

# Learning from 5G for 6G



# Background


- Late 2G was when we saw the first concerns about EMF
- 3G was the first deployment that faced significant opposition
- 4G was relatively quiet
- 5G saw unprecedented opposition
  - coupled with Covid and social media, made for an unhealthy mix
- 6G discussions have already started
  - coupled with concerns about AI, cybersecurity and through widespread social media usage, concerns about 6G could be even more challenging.

# Our response: #5G Facts Not Fear campaign



- Communicated credible science
- Simplified complex content
- Focussed on scientific evidence that helps decision-making.
- Encouraged re-use of content
- Co-operation between associations and other stakeholders.

# Examples: Expert Opinions



**“ THE EFFECTS OF EMF ON HUMANS HAVE BEEN SUBJECT TO SIGNIFICANT RESEARCH. THIS INCLUDES THE RADIO FREQUENCIES USED AND ENVISAGED FOR 5G INMOBILE COMMUNICATIONS AND OTHER APPLICATIONS. ”**

*Ireland's Environmental Protection Agency*

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**“ SCIENTISTS HAVE BEEN STUDYING RADIO FREQUENCY ELECTROMAGNETIC ENERGY (RF EME) SINCE THE 19TH CENTURY, AND IT'S BEEN USED IN COMMUNICATIONS SERVICES, INCLUDING TELECOMMUNICATIONS NETWORKS, FOR ALMOST AS LONG. THIS RESEARCH IS EXTENSIVE AND ONGOING. ”**

*Australian Department of Infrastructure, Transport, Regional Development and Communications*

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**“ THE SPECIFIED LIMITS (ICNIRP) ARE TO BE CONSIDERED REGARDLESS OF THE NUMBER OF TRANSMITTERS. ”**

*Austria's Federal Ministry of Transport, Innovation and Technology (BMINI)*

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**“ ACCORDING TO THE CURRENT STATE OF RESEARCH, THERE IS NO HEALTH RISK TO HUMANS FROM CELL PHONE RADIATION. ”**

*Austrian Scientific Council for Radio Communications*

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**“ NO HEALTH EFFECTS HAVE BEEN PROVEN AT LEVELS BELOW THE ICNIRP GUIDELINES FOR MEMBERS OF THE PUBLIC, AS SUCH NO CONSEQUENCES FOR PUBLIC HEALTH ARE EXPECTED FROM THE USE OF 5G. ”**

*Ireland's Environmental Protection Agency*

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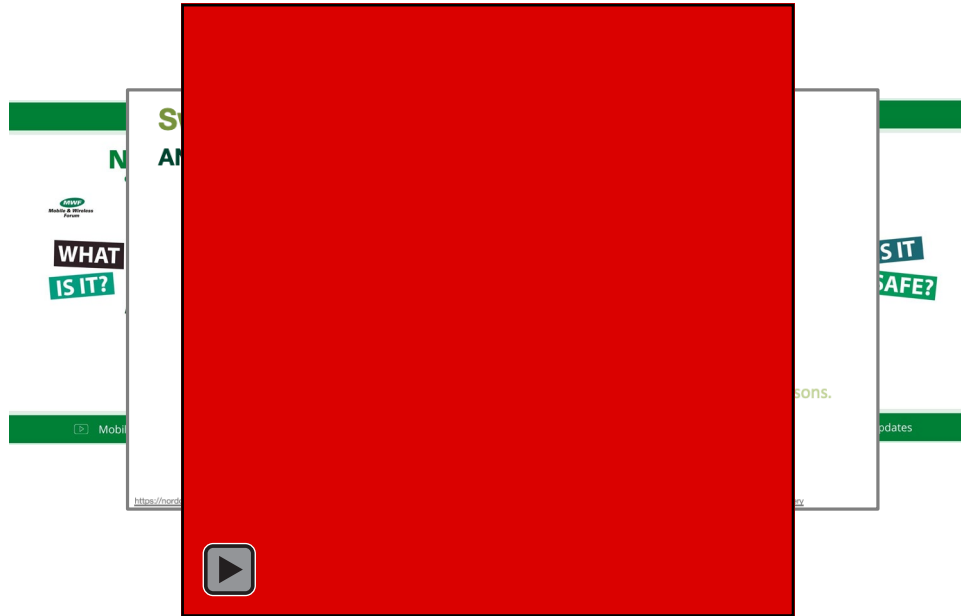
**“ OVERALL, THE AGE STANDARDISED INCIDENCE OF BRAIN TUMORS DOES NOT GIVE SUPPORT TO ANY CAUSAL RELATIONSHIP WITH RADIO WAVE EXPOSURE FROM MOBILE PHONE USE. ”**

*Sweden's Scientific Council on Electromagnetic Fields*

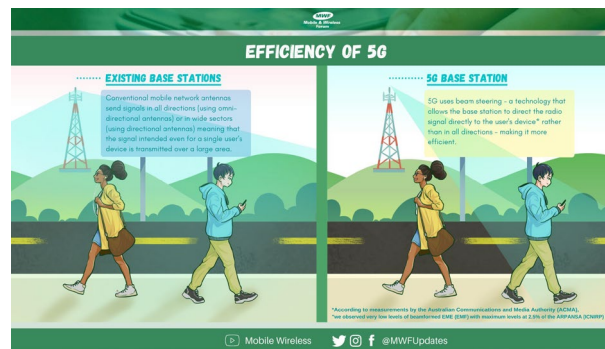
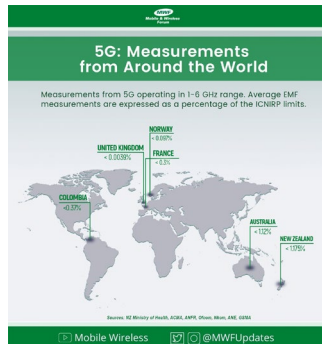
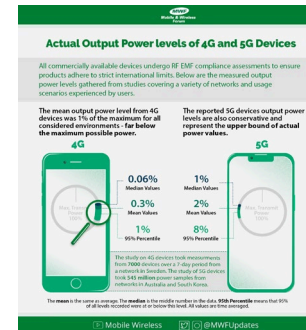
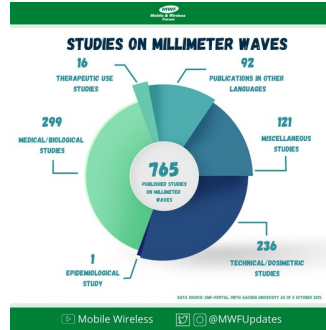
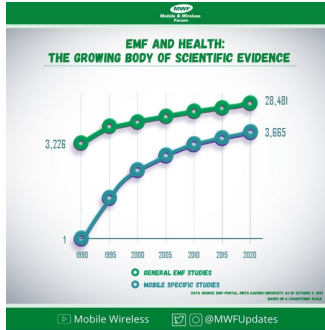
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# Examples: Videos



# Examples: Infographics



# 5G scare has potential to be repeated

- MacKrill (2023): 7 types of health scares:
  - radiation from technology is one
- Common characteristics of scares:
  - “being newly developed, not well understood or unseen threats, natural versus man-made, and out of personal control”
- Background factors relevant for EMF:
  - conspiracy theories, trust in governmental agencies, anxiety and modern health worries
- But also “factually correct albeit unclear information” such as IARC’s EMF classification
- Often start as individual response but readily amplified by social media

*Health Scares: Tracing Their Nature, Growth and Spread.* MacKrill K, Witthöft M, Wessely S, Petrie KJ. *Clinical Psychology in Europe* 5:1-23, 22 December 2023. <https://doi.org/10.32872/cpe.12209>

# Additional Lesson: Quality Research is Needed Early

- Vocht & Albers (2022) reviewed early papers on 5G (2018-2021):
  - “publications by authors with links to anti-5G campaigning organizations dominated the early phase”
- Early papers were more narrative reviews rather than systematic-style
  - no focus on quality of studies
- “...articles in the popular media, therefore, were influenced more heavily by the initial advocacy publications than by the later higher quality contributions.”

*The Population Health Effects from 5G: Controlling the Narrative.* de Vocht F, Albers P. *Front Public Health.* 10:1082031, 19 Dec 2022.  
<https://doi.org/10.3389/fpubh.2022.1082031>



# Preparing for 6G should begin now

- 6G is already being discussed in technical terms as representing 'extreme performance', 'pervasive reach' and 'limitless connectivity' that will require even 'denser networks'.
  - Alarming terminology for some?
- Google search analysis already shows that 6G questions have started:
  - What are the risks of 6G?
  - Is 6G really necessary?
  - Is 6G safe?
  - Is 6G harmful to humans?
  - How close to 6G tower is safe?
  - How powerful is 6G?
  - What does 6G EMF do to your body?
  - Will 6G internet be more harmful than 5G?
  - 6G Network Dangers

# Key takeaways

- 6G, like 5G, share MacKrill's common characteristics and risks being another health scare.
- Quality systematic-style research is needed and available early in the development process
  - Providing credible science for media to reference
- To meet public concerns technical answers are necessary but not sufficient
- And with discussions already underway communication needs to begin now