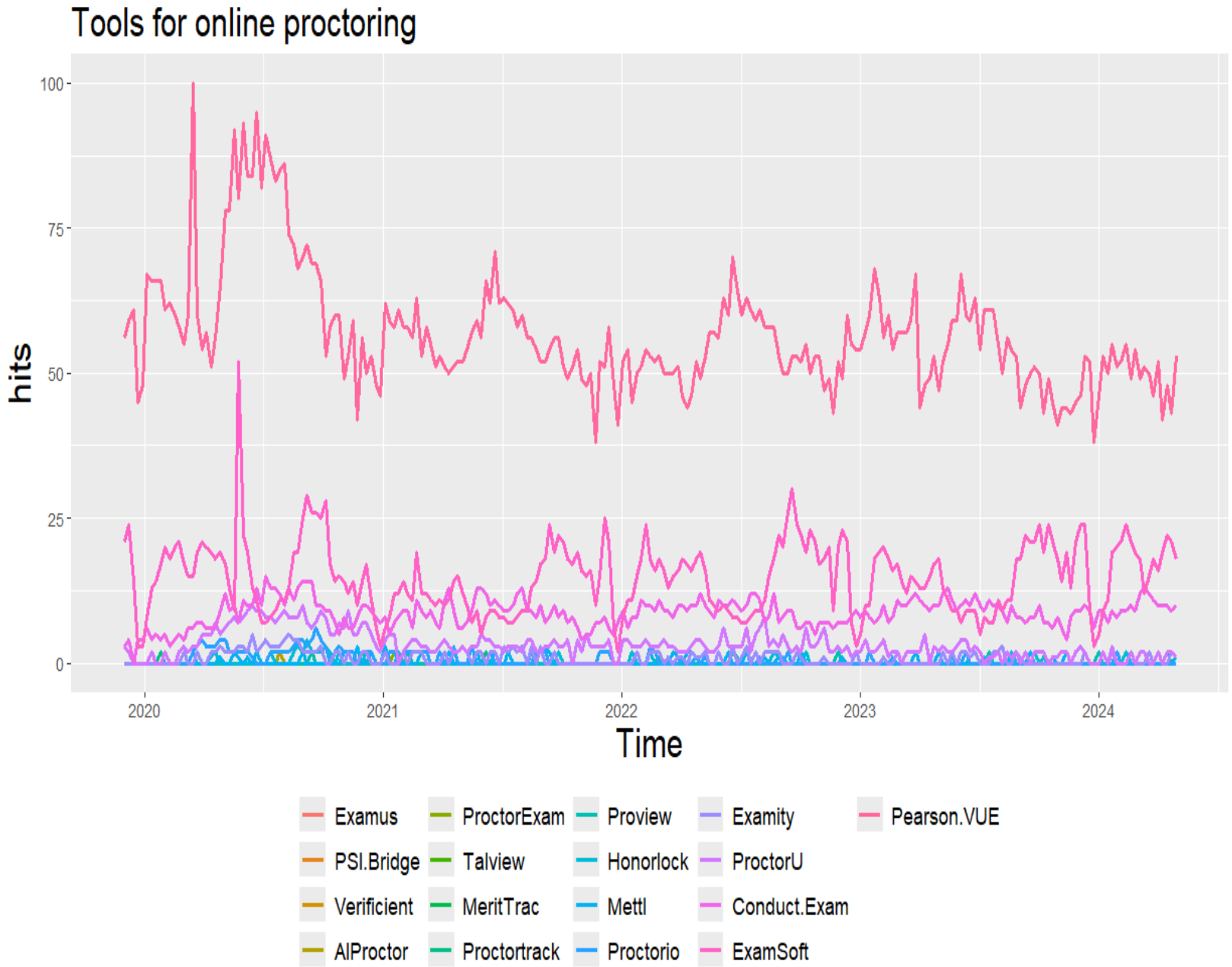


Image Source: https://cdn.elearningindustry.com/wp-content/uploads/2021/01/is-remote-proctoring-the-future-of-academia.png



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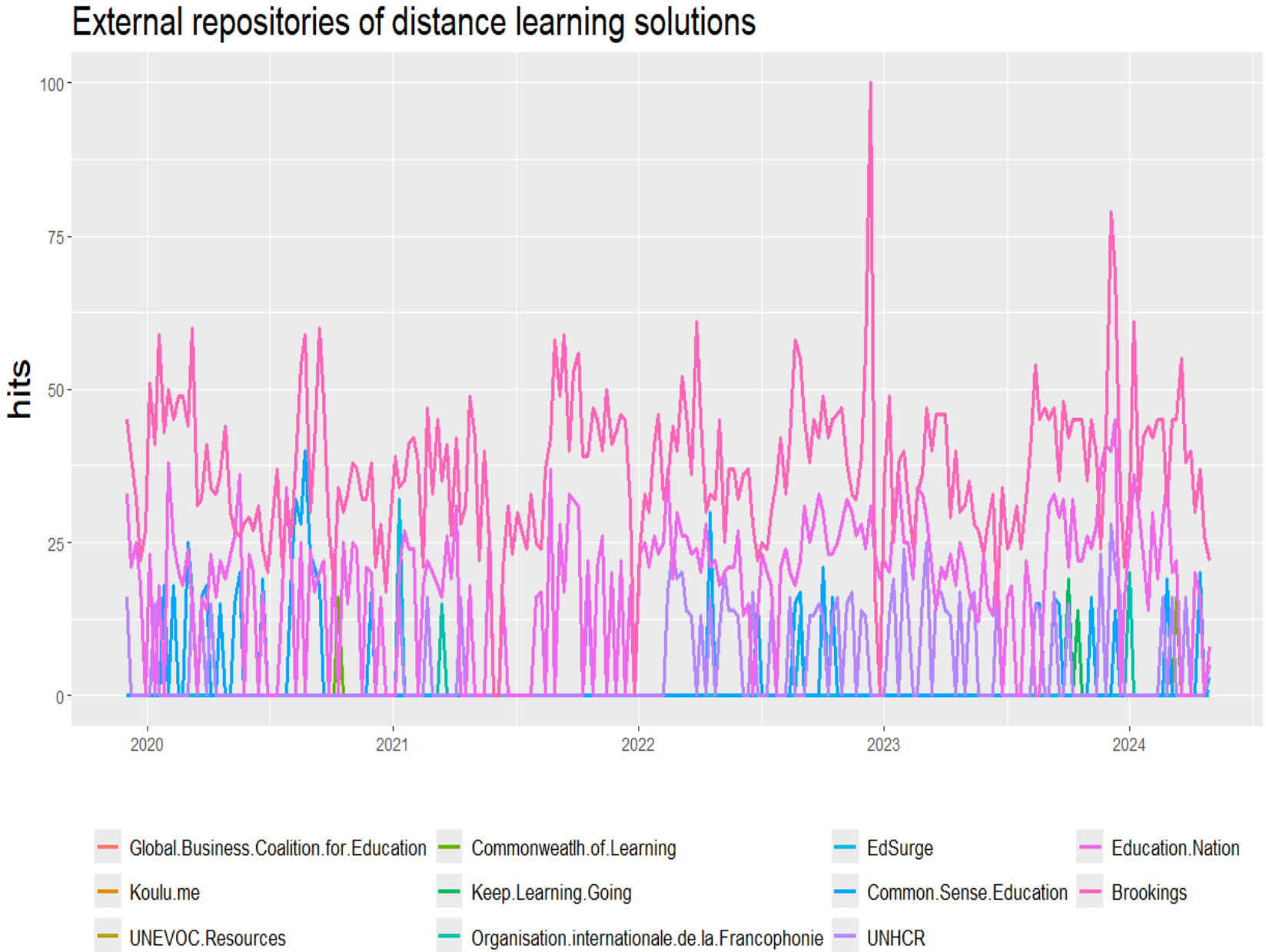
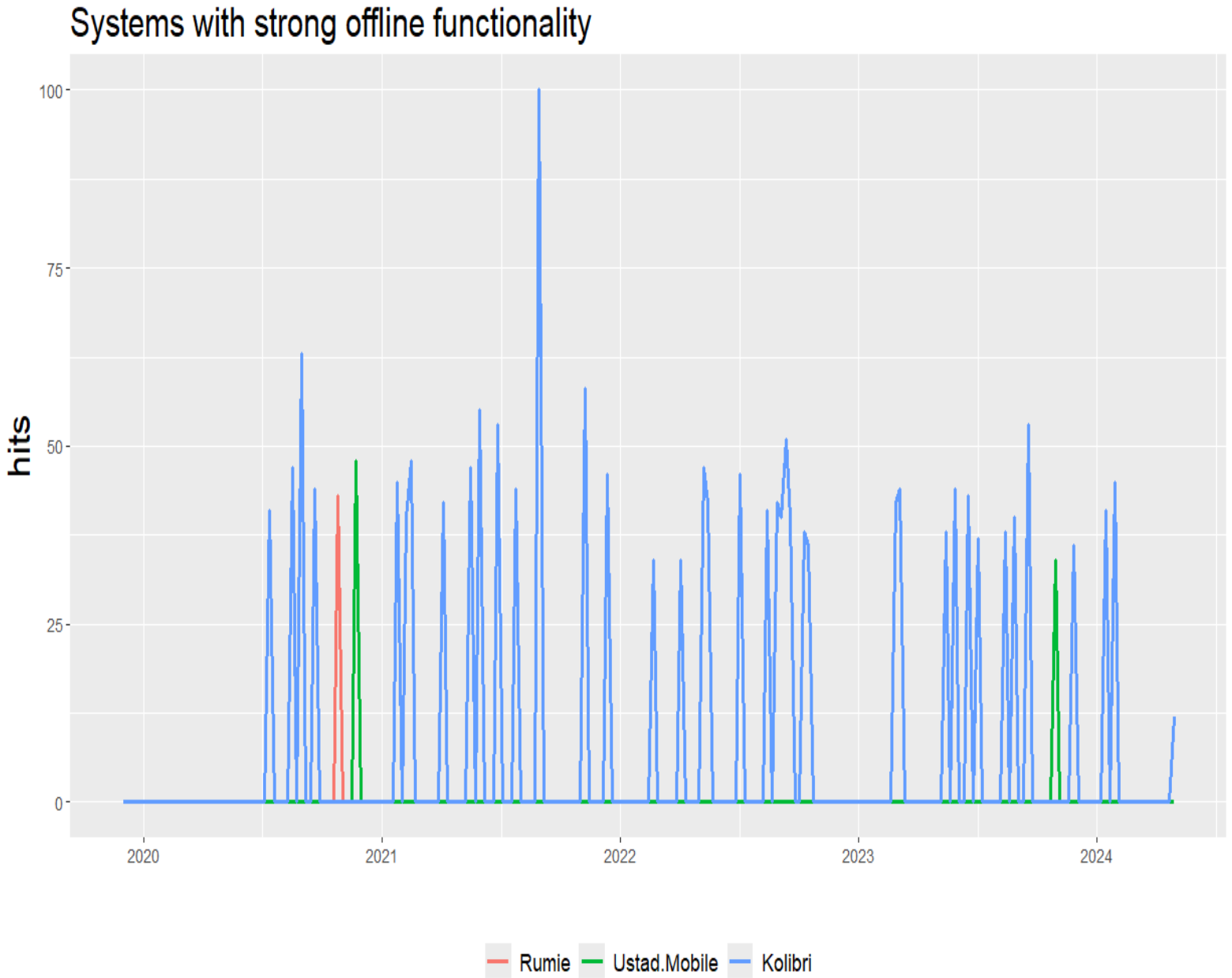


Image Source: https://medium.com/@i.vikash/designing-a-mobile-application-architecture-for-offline-use-e03e7731f4f2



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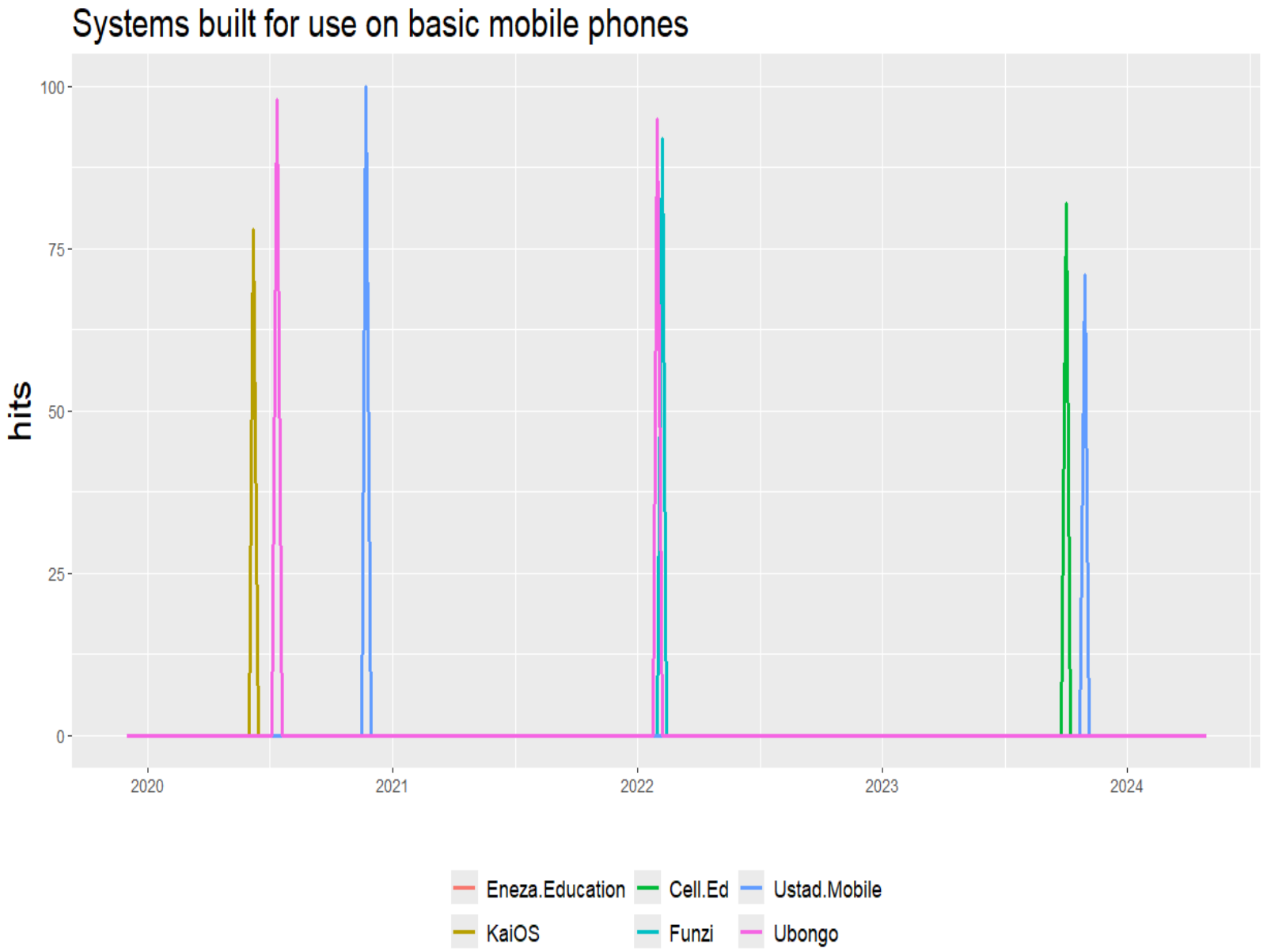
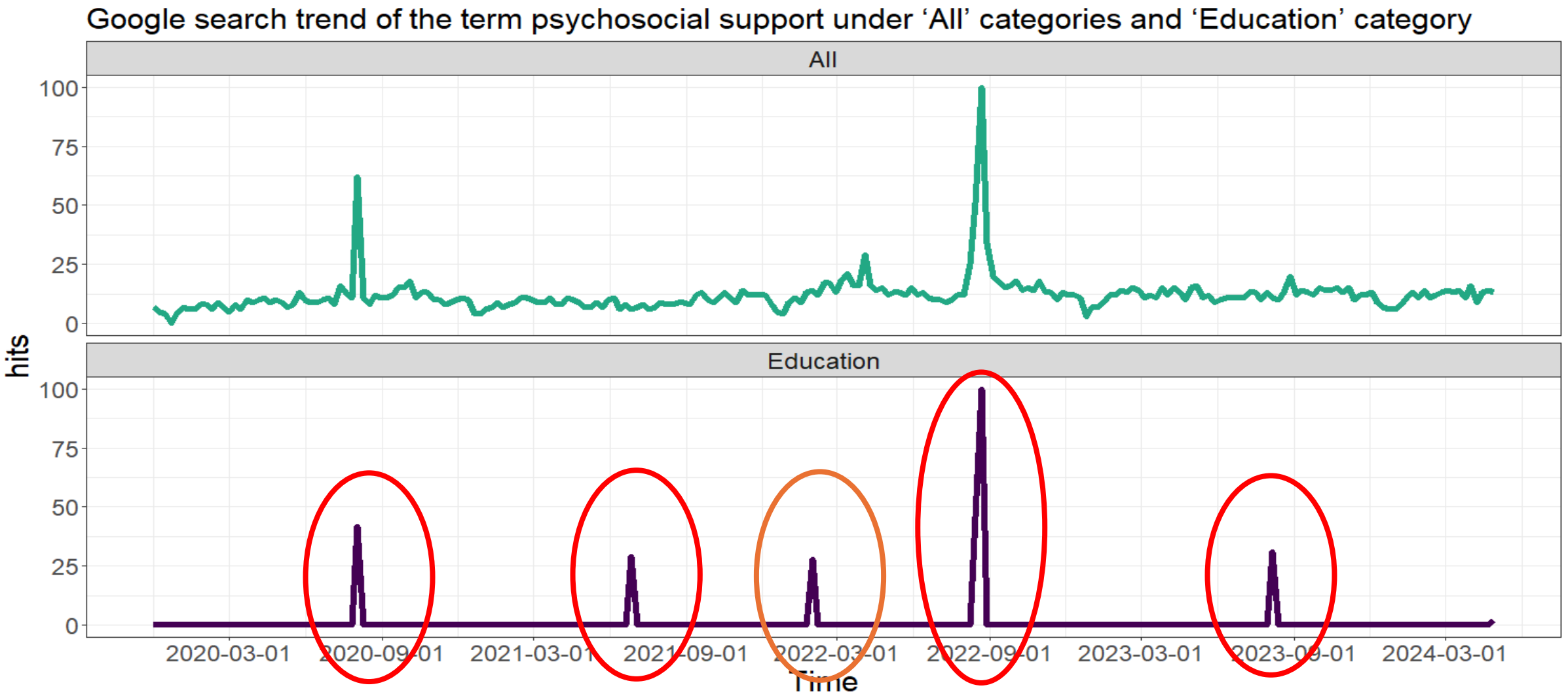
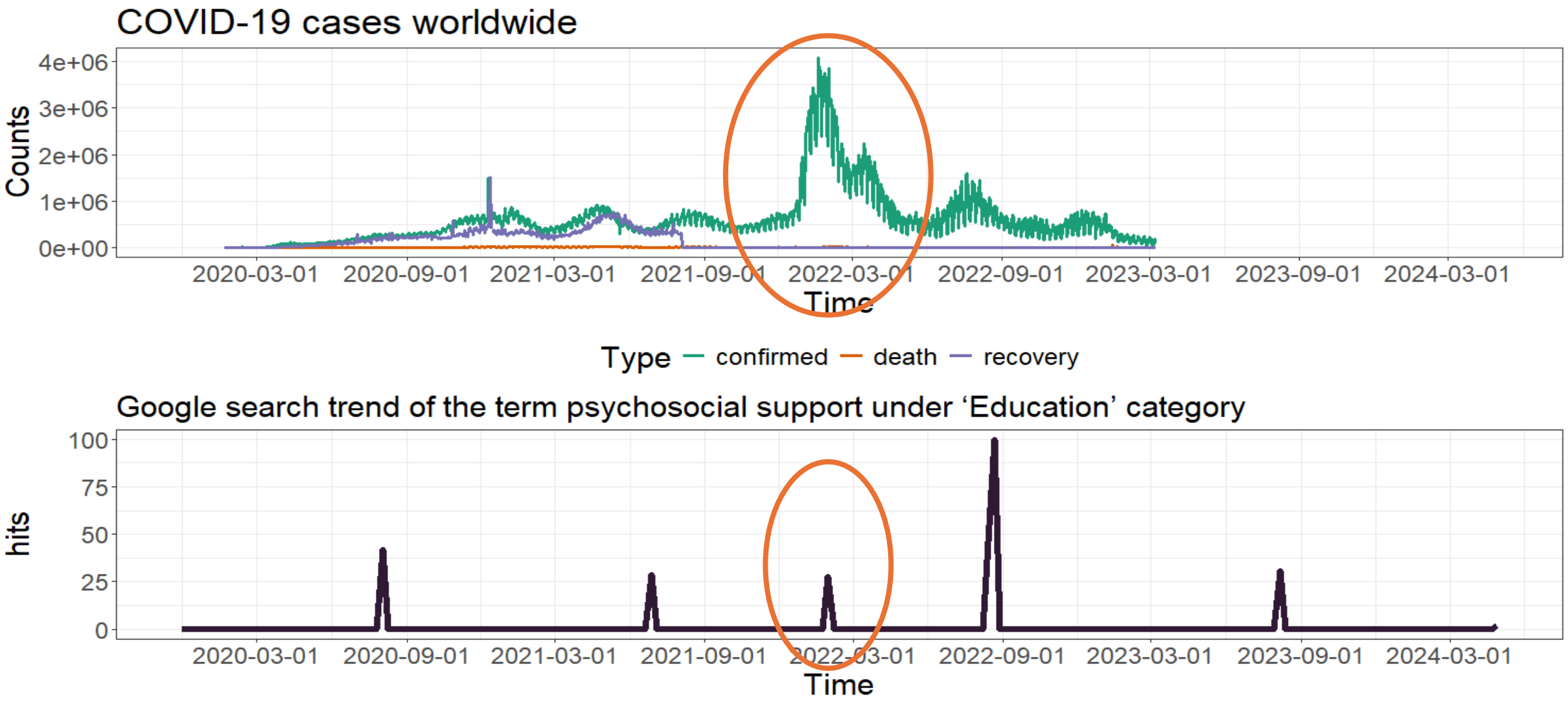


Effective psychosocial support is very important for improving the mental health and overall well-being of students and teachers during a pandemic.



Align with academic breaks in most parts of the world.



Analyzing secondary data in this manner is very important, as these characteristics may be overlooked due to lack of engagement and communications between the students and the educators during school closures.

What Next ?

- Enables informed decision-making with minimal time and effort.
- Popularity does not guarantee quality.
- Future research should evaluate the efficiency and effectiveness of popular tools to ensure engaging online learning experiences.
- Reflects search behaviour of internet users only.
- Further investigation at national and regional levels to understand the specific needs and challenges in different areas
- Further research should assess the accuracy, reliability, and coverage of Google Trends data to enhance its utility (Cebrián et al. ,2023)

Thank you

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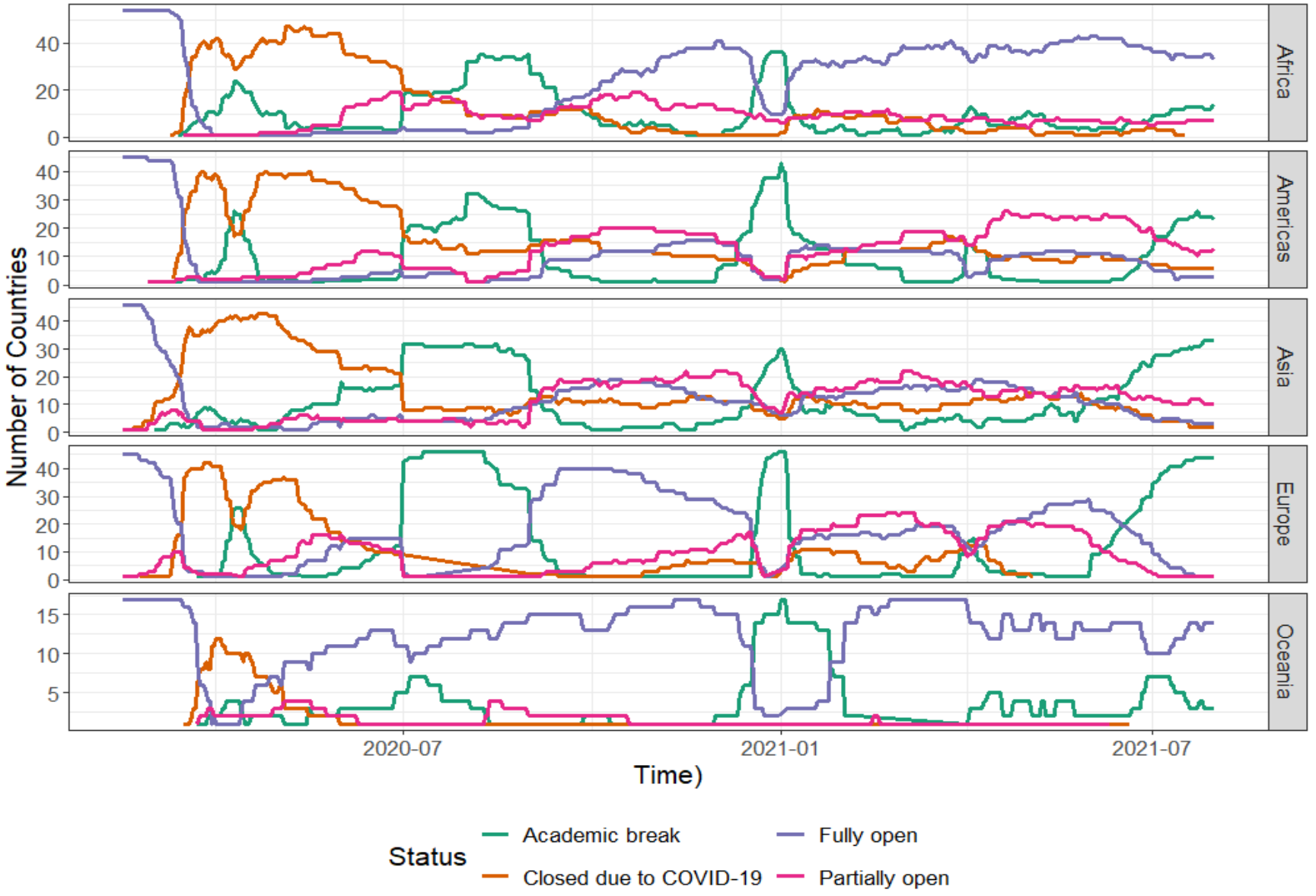
Region wise tracking of COVID-19 caused school closures and re-openings



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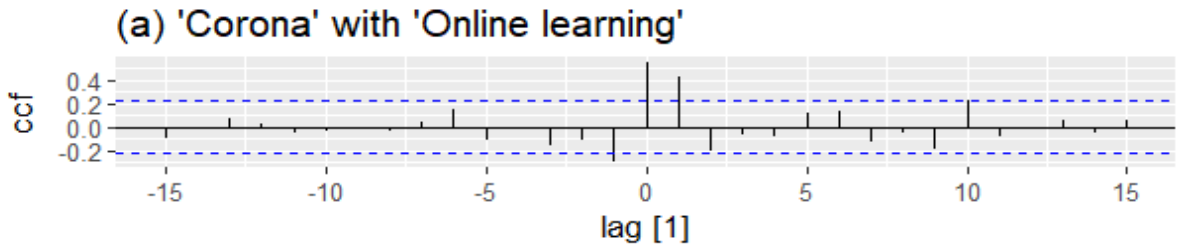
(a) 'Corona' with 'Online learning'
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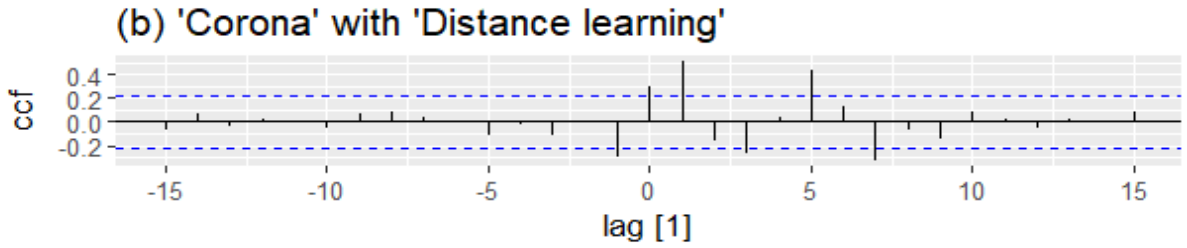
(b) 'Corona' with 'Distance learning'
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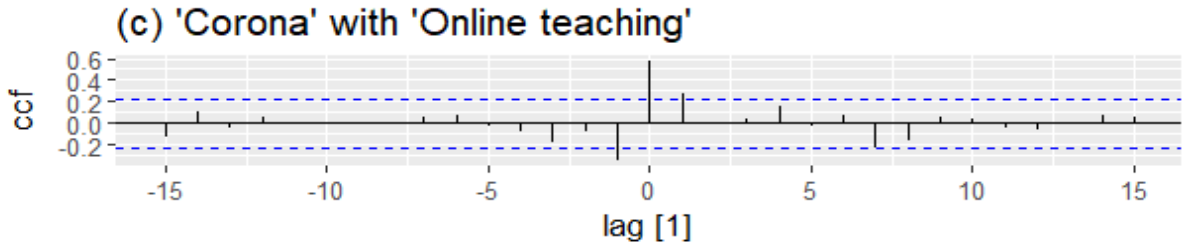
(c) 'Corona' with 'Online teaching'
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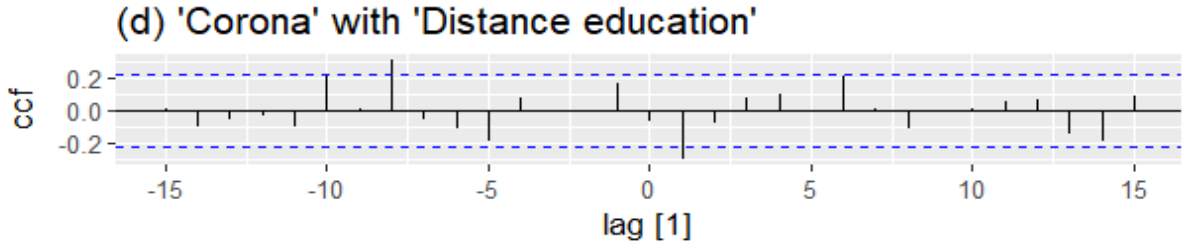
(d) 'Corona' with 'Distance education'
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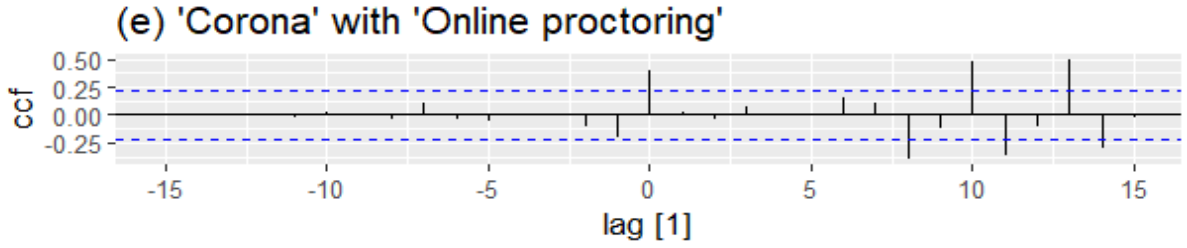
(e) 'Corona' with 'Online proctoring'
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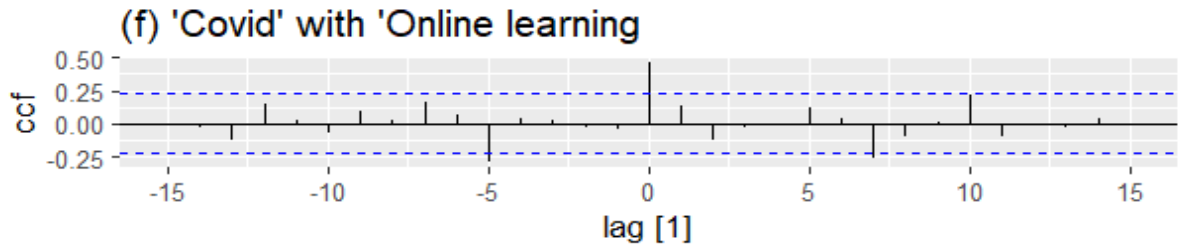
(f) 'Covid' with 'Online learning
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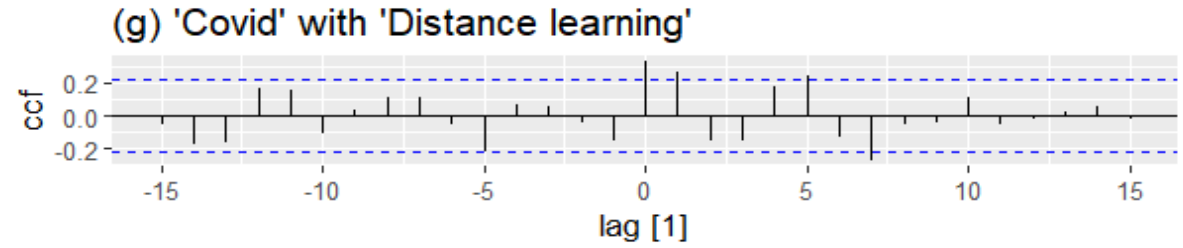
(g) 'Covid' with 'Distance learning'
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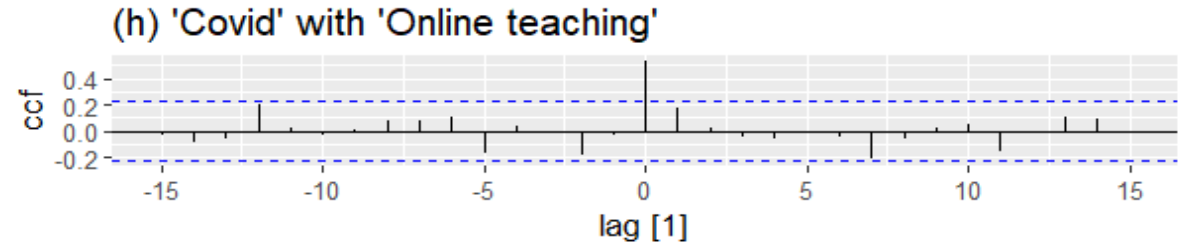
(h) 'Covid' with 'Online teaching'
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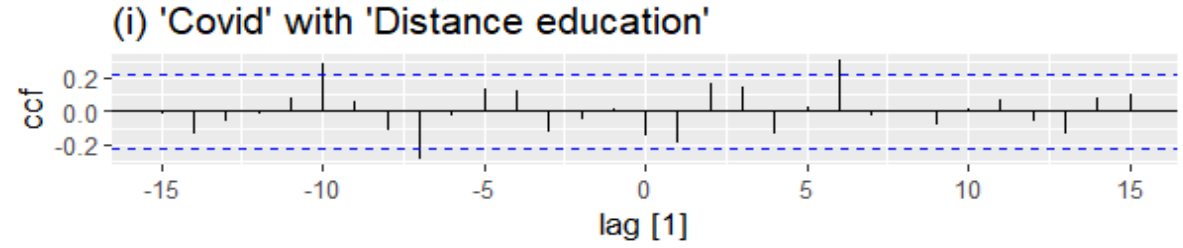
(i) 'Covid' with 'Distance education'
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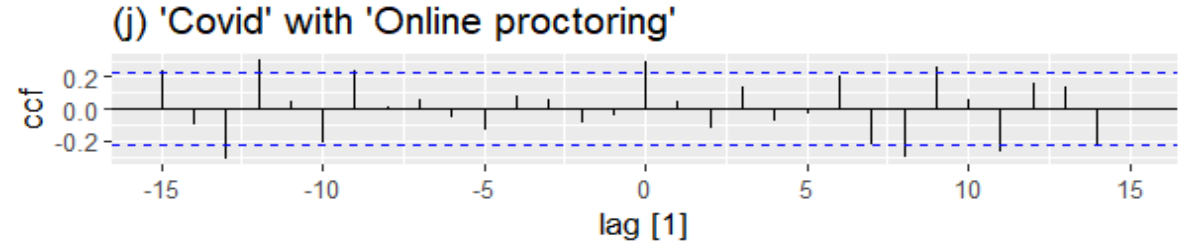
(j) 'Covid' with 'Online proctoring'
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Main Contributions

- Facilitates navigation through the multitude of market options available.
- Enables informed decision-making with minimal time and effort.
- Provides valuable information for identifying competitors and enhancing tool efficacy.
- Guides developers and educational institutions to improve and innovate existing tools.
- Highlights the critical need to address overlooked aspects of mental health support during academic breaks and school closures.

Segmentation of Analysis

1. **Digital learning management systems**: Platforms for organizing, delivering, and tracking educational content and activities online.
2. **Systems designed for basic mobile phone usage**: Educational tools optimized for use on simple, non-smart mobile phones.
3. **Systems with strong offline functionalities**: Learning platforms that allow access to content and activities without an internet connection.
4. **Massive Open Online Course (MOOC) platforms**: Online platforms offering free or low-cost courses to a large number of participants.
5. **Self-directed learning resources**: Materials and tools that enable learners to study independently at their own pace.

Segmentation of Analysis

6. **Mobile reading apps**: Applications designed for reading e-books and other digital texts on mobile devices.
7. **Collaboration platforms facilitating live-video communication**: Tools that support real-time video interactions for group learning and meetings.
8. **Tools for educators to create digital learning content**: Software that helps teachers design and produce online educational materials.
9. **External repositories of distance learning solutions**: Online databases that provide access to a variety of remote learning resources and tools.
10. **Tools for Online proctoring**: Software that monitors and ensures the integrity of online exams.
11. **Psychosocial support**: Services and resources providing emotional and psychological assistance to learners