

# The Landscape of online pharmacies in Europe: A pan-European analysis of legitimate and illegal vendors in 30 countries

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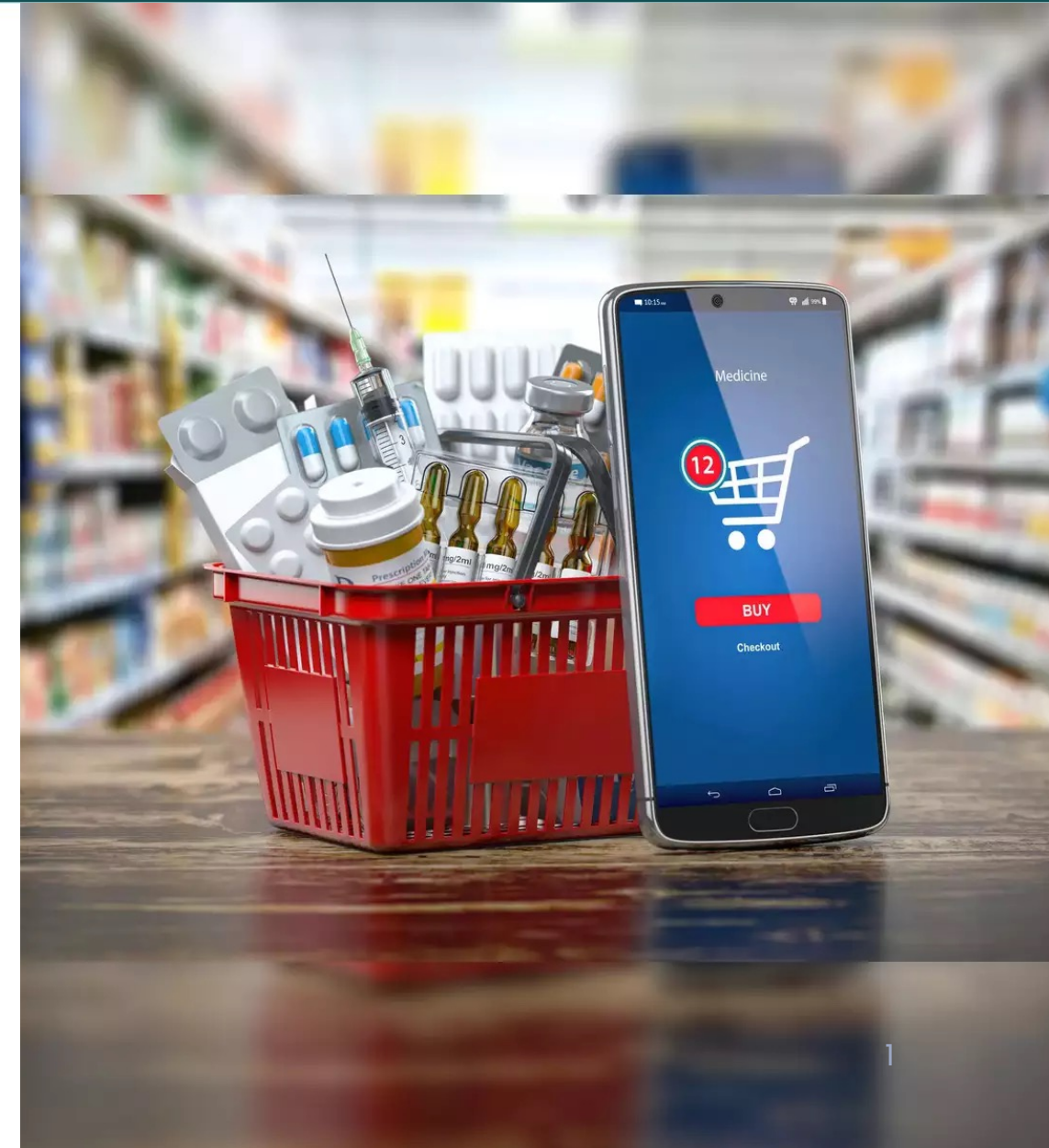


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# Online pharmacy

- **Web- or app-based** pharmacies dispensing **non-prescription** and **prescription-only medications** directly to consumers, delivering via **mail or courier services**
- Rapid growth of section since 1990s with expansion of **internet access**, shifts in **consumer behaviour**, **COVID-19 pandemic**



# Potential benefits of online pharmacy

- Potential to enhance accessibility of quality pharmacy care?

- Better accessibility, last-mile delivery of medicine



- Competition & economies of scale lower prices



- Enhanced traceability & quality assurance



# Concerns...



Sale of medicines  
without prescription



Sale of substandard  
and falsified medicines



Inadequate provision of  
patient information



Risks to data and  
financial security



Emergence of  
rogue players

# Legitimate vs. Illegal online pharmacies

- **Legitimate online pharmacies:** registered with national regulators, subject to regulations and oversight to ensure safety and efficacy of medications sold, protection of patient information
- **Illegal online pharmacies:** (aka illegal medicine vendors) often bypass laws, regulations and standards
- Estimated 30,000 to 35,000 online pharmacies:
  - 96% illegal
  - 4% legitimate





# Study objective

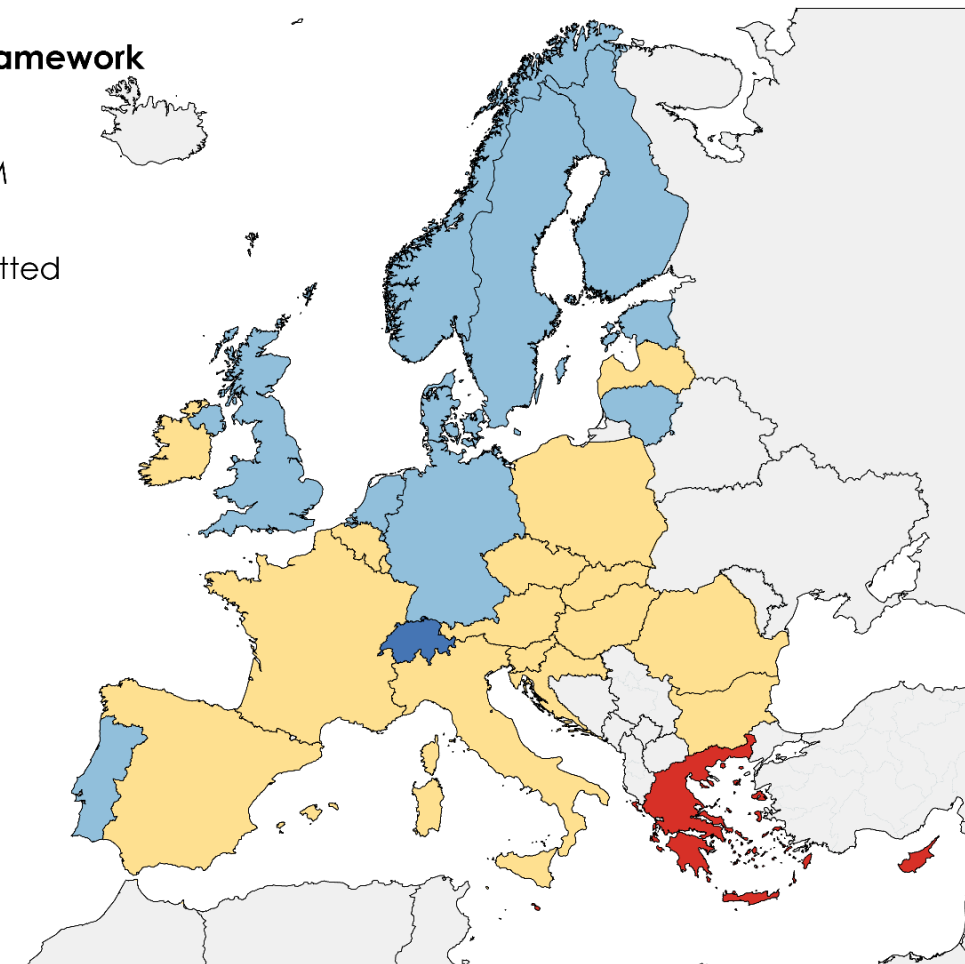
To examine consumer exposure to **legitimate online pharmacies (LOPs)** and **illegal medicine vendors (IMVs)** across 30 European countries

Three basic **regulatory frameworks**:

1. Online pharmacies permitted to sell prescription-only medicines (POMs) and over-the-counter medicines (OTCs)
2. Online pharmacies permitted to sell OTCs only
3. Online pharmacies not permitted\*

## Legislative framework

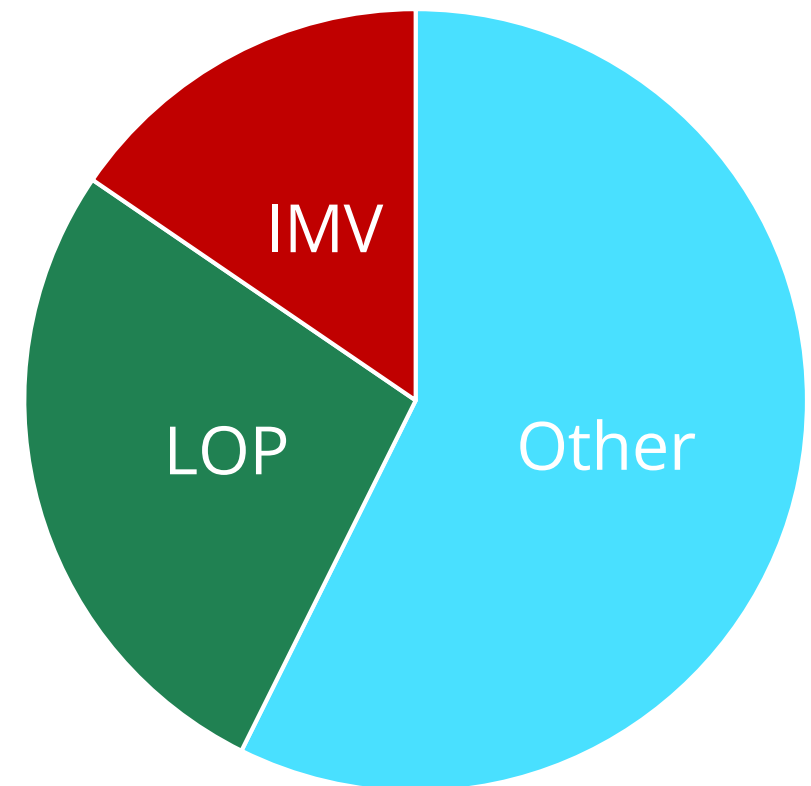
- OTC
- OTC+POM
- POM
- Not permitted
- N/A



1. Simulated consumer searches online for **6 popular medicines** across **three categories**:
  - **Controlled substances**: alprazolam, clonazepam
  - **POMs**: amoxicillin, omeprazole
  - **OTCs**: ibuprofen, paracetamol
2. Categorisation of **first organic 50 search engine results** (SERs) to identify links to **legitimate vs. illegal** online pharmacies
3. Analysed **prevalence, ratio** and **ranking** of links to **legitimate** and **illegal** online pharmacies among SERs by country:
  - Overall (i.e. 50 organic SERs x 6 searches)
  - First page (i.e. Top 10 SERs x 6 searches)
  - Highest ranked online pharmacy link (i.e. legal vs. illegal) in 6 searches

# Results: Overview

- **9000 search engine results reviewed** (50 SERs x 6 searches x 30 countries)
  - 42.6% (n=3839) of links to online pharmacy websites
    - 63.7% (n=2447) of **links for LOP websites**
    - 36.3% (n=1392) of **links for IMV websites**

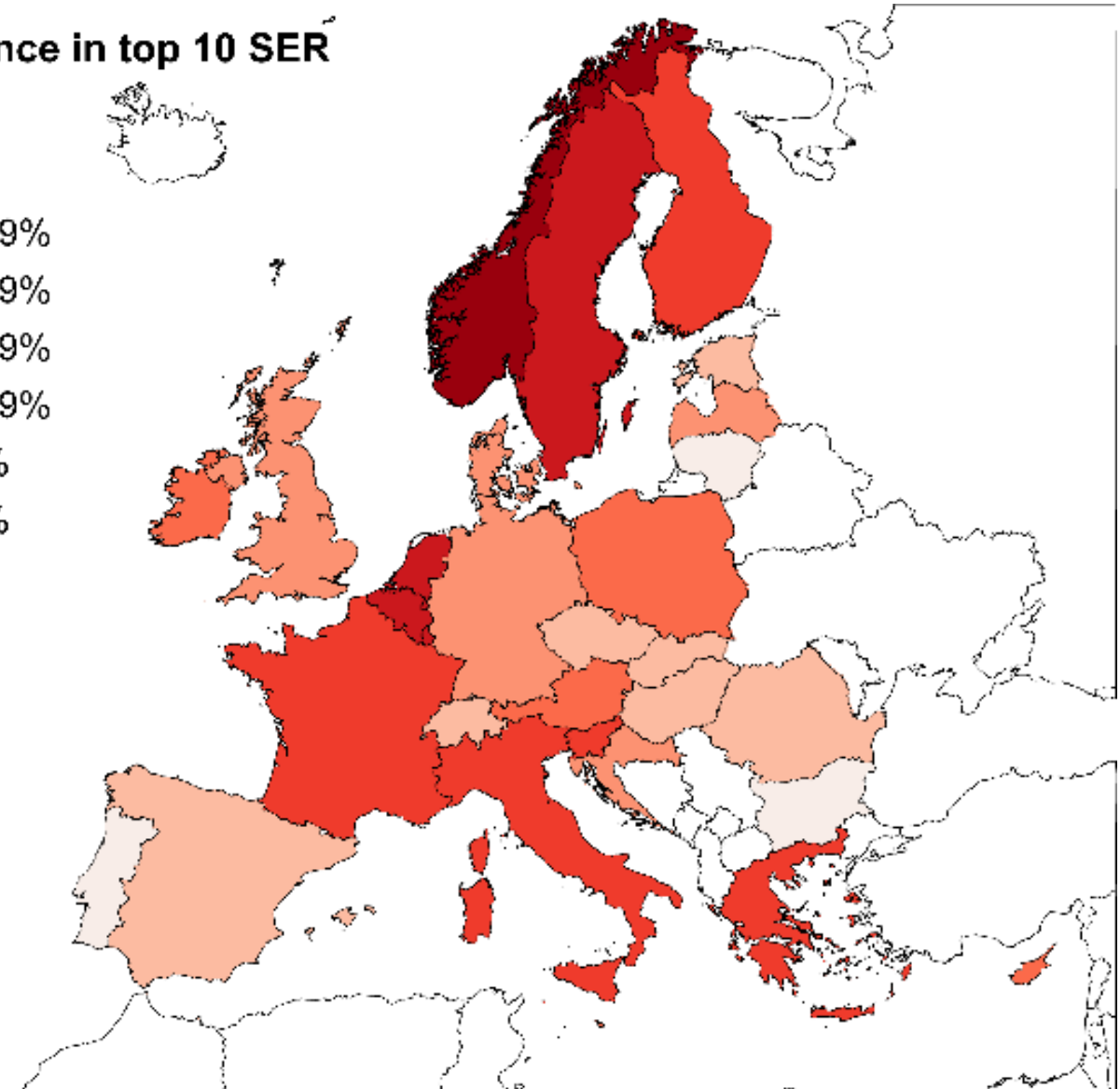
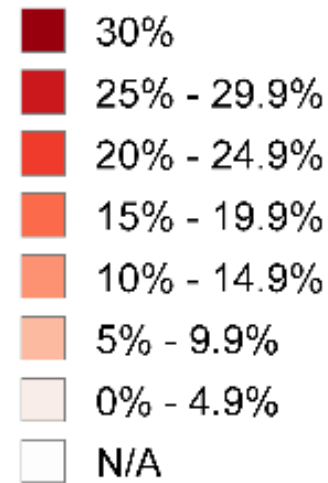




# Results: Prevalence of IMV links in first page SERs

- **IMV link** prevalence <20% in 20 countries
- <5% in Bulgaria, Portugal, Lithuania
- 25%+ in Norway, Sweden, Belgium, Netherlands, Luxembourg

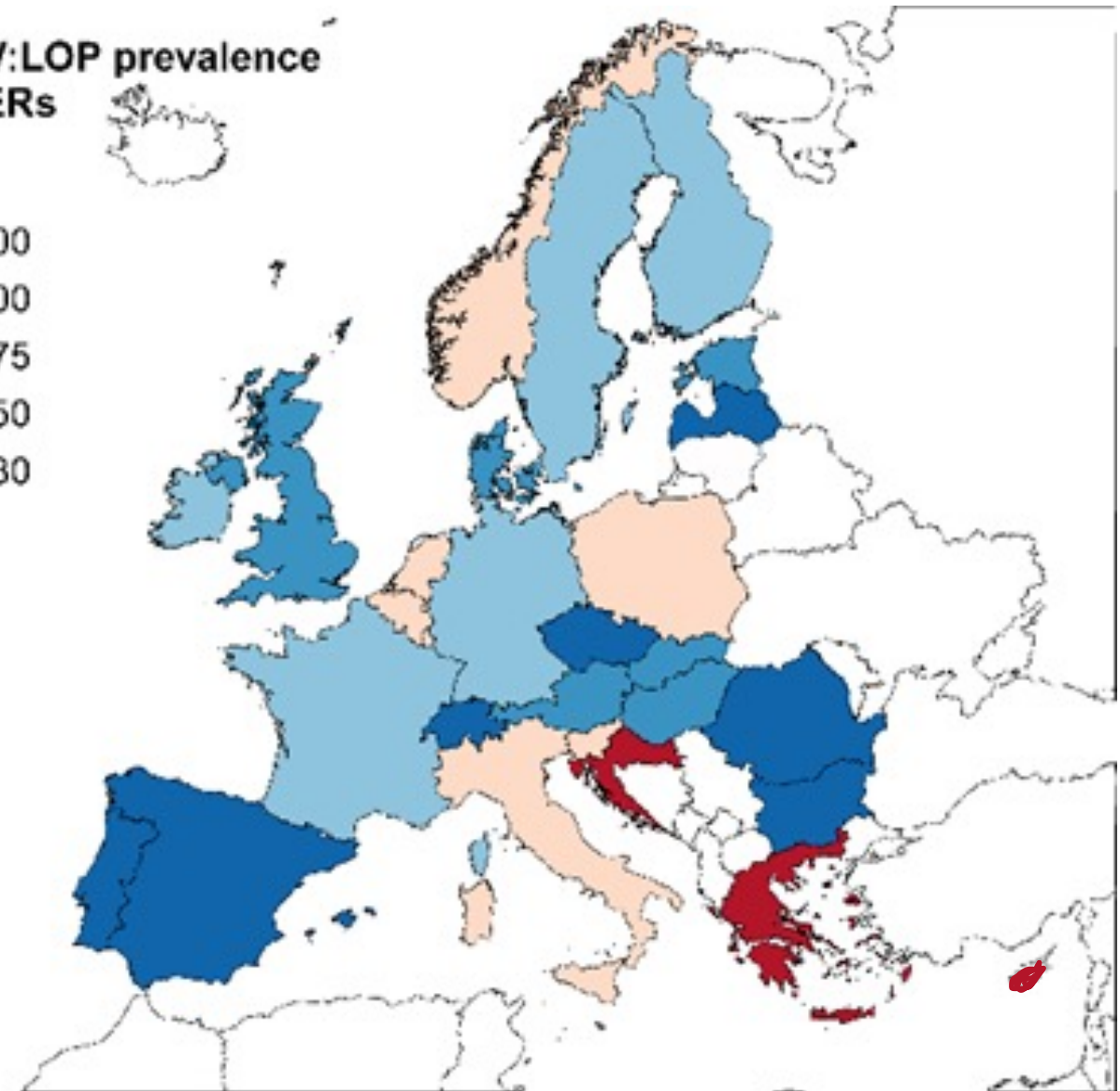
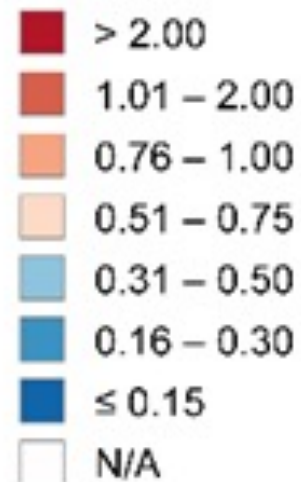
IMV prevalence in top 10 SER  
(%, n=60)



# Results: Ratio of IMV:LOP links in first page SERs

- LOP links outnumbered IMV links by at least 2:1 in top 10 SERs in 20 countries
- 2x - 5x more IMV links than LOP links in top 10 SERs in Greece, Croatia, Cyprus

Ratio of IMV:LOP prevalence  
in top 10 SERs



# Results: Highest-ranked online medicine seller is IMV

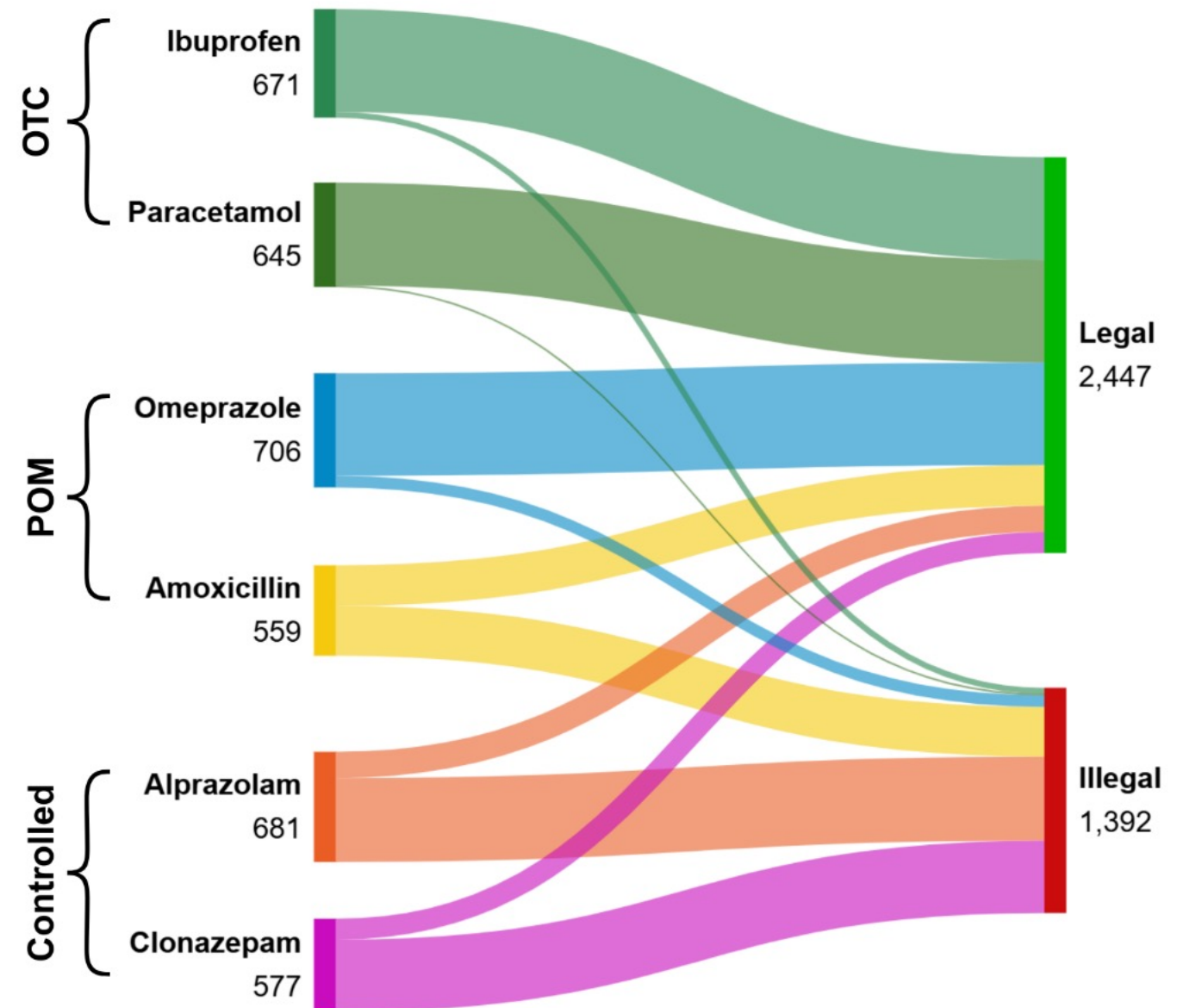
Among all the searches conducted in each country:

- 50% or more of searches in Greece, Croatia, Cyprus had a **link to IMV** as the highest-ranked SER
- In 10 countries, 0% of the searches had a **link to IMV** as the highest-ranked SER (i.e. **LOP link** was highest-ranked SER in a searches )

# Results: Effect of medicine category searched on prevalence and ranking of IMV links

Searches for **controlled substances** more likely to have:

- Highest **IMV link** prevalence among top 10 results and overall
- **IMV link** as the highest-ranked SER

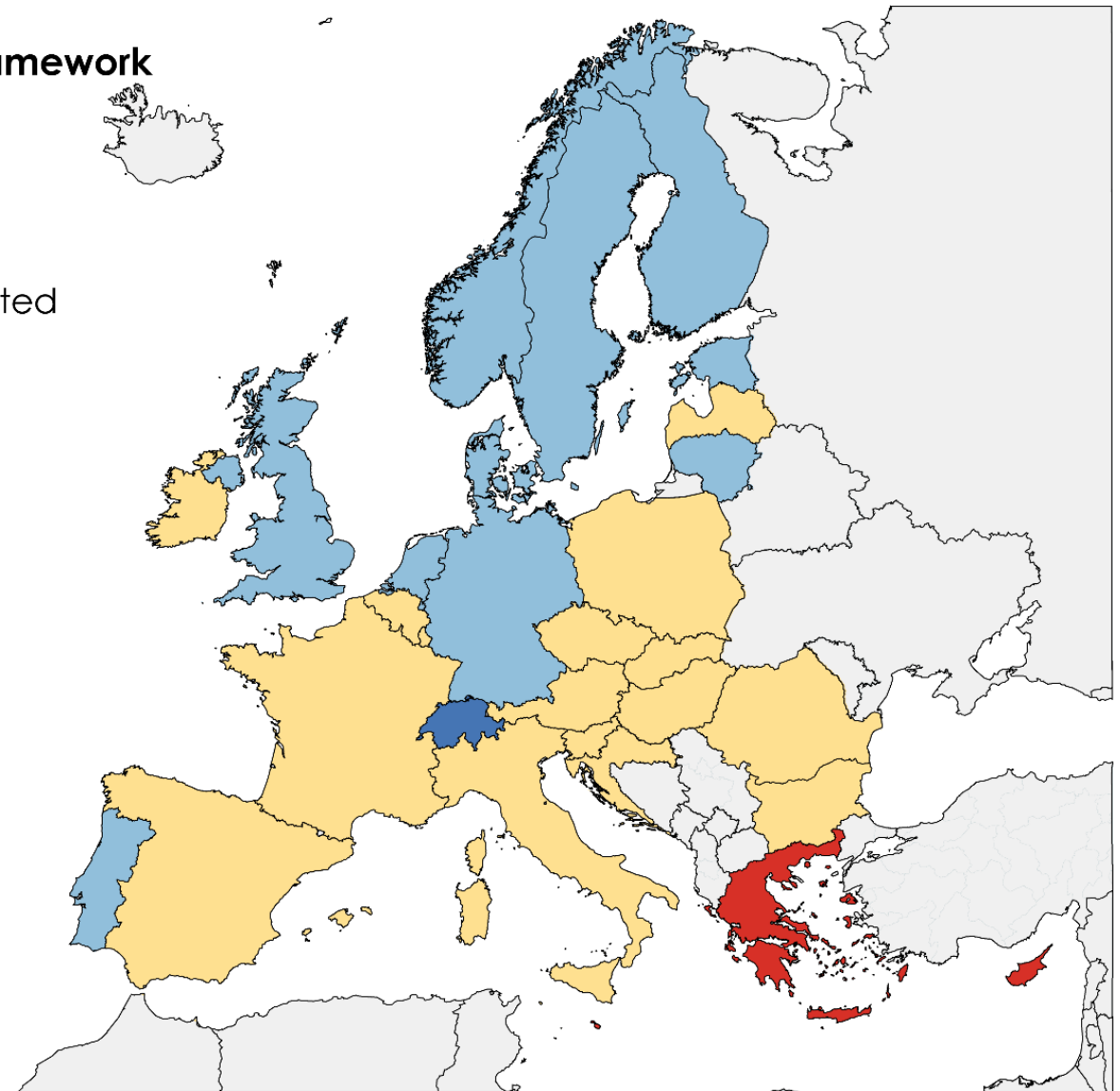
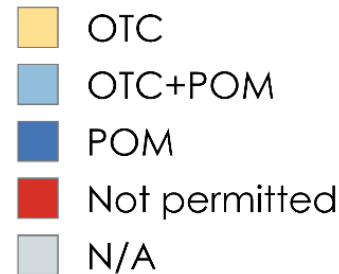


# Results: Effect of national regulatory framework on prevalence and ranking of IMV links

Searches in countries with **most restrictive regulatory frameworks** were more likely to have:

- Highest **IMV link** prevalence among top 10 results and overall
- **IMV link** as the highest-ranked SER

## Legislative framework





# Strategies to improve consumer safety

- Links to legal providers predominant over links to illegal competitors in SERs in most European countries, but exposure risk varies by country
- Persistent exposure to IMV links in SERs of all European countries still presents risks to consumer safety
- Reducing risk requires multi-faceted coordinated action involving:
  - Consumers
  - Regulators
  - Online pharmacies
  - Search engine providers



# Strategies to improve consumer safety

## Suggested actions:

- Promote initiatives **helping consumers differentiate between LOPs and IMVs**
- Collaborate with **search engine operators to adapt existing strategies** (e.g. content moderation and deprioritising) when users search online to buy medicines



# Thank you

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