

# Burden of community acquired pneumonia in older adults in the new EU countries of the Central Europe

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## Introduction

Older adults are in an increased risk of respiratory infections including community acquired pneumonia (CAP)<sup>1</sup>. The former socialistic countries of the Central Europe form a unique region with specific health care and epidemiology characteristics, and where the local evidence on the underlying epidemiology in elderly is scarce.

## Purpose

The objective of this study was to estimate the incidence and the case fatality rates (CFR) of CAP in adults ≥50 years of age in the Czech Republic (CR), Hungary (HU), Poland (PL) and Slovakia (SK).

## Methods

The national demographics data stratified by age were obtained from the respective statistical office in each country (table 1).

The incidence and the CFR for hospitalised CAP (table 2,3) were estimated using the national surveillance and reporting systems (PL, CR, SK)<sup>2-5</sup> and national insurance records (HU)<sup>6</sup>.

National retrospective patient chart reviews (CZ, SK) were used to estimate the non-hospitalised CAP incidence as a portion of the hospitalised CAP. In PL we used national surveillance data and in HU the national insurance fund records to estimate outpatient CAP incidence.

## Results

The older adults present a substantial part of the population with 39%-40% of those older than 65 years (table 1).

Age	Population			
	Czech Republic	Slovakia	Poland	Hungary
Total population	10 190 213	5 477 038	38 441 588	9 976 062
50-64	2 145 970	1 085 074	8 097 400	2 053 455
65-74	955 577	391 001	2 712 297	914 515
75-84	530 541	235 384	1 951 742	569 825
>85	179 477	74 516	520 525	104 908
Total >50	3 811 565	1 785 975	13 281 964	3 642 703
% over 65 in >50	44%	39%	39%	44%

Table 1: Size of the population >50 years in the four countries.

Compared with adults 50-64 years of age, the incidence of hospitalised CAP were

□ 2.3 fold higher in those 65-74

□ 5.2 fold higher in 75-84

□ 10.8 fold higher in those ≥85,

manifesting an exponential trend.

The incidence (figure 1) and mortality (figure 2) of CAP however sharply increases with growing age.

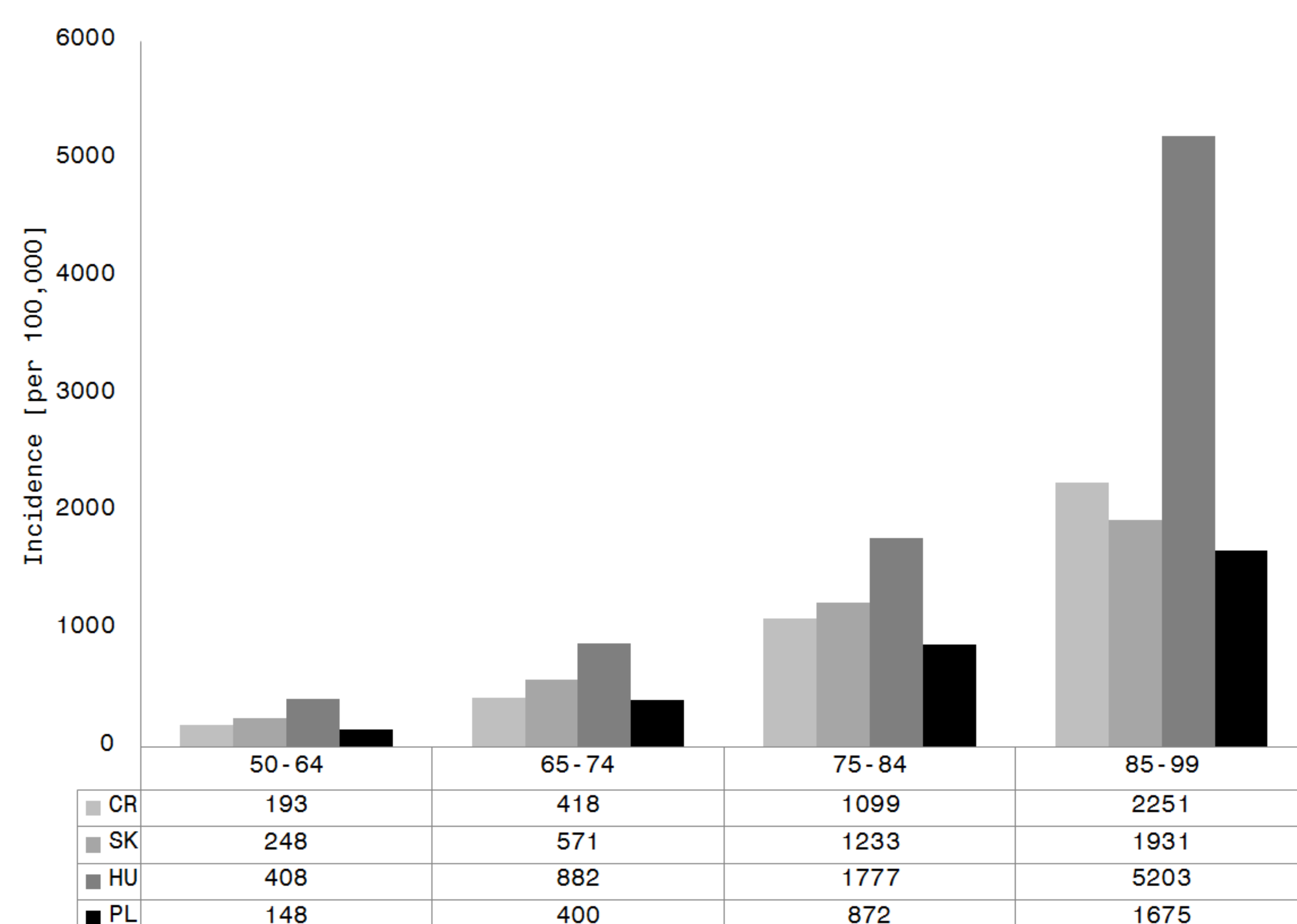


Figure 1: Country-specific incidence per 100,000 of inpatient CAP by age group

## Results

	Hospitalised CAP incidence per 100,000	The CFR per 100 cases of hospitalised CAP	Non-hospitalised CAP incidence per 100,000
Czech Republic	457	21	710
Slovakia	879	20	598
Poland	364	18	316
Hungary	524	18	3551*

Table 2: Hospitalised CAP incidence and CFR, and non-hospitalised CAP incidence in the four countries

By contrast, the incidence of non-hospitalised CAP was generally flat or declining with age, representing a higher likelihood of hospitalisation with increasing age. The total number of hospitalisations and deaths in CR, HU, PL, and SK were 17,473 and 3,686; 23,652 and 4,796; 35,895 and 7,325; 6,321 and 1,497). In Poland, for example, adults over 65 represent approximately 14% of the study population, while they account for 80% of deaths from CAP.

	Community Acquired Pneumonia			
	Czech Republic	Slovakia	Poland	Hungary
Cases	29444	19749	90492	152198
Deaths	2572	1322	3519	4098
Cost	€12 887 861	€10 153 834	€22 746 159	€19 216 545
PPPY	€3.38	€5.69	€1.71	€5.28
Death rate	67.49	73.99	26.50	112.51

Table 3: Absolute and derived CAP figures together with estimated costs of the illness. PPPY denotes the Per Patient Per Year costs.

## Conclusions

Both the morbidity and mortality of hospitalised CAP increases sharply with advancing age, signalling a likely increasing public health problem as the population ages over time. In Poland, for example, adults over 65 represent approximately 14% of the study population, while they account for 80% of deaths from CAP). With greater life expectancy and lower birth rates the proportion of older adults is expected to grow significantly in these countries, making efforts to efficiently treat or prevent CAP a public health priority.

The increase in incidence of hospitalised CAP with age shows exponential trend as a consequence of increasing incidence and high hospitalisation rate. By contrast, the incidence of non-hospitalised CAP was generally flat or declining with age, representing a higher likelihood of hospitalisation with increasing age.

In Hungary, where the primary incidence data were provided by the national insurance fund, substantially larger incidence was calculated in both types of CAP with strikingly high number of outpatient CAP cases. This may be mainly due to different coding practice. Nevertheless, CAP poses a significant burden in all four countries among adults ≥50 years of age.

The data sources as available under national reporting and survey programs in all four countries provides a good time course analysis for hospitalised CAP as hospitalisations are mandatorily reported. The outpatient CAP is greatly underreported or unknown though. National insurance fund seems to be a good source of data on outpatient CAP.

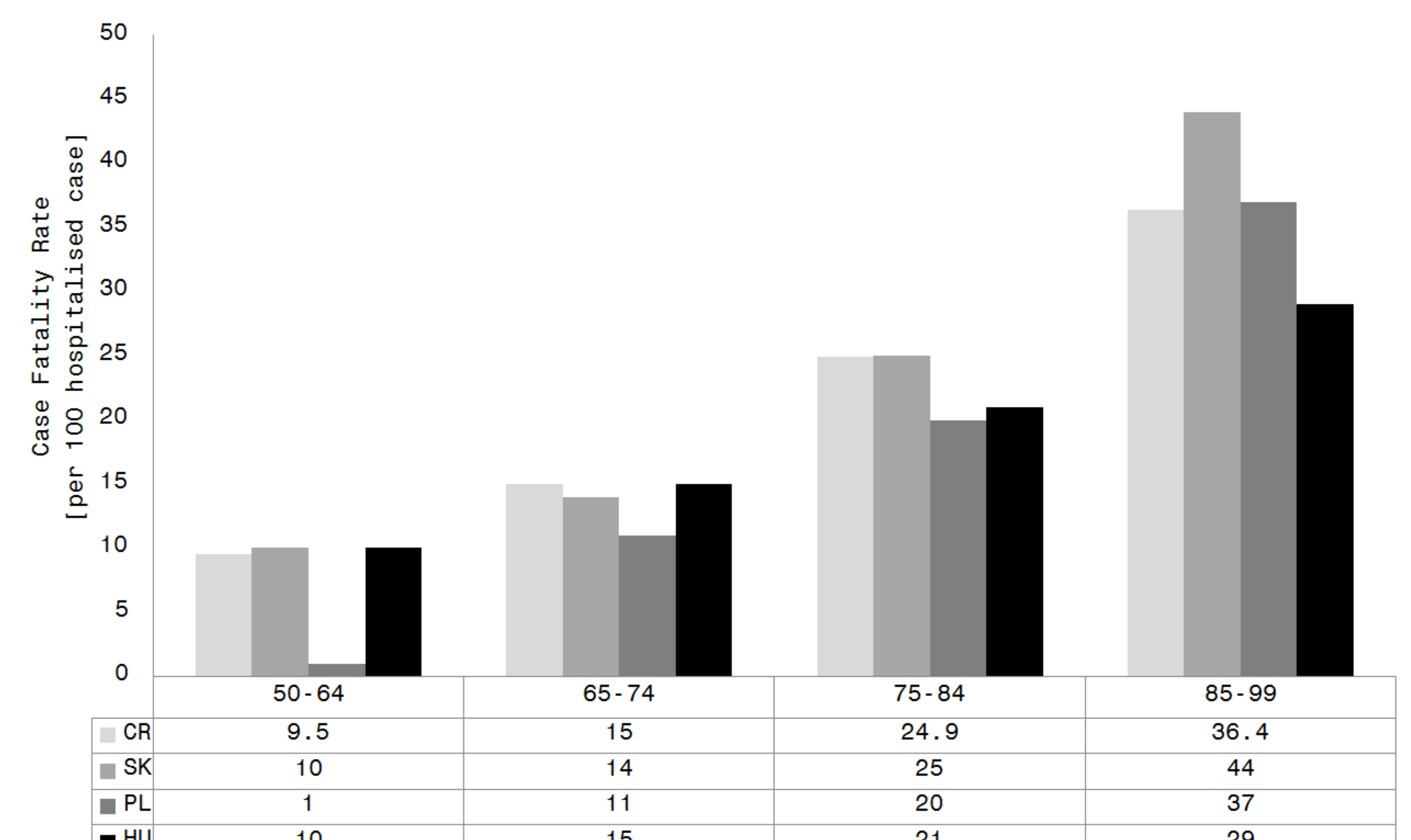


Figure 2: Country-specific case fatality rate per 100 hospitalised CAP cases by age group