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Reaching the Unreached

DKA at onset of paediatric type 1 diabetes across the world: results from a Joint International Project

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Background

- DKA is not only potentially lethal and related to longer hospitalisation, but also a predictor of long-term poor metabolic control.
- Reported rates of DKA at diabetes onset do vary between countries, however definition of DKA, inclusion criteria, age-range and statistical analysis differ considerably.

Objectives

To evaluate worldwide geographic variability and time trends of DKA rate at onset of paediatric type 1 diabetes (<15y) between 2006-2016.

Specific research questions

- Country comparison, cross-sectional and time trend analysis.
- Differences between age, gender, minority status.

Methods

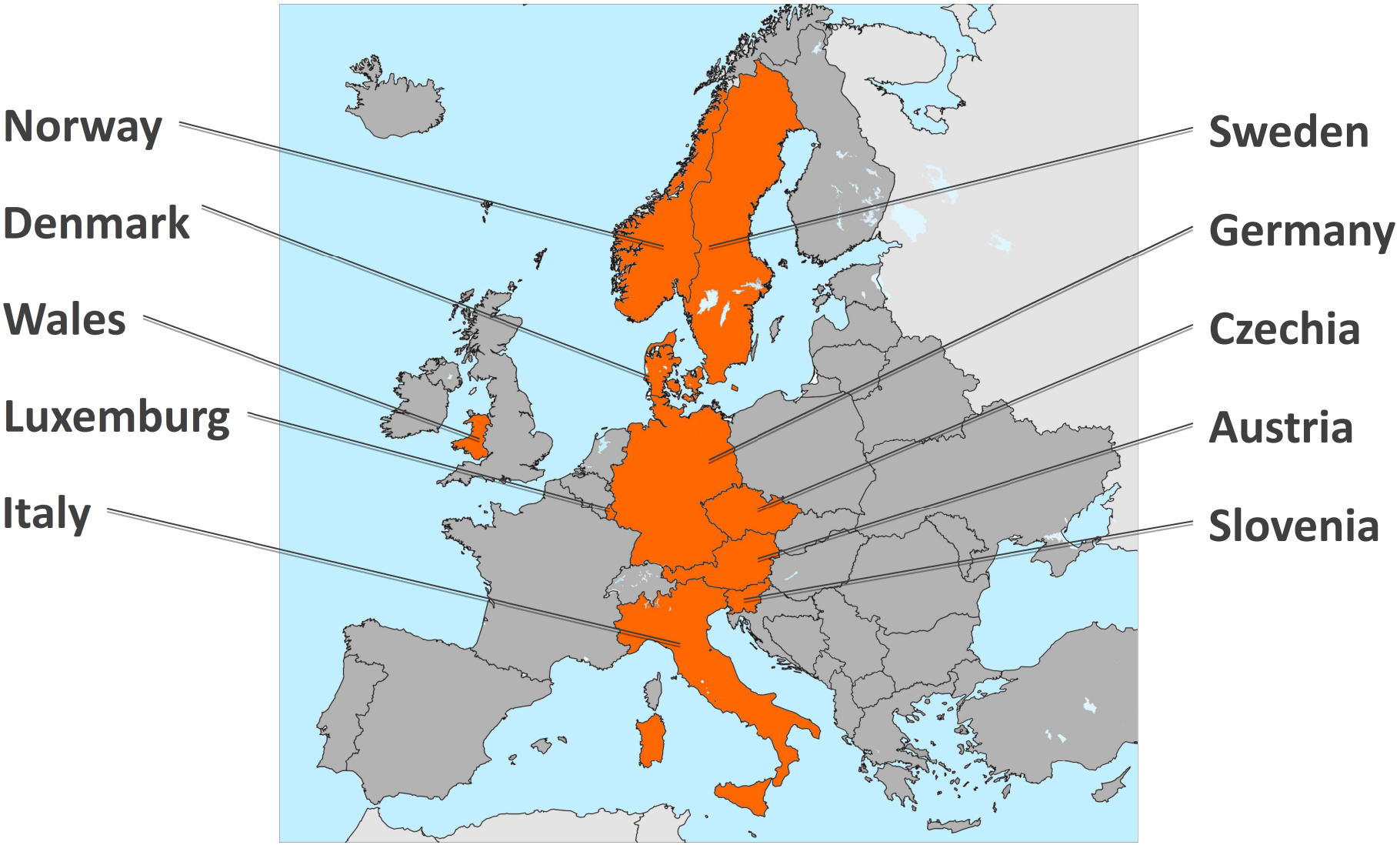
Requirements for participation of countries

- Willingness to share patient-level data for joint analysis.
- Nearly-complete nationwide (>60%) or registry data available for major part of observation period.
- Definition of DKA: pH < 7.3 or HCO_3^- ≤ 15.

Data per patient (T1D only)

- Age at diabetes onset, date of diabetes onset, gender, pH or HCO_3^-, minority status.
- Patients without information on pH or HCO_3^- were excluded.

Map of 10 participating European countries

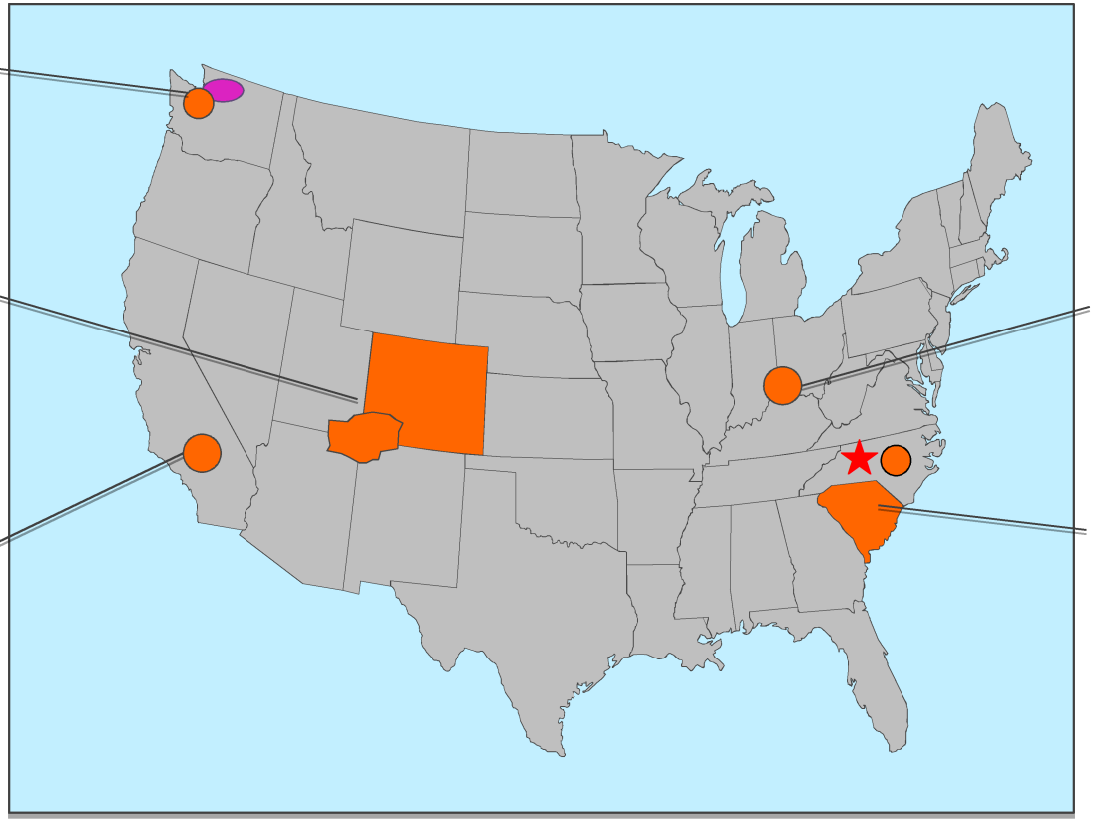


Map of USA-SEARCH centres

Seattle Children's Hospital

University of Colorado Denver

Kaiser Permanente Southern California



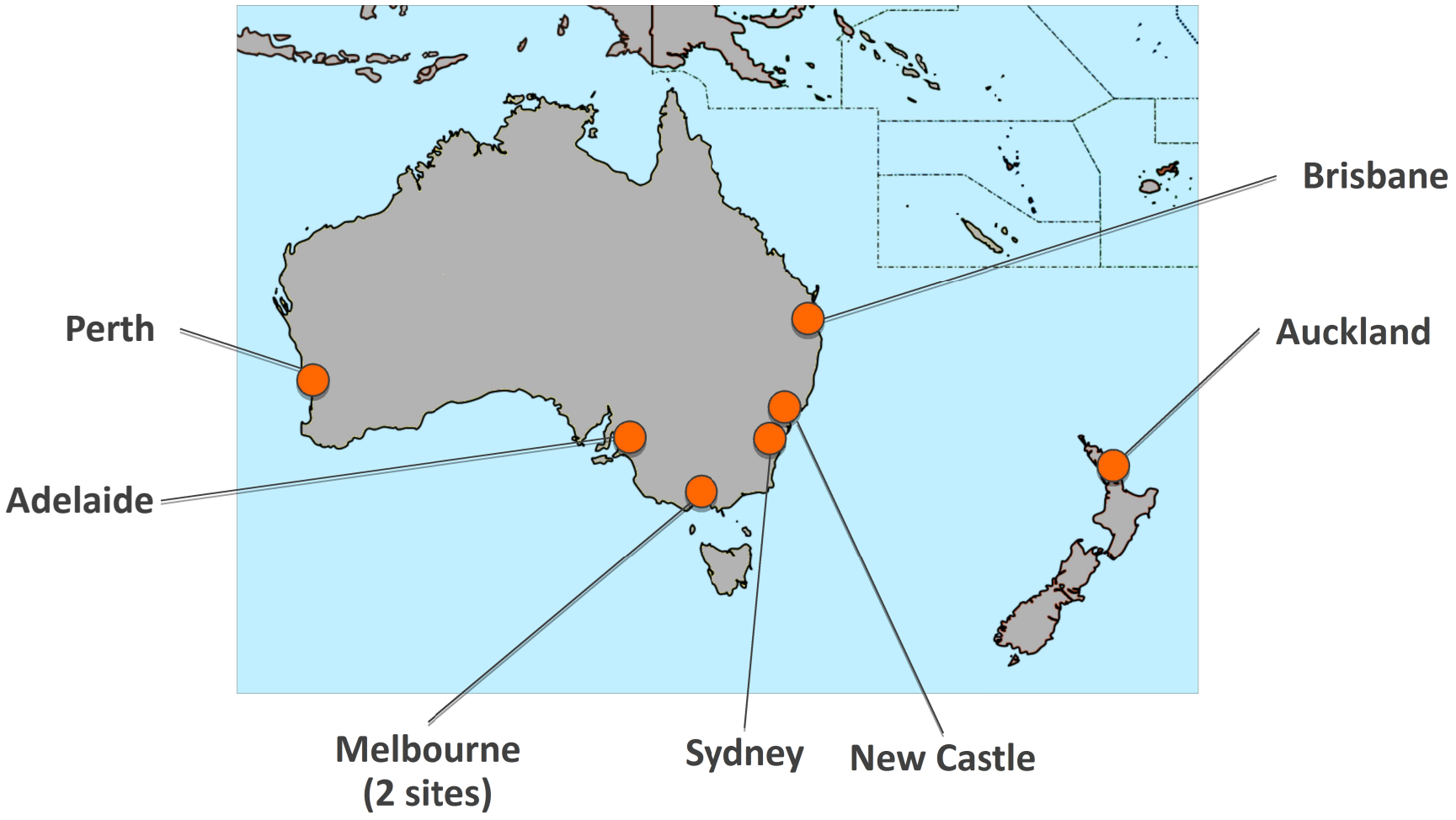
Cincinnati Children' Hospital Medical Center

South Carolina (Coordinated at UNC Chapel Hill)

★ Wake Forest School of Medicine (Coordinating Center)

University of Washington (Central Laboratory)

Map of AUSTRALASIA Centres

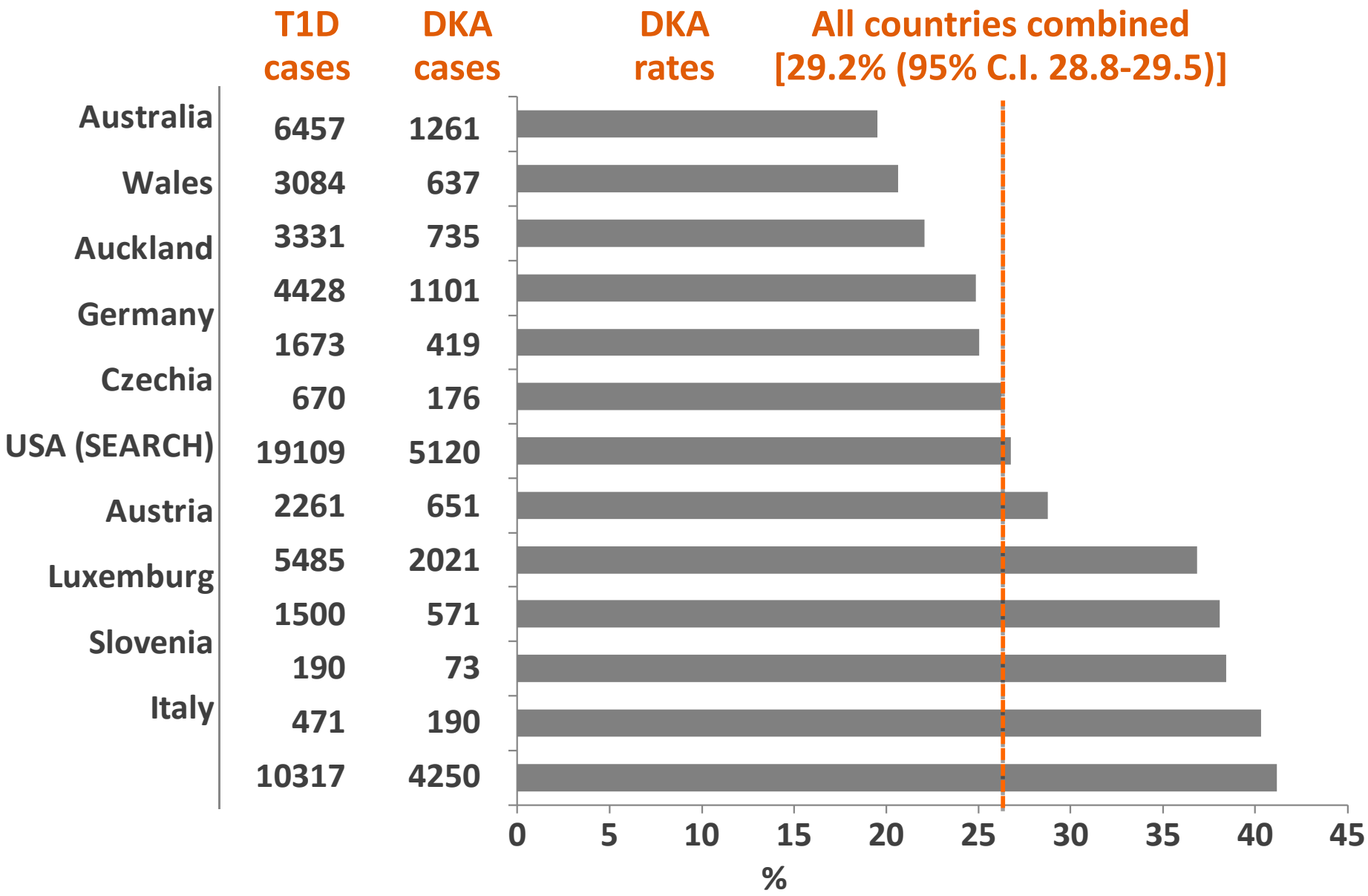


Australian data from Australasian Diabetes Data Network (ADDN)

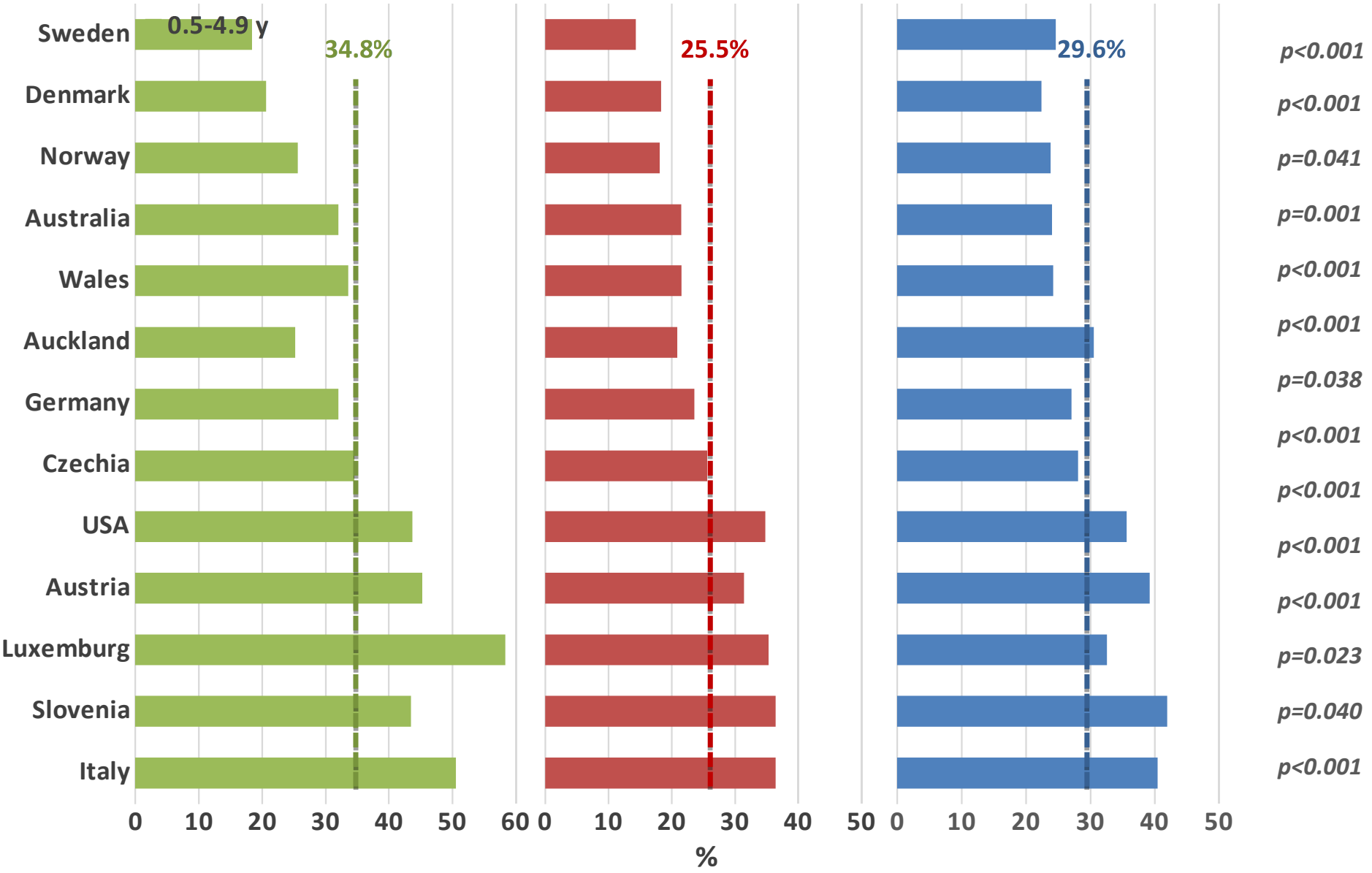
Results

Patients fulfilling inclusion criteria (n)	58,976
Age [years, median (1^{st} – 3^{rd} quartiles)]	9 (5.5-11.7)
Gender (% of males)	52.9
Minority status (%)	13.0
Patients with DKA at T1D onset (n)	17,205

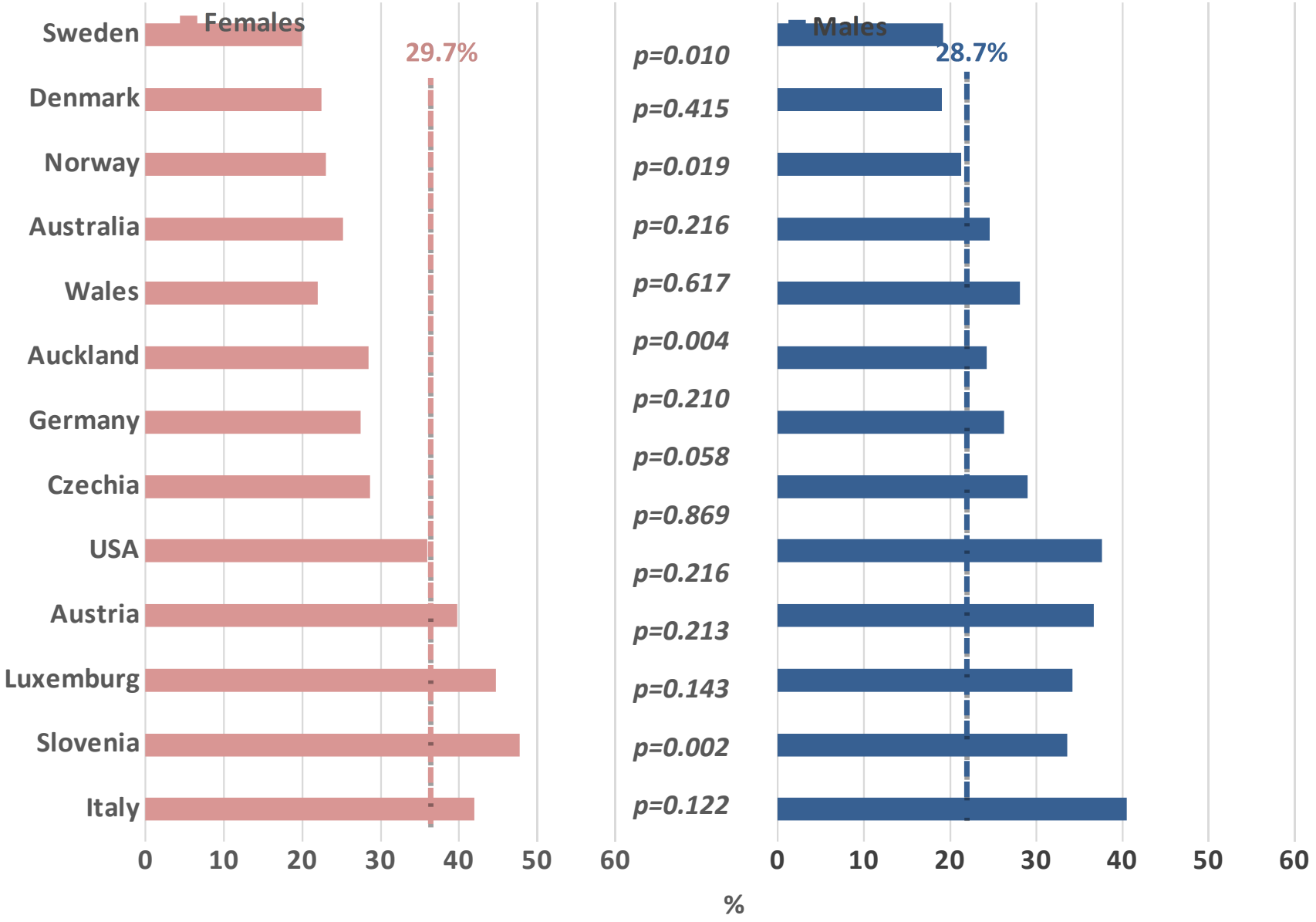
DKA at T1D onset in 13 countries



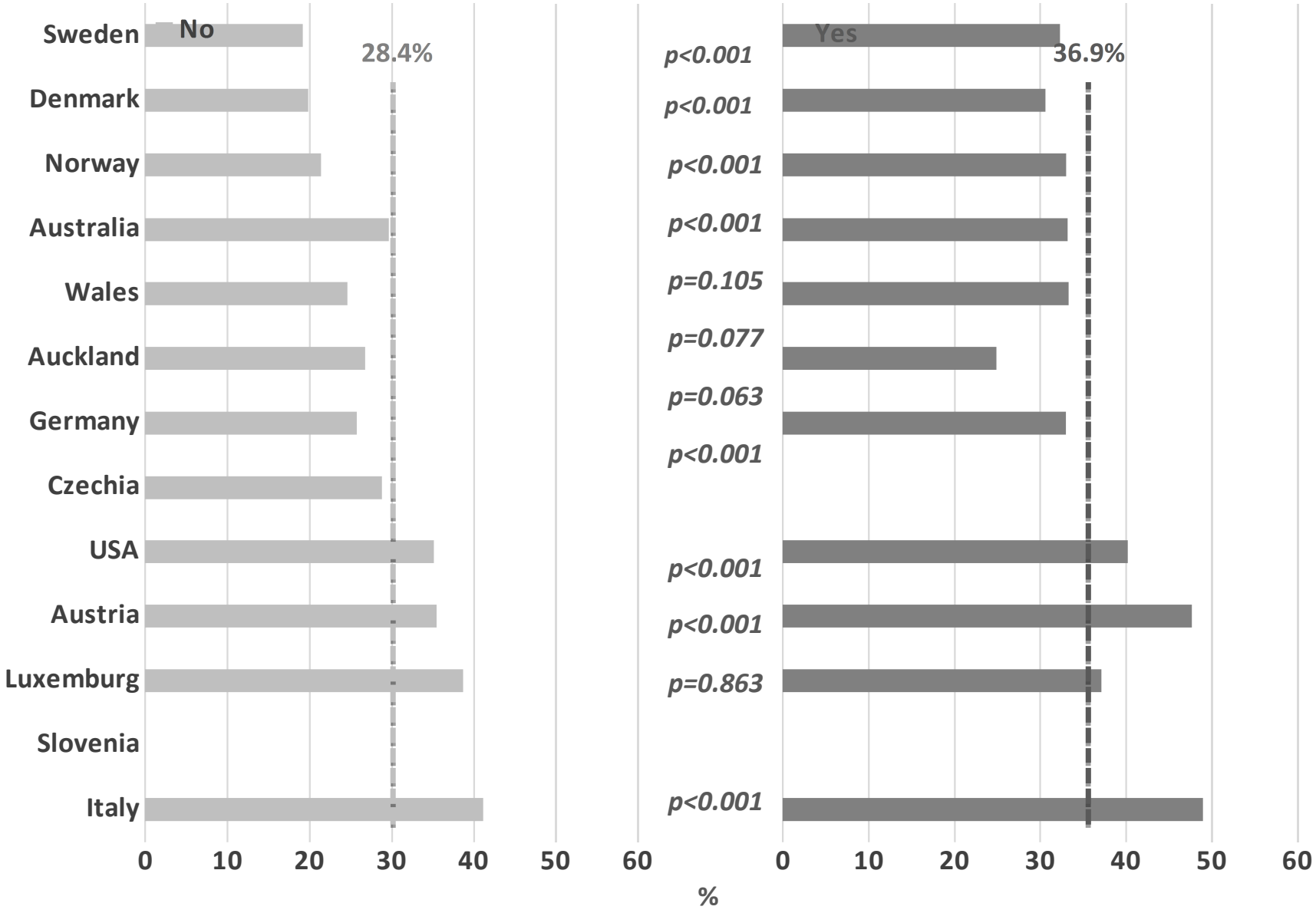
DKA rates by age group



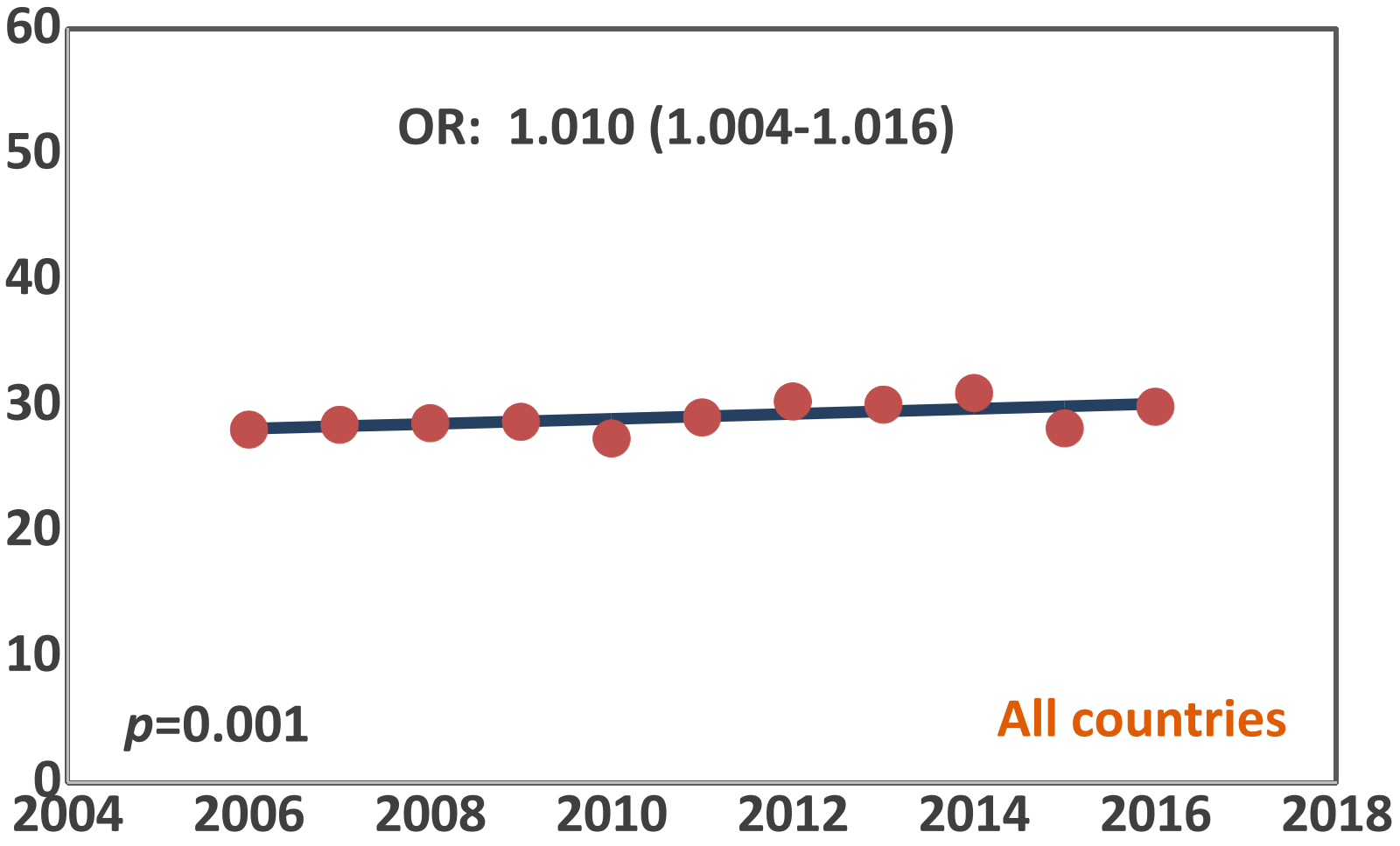
DKA rates by gender



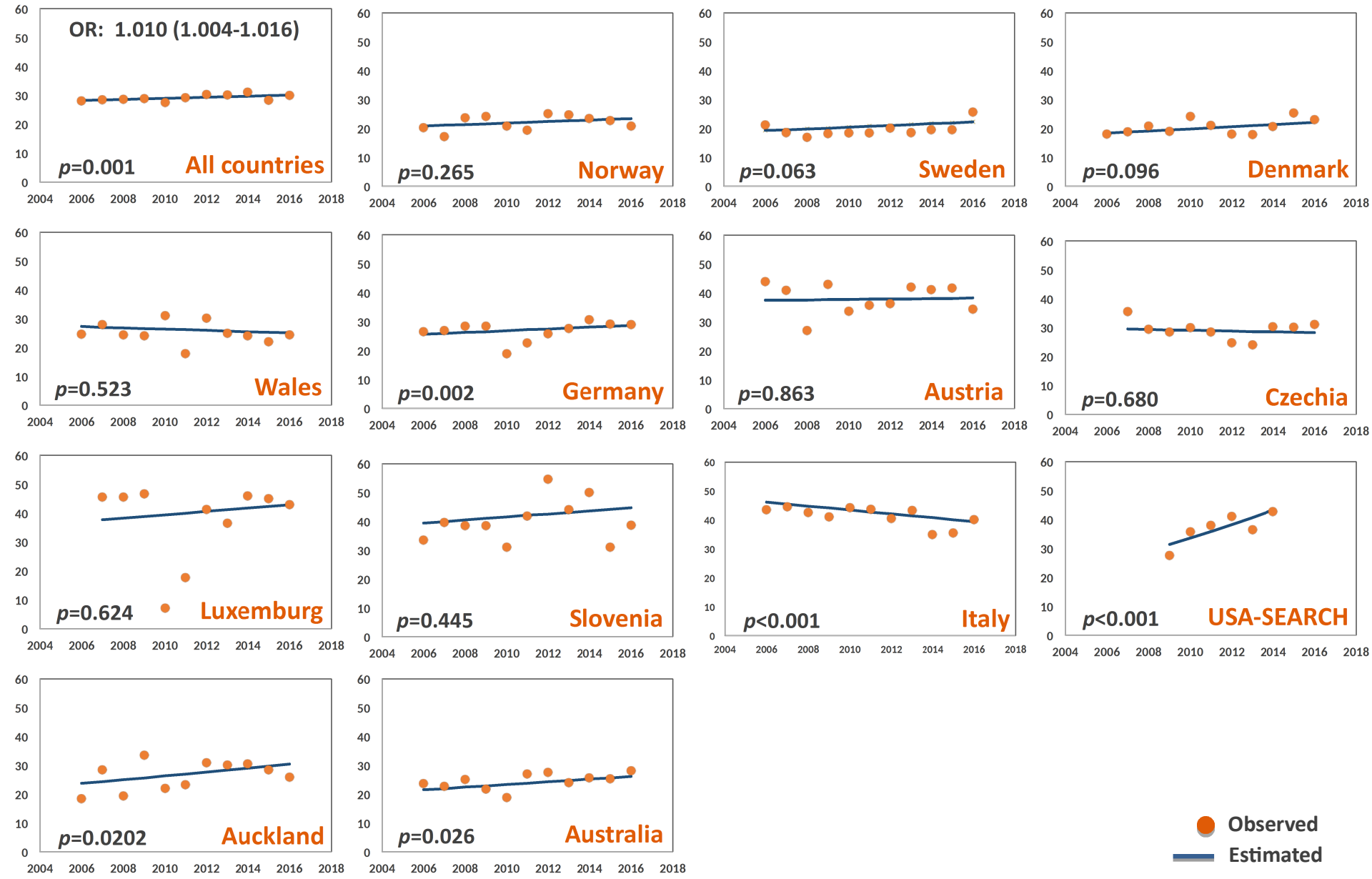
DKA rates by minority status



Trends in DKA rates at T1D onset



Trends in DKA rates at T1D onset



Conclusions

- Needed reporting pH and/or HCO_3^- at diagnosis of T1D.
- DKA rates were unacceptably high in all countries.
- There was a huge variation of DKA rates across the world.
  - Higher rates in younger age-group.
  - Higher rates in females.
  - Higher rates in minority status.
- Slight increase in DKA in time span 2006-2016.

Efforts focused at reducing the rate of DKA at onset of type 1 diabetes are warranted.

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