

Swiss TPH



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Health

# Mobile phone use and risk of brain tumors in children and adolescents: a multicenter case-control study (CEFALO)

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## **Mobile Phone Use and Brain Tumors in Children and Adolescents: A Multicenter Case–Control Study**

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## **Introduction**

- Brain tumors: 2nd most common tumors in children.
- Causes of childhood brain tumors remain unknown.
- High doses of ionizing radiation and a few rare genetic syndromes.

## **Mobile phones**

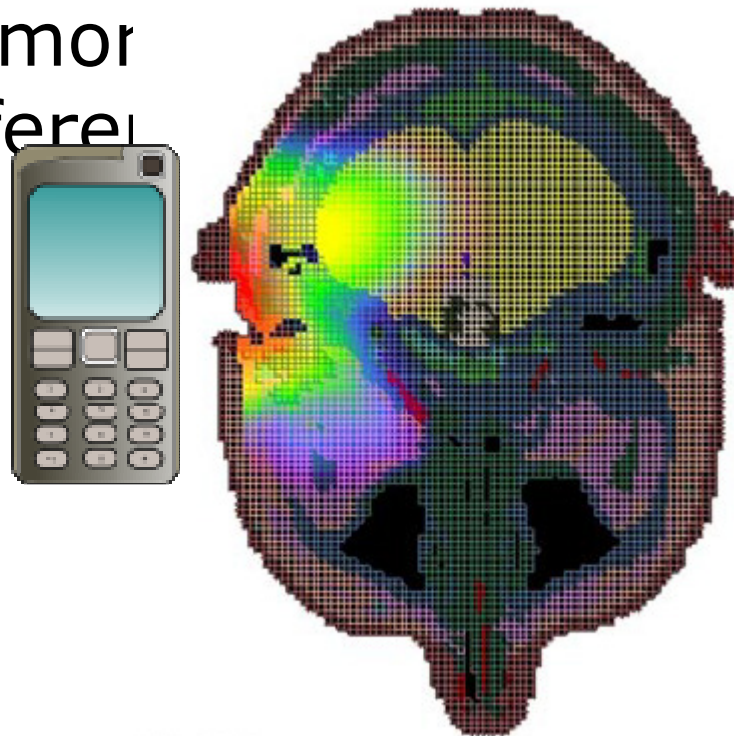
- Dramatic increase since the 1990s among adults.
- Concerns in the general public

## Studies in adults

- Inskip et al. (2001). *NEJM* 344(2): 79–86
- Auvinen et al. (2002). *Epidemiology* 13(3): 356–359
- Christensen et al. (2005). *Neurology* 64:1189–1195
- Hepworth et al. (2006). *BMJ* 332(7546): 883–887
- Klæboe et al. (2007). *Eur J Cancer Prev* 16:158–164
- Lahkola et al. (2007). *Int J Cancer* 120(8): 1769–1775
- Takebayashi et al. (2008). *Occup Environ Med* 63: 802–807
- Hardell et al. (2009). *Int J Oncol* 35(1): 5–17
- INTERPHONE study group (2010). *Int J Epidemiol* 39(3): 675–694

## Why children?

- Maybe more circumference system
- Longer



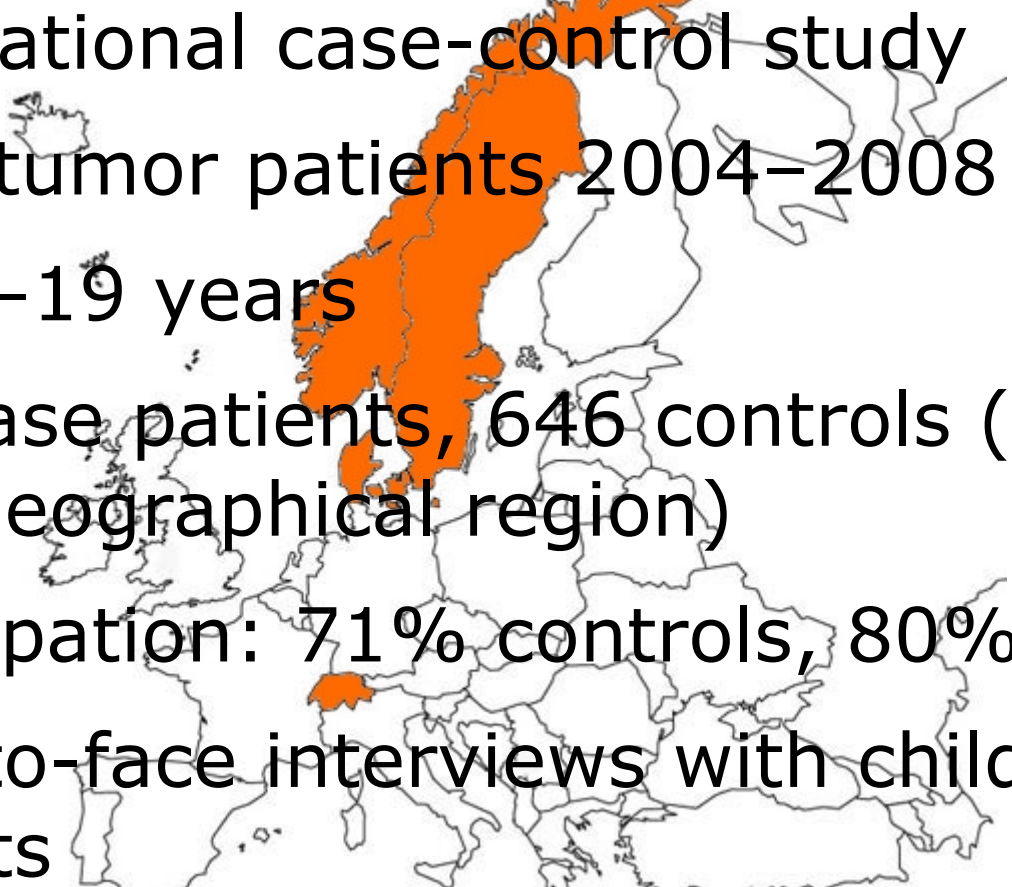
aller head  
nervous

dB SAR  
max: 1.30 (W/kg) 

## **Introduction**

- Childhood brain tumors are rare (3 cases per 100`000 person-years).

## CEFALO

- Multinational case-control study
  - Brain tumor patients 2004–2008
  - Age 7–19 years
  - 352 case patients, 646 controls (gender, age, geographical region)
  - Participation: 71% controls, 80% cases
  - Face-to-face interviews with children and parents
- 

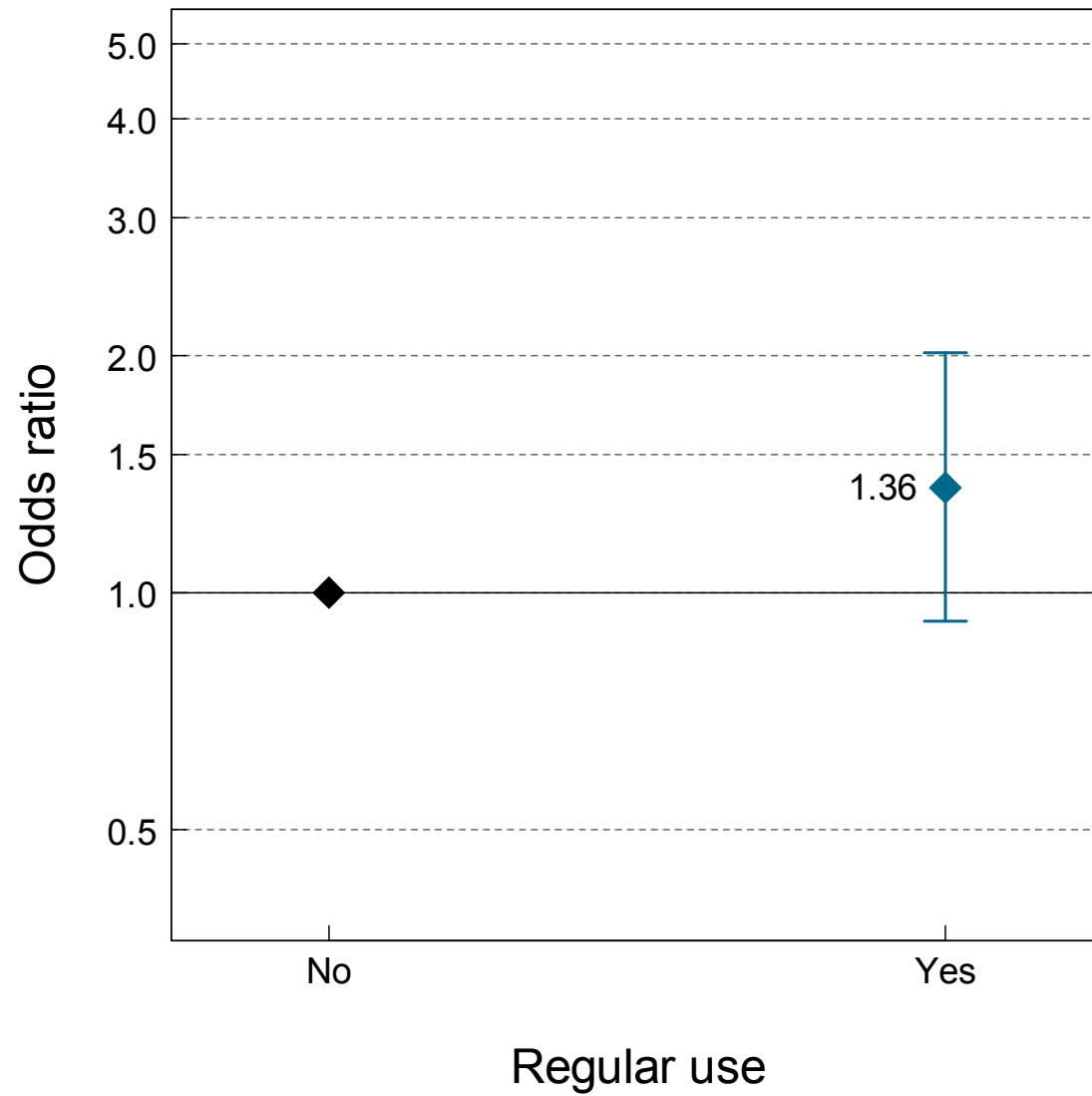


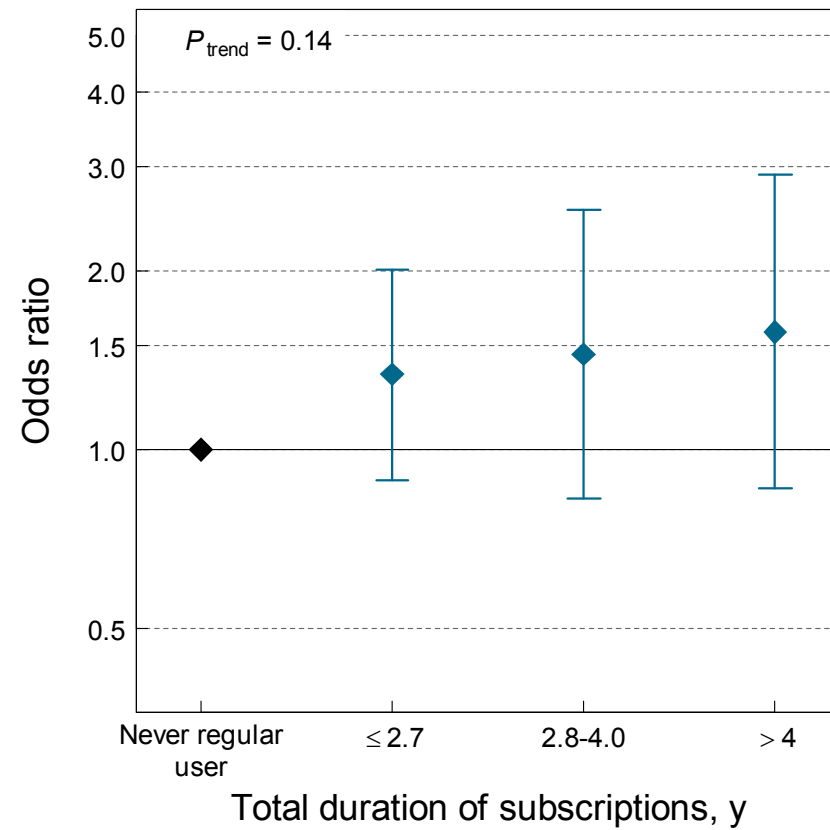
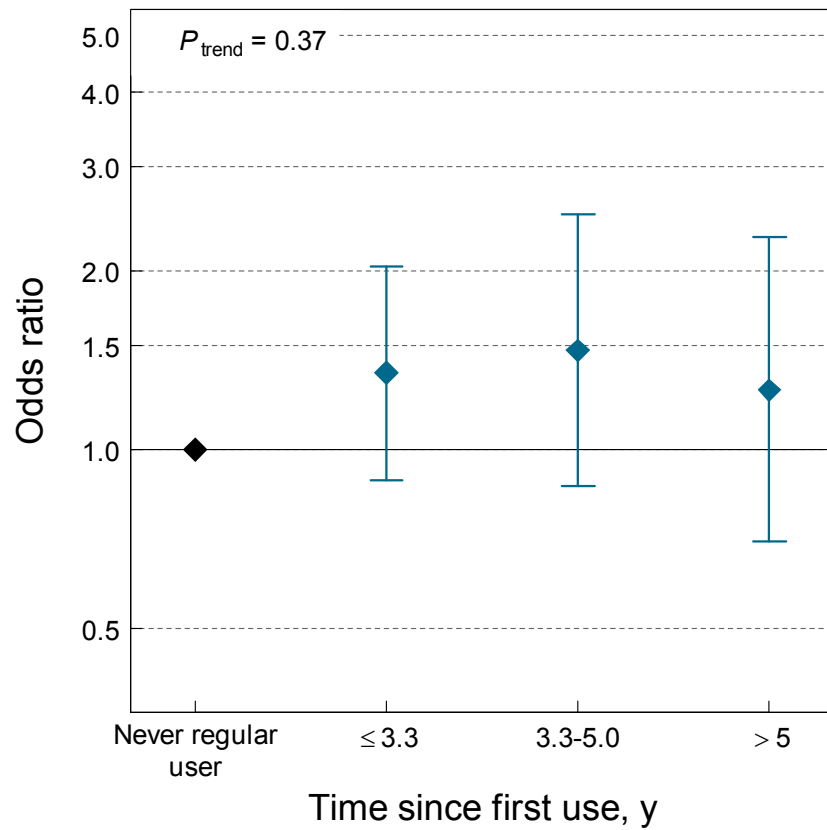
## Methods

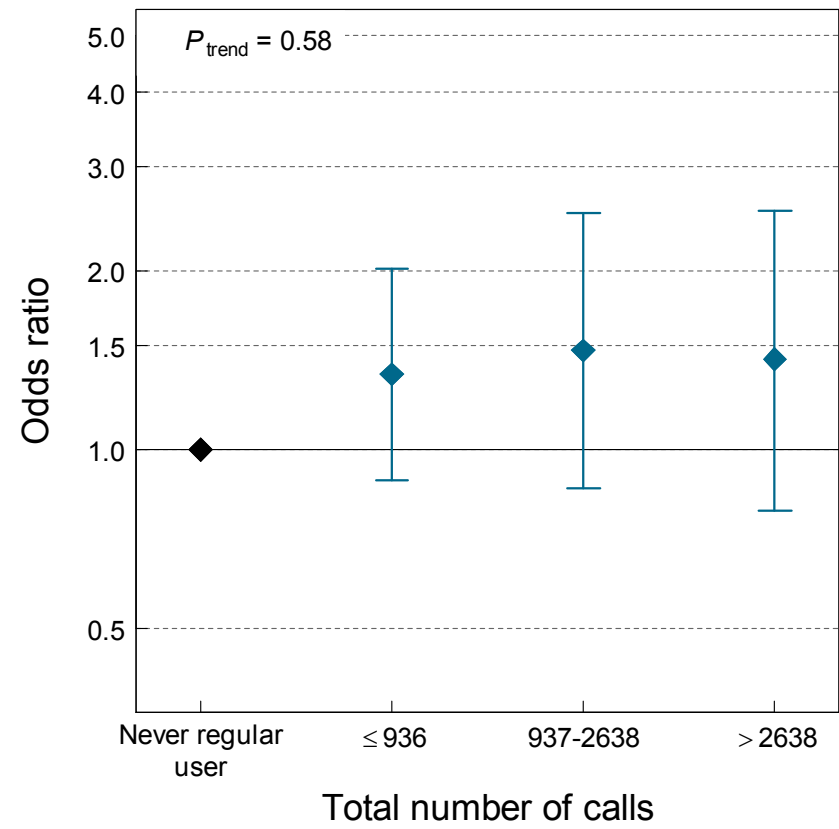
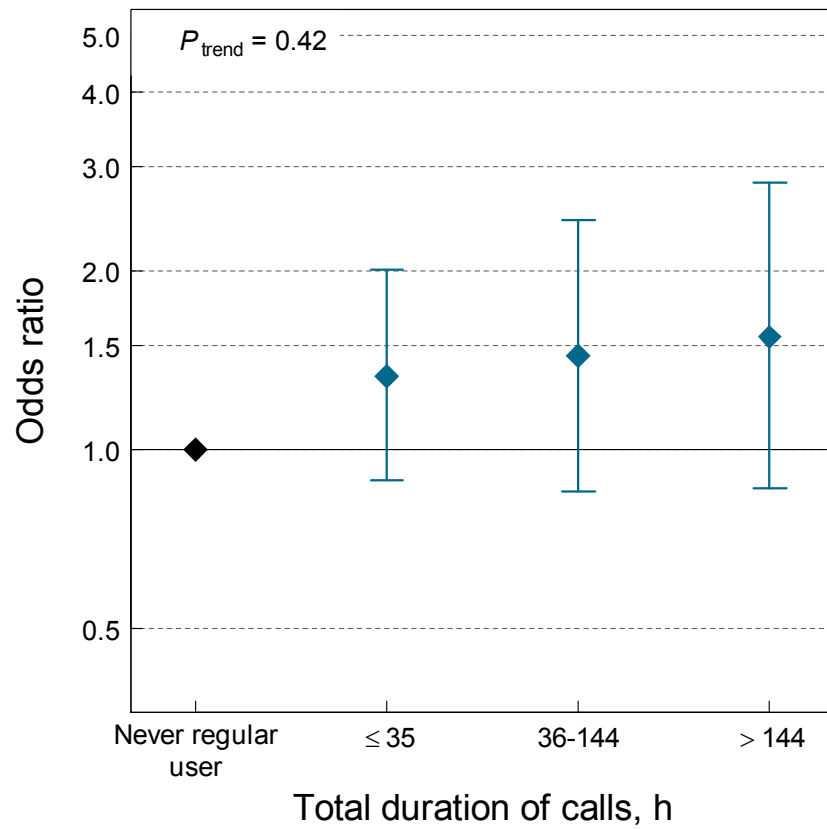
- Detailed questions about past mobile phone use
- Time since first use of mobile phones
- Total subscription time
- Total number of calls
- Total duration of calls
- Operator recorded data

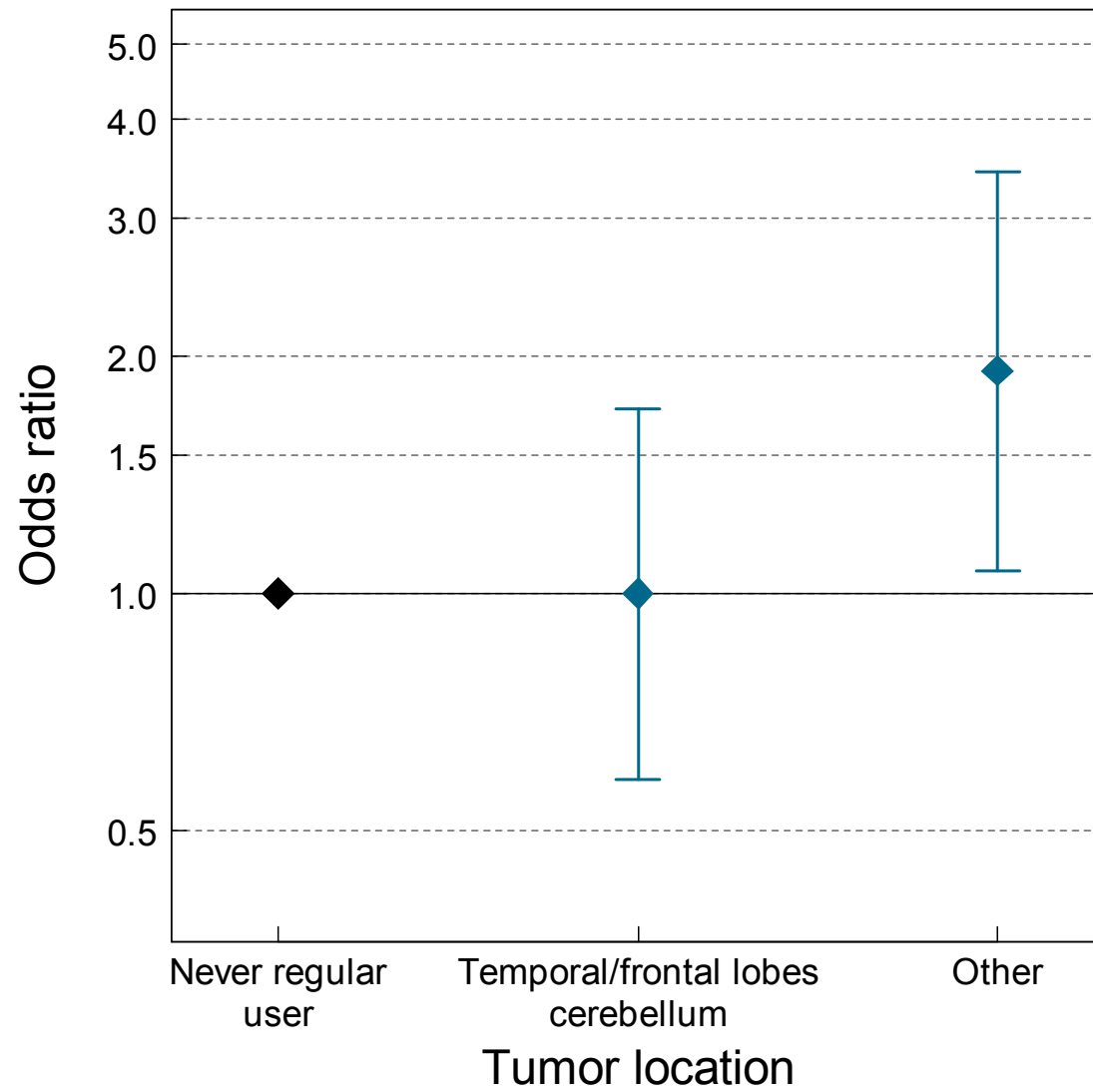
## Results

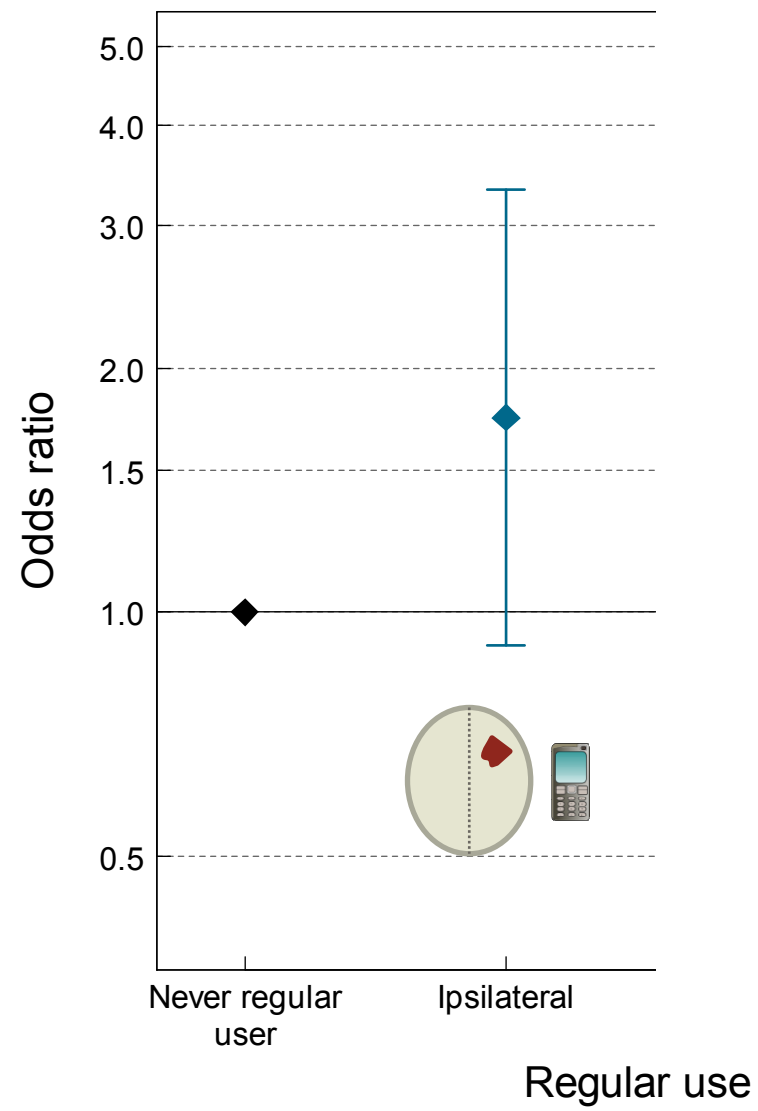
- 75% of cases and 72% of controls: spoken more than 20 times on mobile phones.
- 55% of cases and 51% of controls: regular use
- Regular use: At least one call per week for a period of 6 months or more.

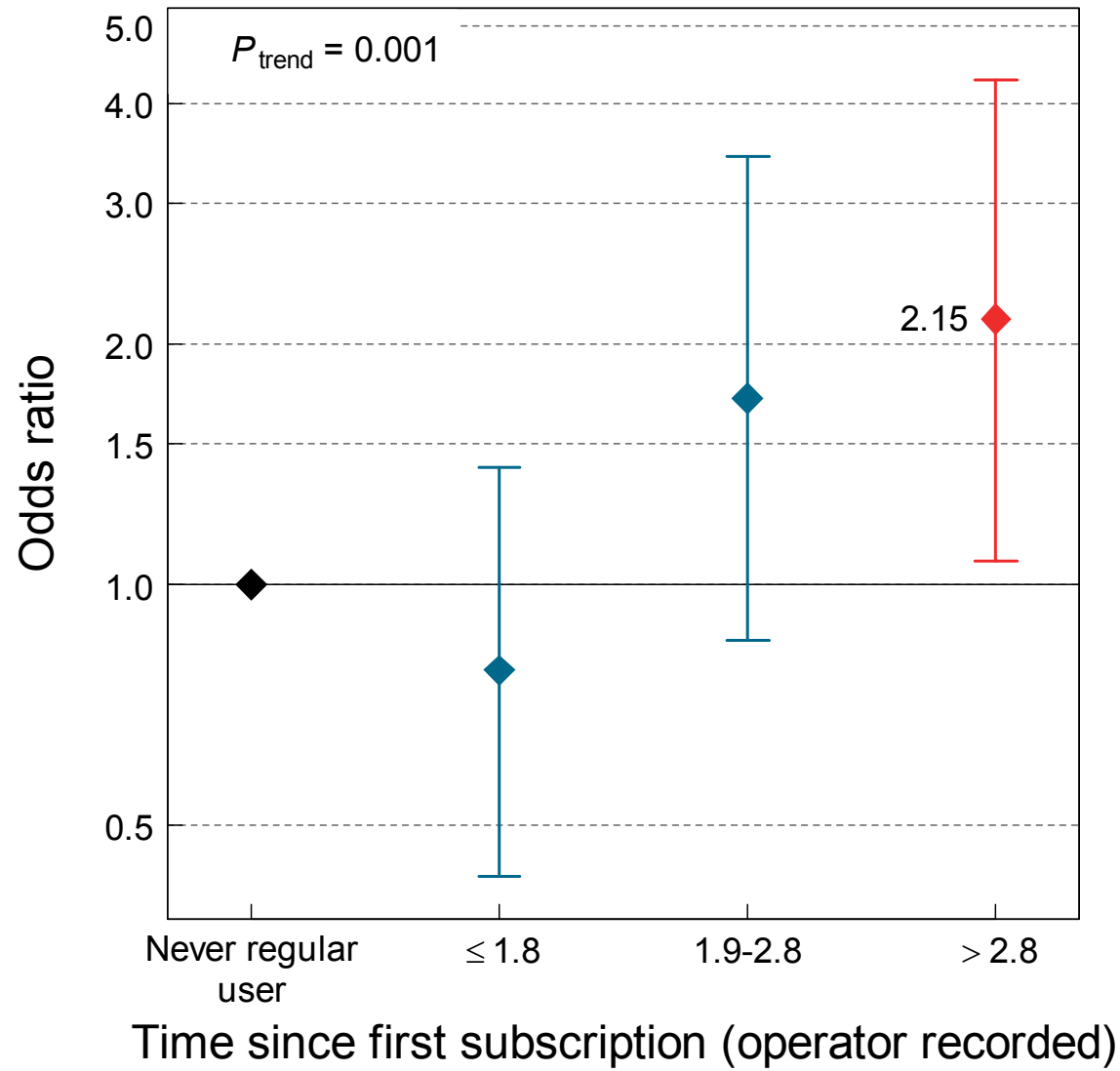




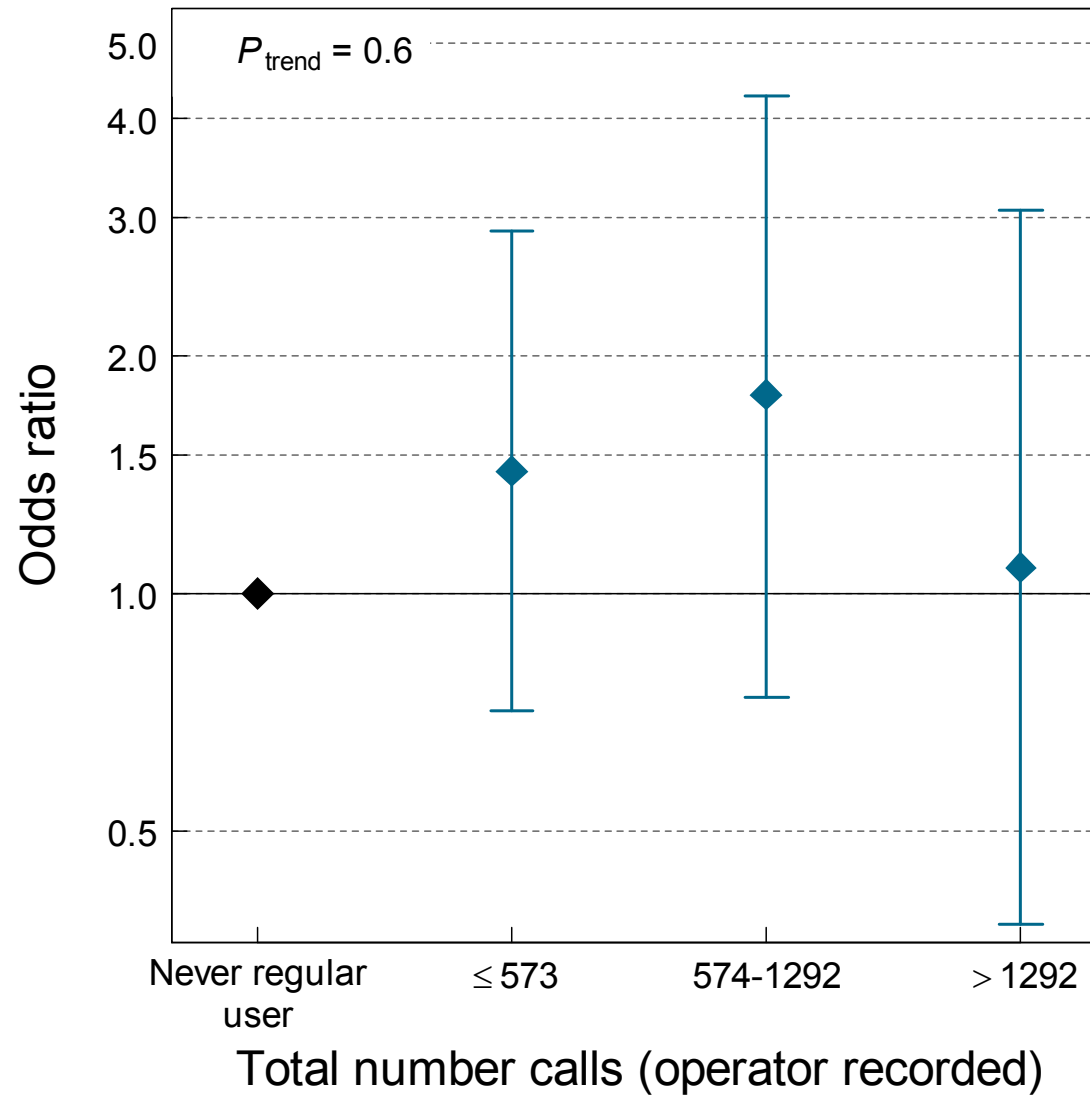


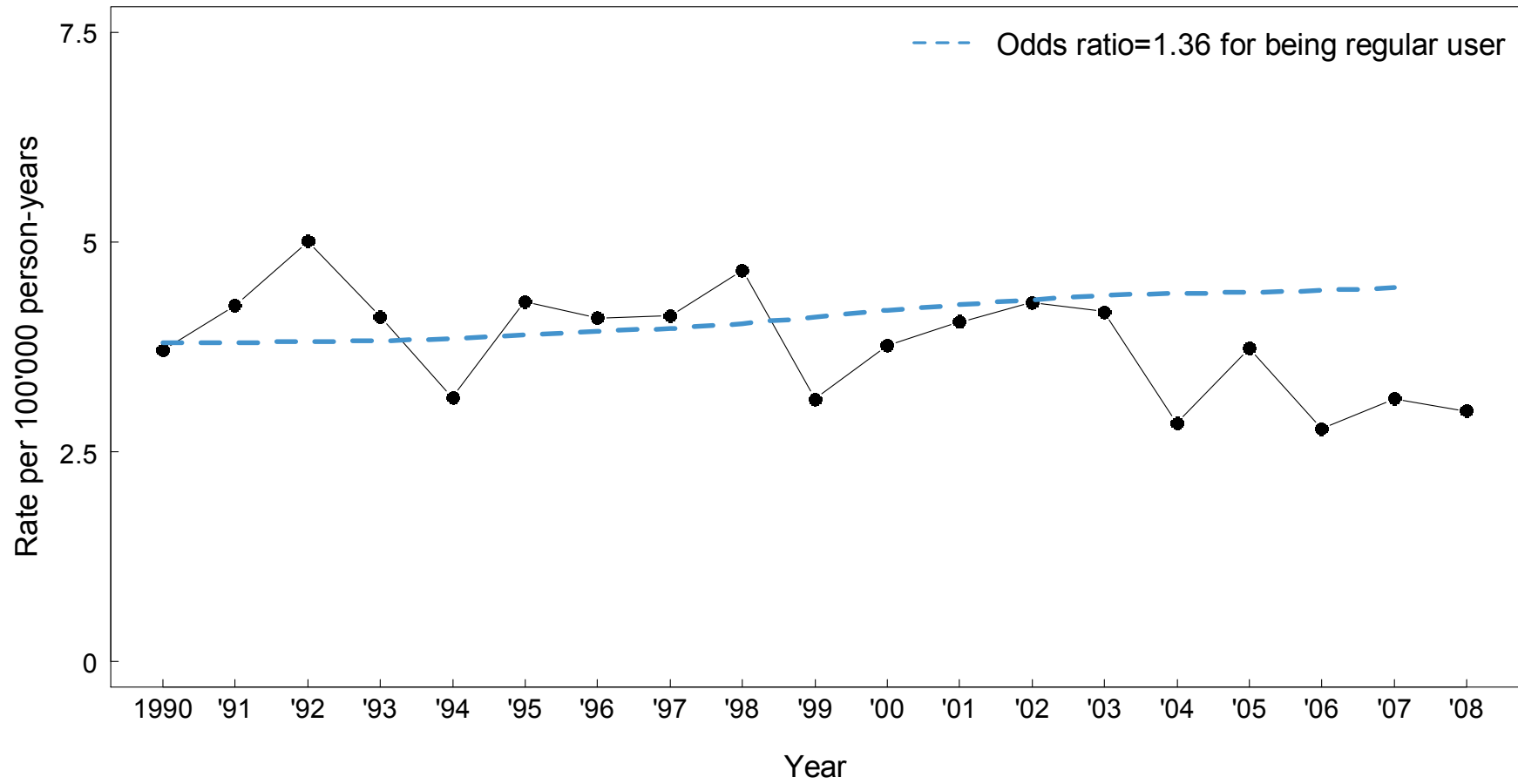


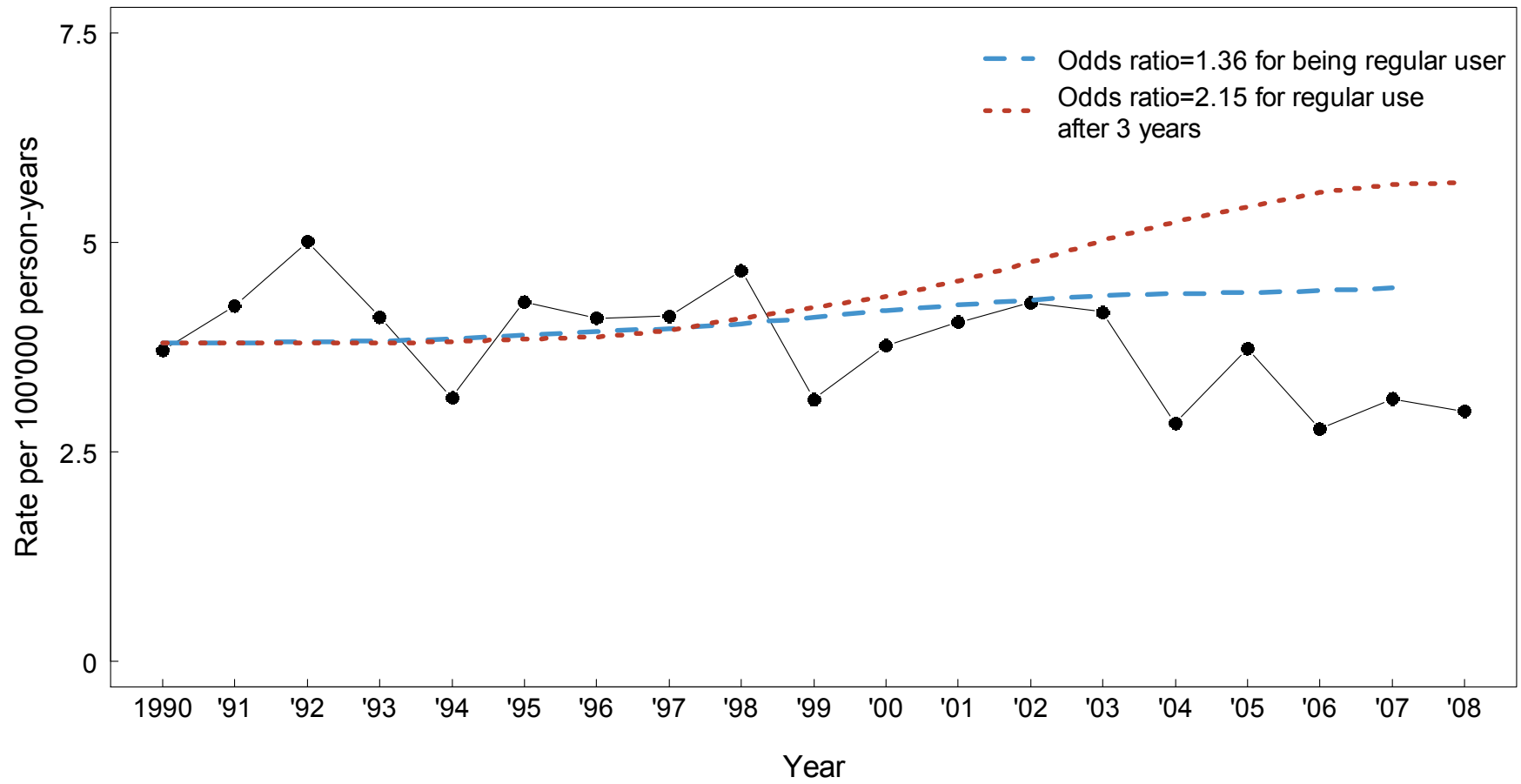












## Challenges

- Data cleaning, exchange and merging (software)
- Possible delays
- Different laws: data availability may vary

## **Strengths & Limitations**

- + First study on children and adolescents.
- + Multinational
- + High participation rates
- Self-reported mobile phone use
- Representativeness of mobile phone use
- Limited statistical power to detect small risks.

## Conclusions

- No exposure-response relationship in terms of the *amount of mobile phone use* or by *localization of the brain tumor*.
- Elevated but not significant ORs.
- If there is a risk, it is not large.
- Incidence rate trends remain stable or decline.
- Findings argue against a causal relationship.

## **Outlook**

- No more retrospective studies
- Monitoring of incidence rate trends: most promising method

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- Tone Eggen
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*Thank you.*