The Burden of Disease due to COVID-19 in Korea using Disability-Adjusted Life Years

Jo MW, Go DS, Kim R, Lee SW, Ock M, Kim YE, Oh IH, Yoon SJ, Park H
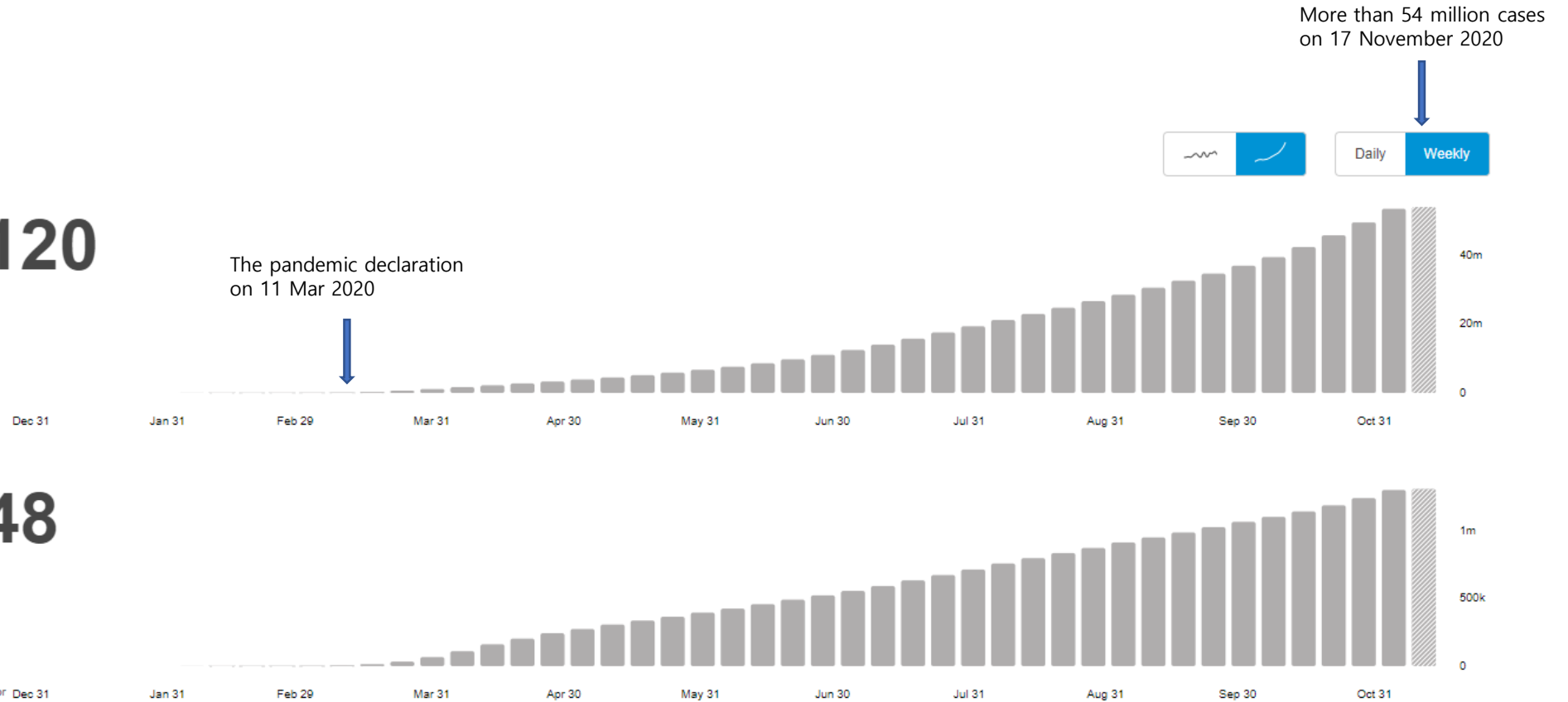
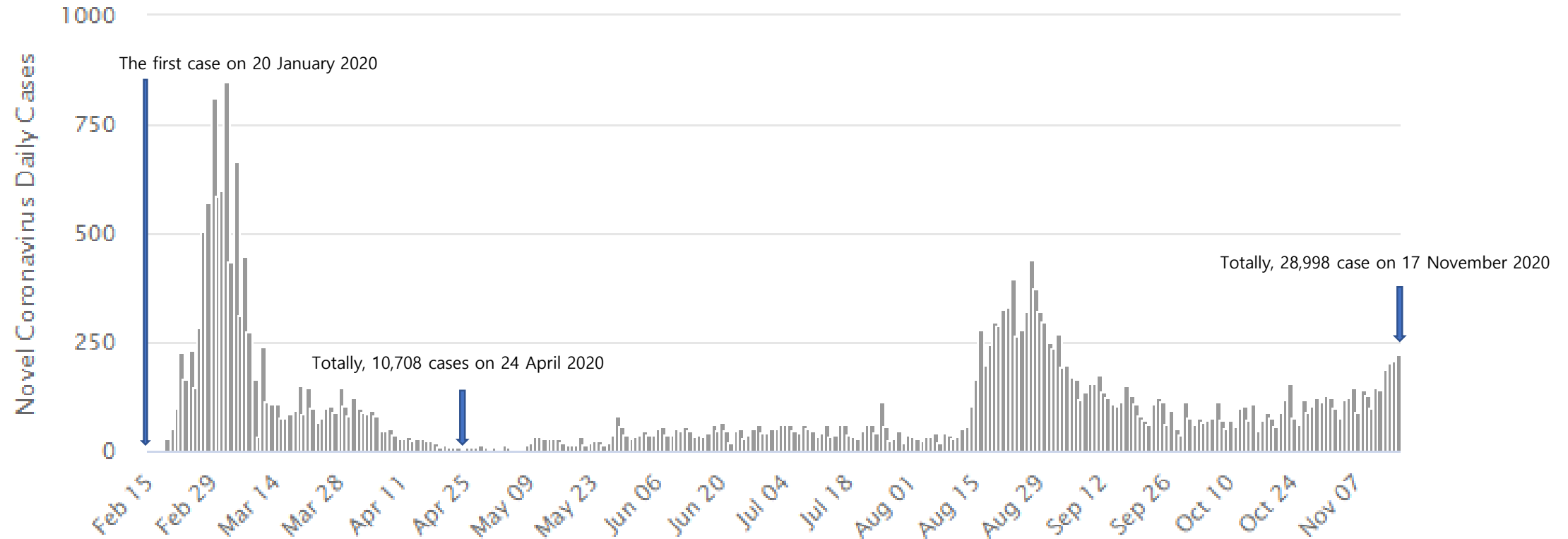**The Korean National Burden of Disease study team**

Introduction

More than 54 million cases on 17 November 2020

Global Situation

Daily | Weekly

54,558,120 confirmed cases

The pandemic declaration on 11 Mar 2020

1,320,148 deaths

Source: World Health Organization

Data may be incomplete for the current day or week.

https://covid19.who.int/

Introduction

https://www.worldometers.info/coronavirus/country/south-korea/

Study objectives

This study aimed to calculate the burden of disease due to COVID-19 between 20 January and 24 April in Korea

Methods

- Incidence based approach

- DALYs = YLDs + YLLs

- YLDs
  - No. of confirmed cases by sex and age
    - KCDC data including foreigners
  - Duration
    - Person-days from confirmed, cured, and death cases
    - Including symptom experiences before a diagnosis
  - Disability weight
    - Considering the disease severity (asymptomatic, mild, moderate, and severe) and anxiety
    - Adopted DW of similar conditions

Methods

- YLL
  - No of death due to COVID-19 by sex and age
    - Data resources: CDC, public media
  - Standard life expectancy for each sex and age
    - Data resource: the 2018 life table by the Statistics Korea

- Population
  - For YLDs, YLLs, and DALYs per 100,000
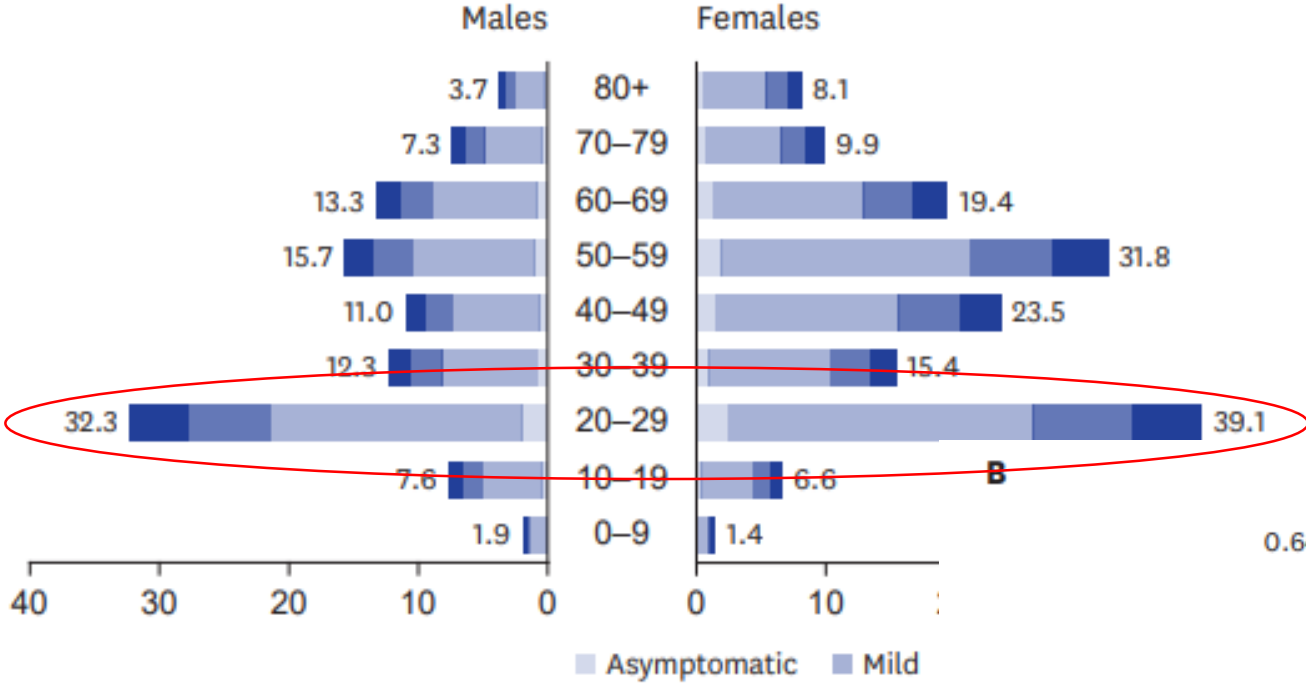 - Data resource: the Statistics Korea demographic survey

Results

Table 1. Parameters used to calculate the years lived with disability

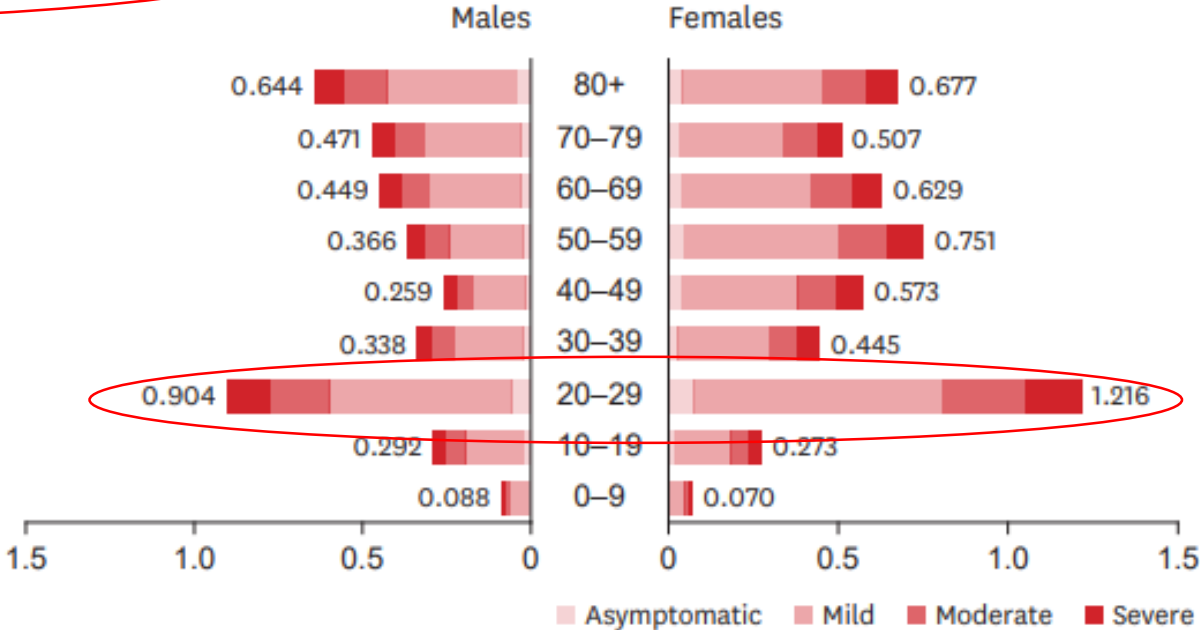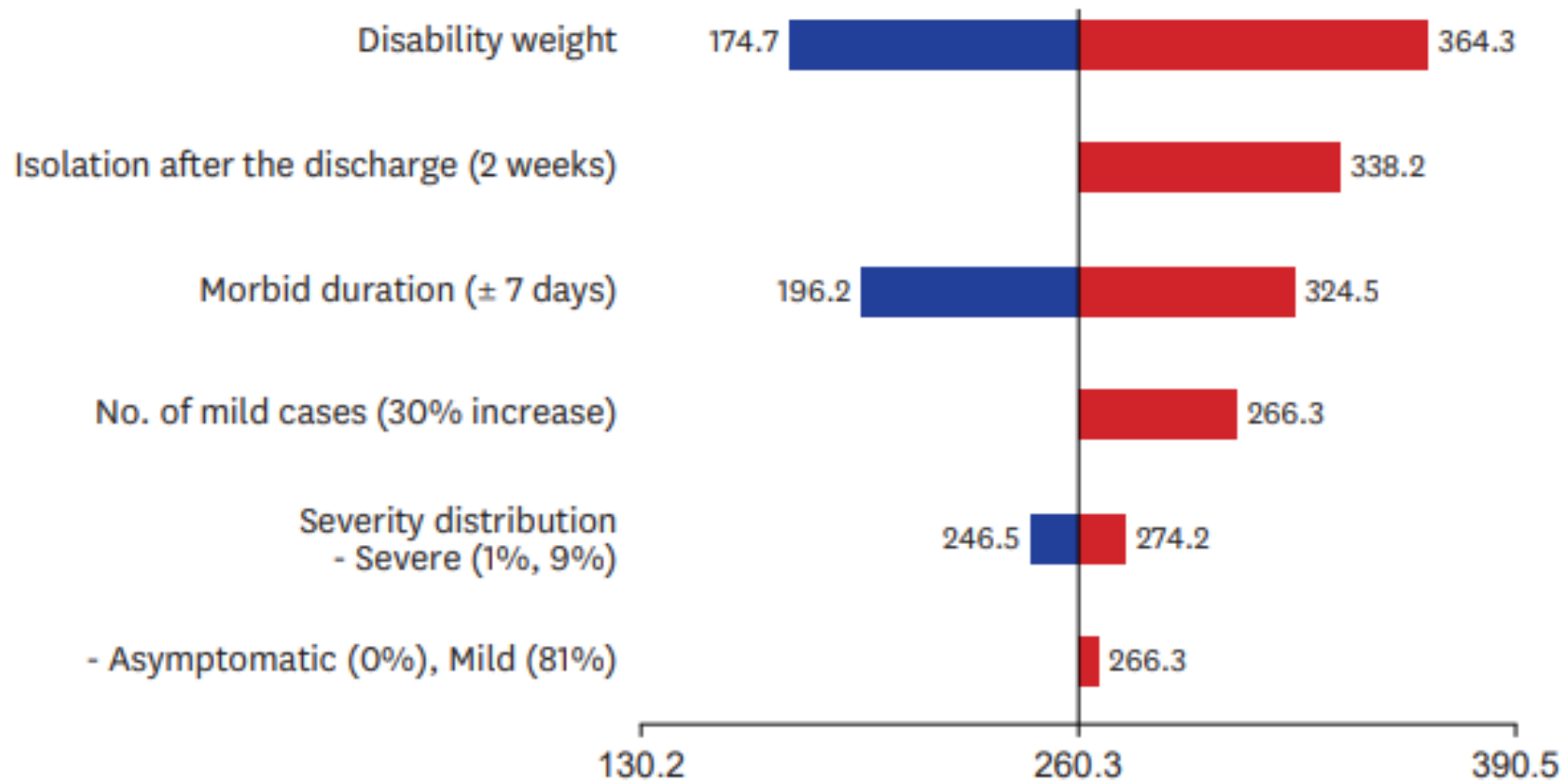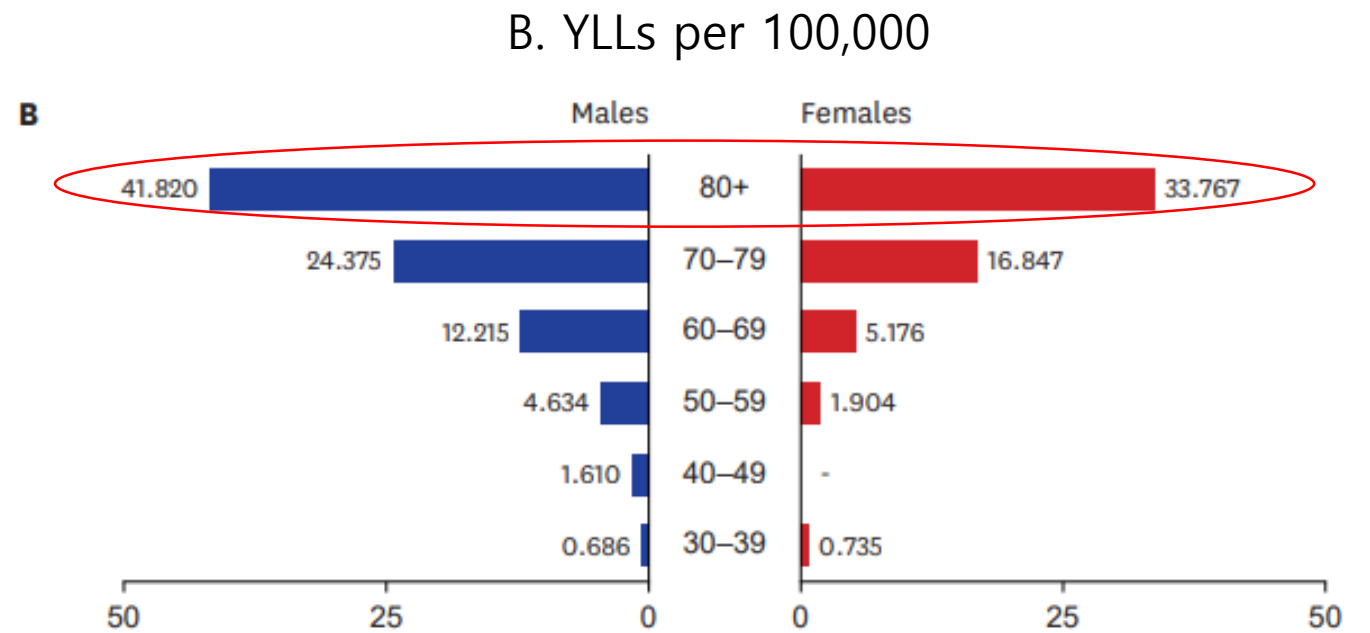| Parameters	Baseline	Sensitivity analysis		Reference
		Lower limit	Upper limit	
No. of cases		-	10%/20%/30% increase	Estimation
Mild	7,603			
All	10,708			
No. of deaths				
All	240	-	10%/20%/30% increase	Estimation
Severity distribution				7
Proportion of mild				
Asymptomatic	10.0%	0.0%	-	
Mild	71.0%	-	81.0%	
Proportion of severe				
Moderate	14.0%	10.0%	18.0%	
Severe	5.0%	1.0%	9.0%	
Disability weight				8
Upper respiratory infection	0.088	0.045	0.154	
Hemophilus influenzae type B pneumonia	0.309	0.215	0.418	
Maternal sepsis	0.825	0.755	0.881	
Dysthymia	0.194	0.122	0.286	
Duration of disease, day	28.4	21.4	35.4	Estimation
Burden of isolation for 2 wk after the discharge, per person	-	-	0.007	7,8

Results
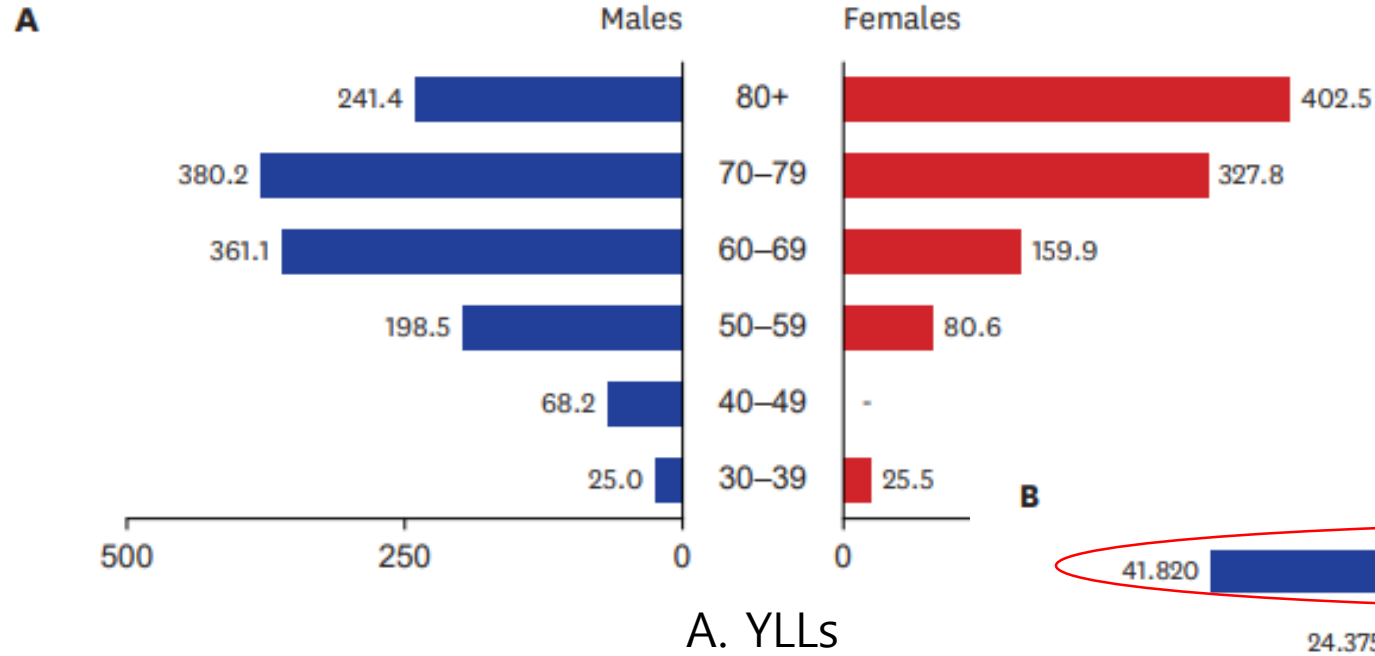

A. YLDs

B. YLDs per 100,000

Results

Results

A. YLLs

B. YLLs per 100,000
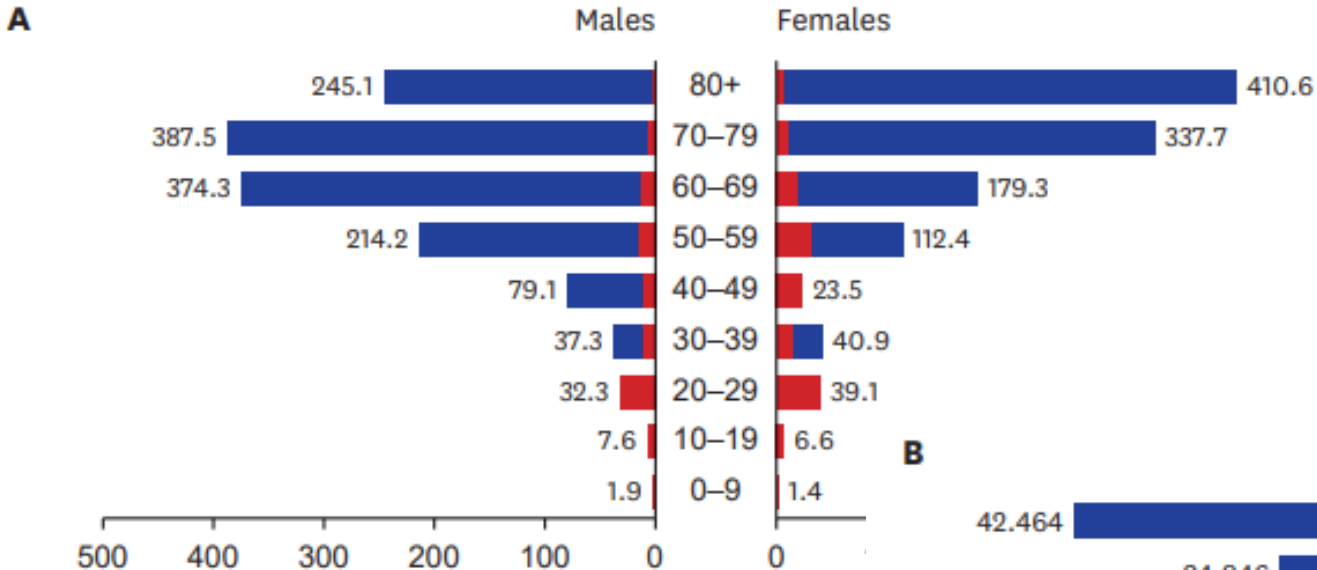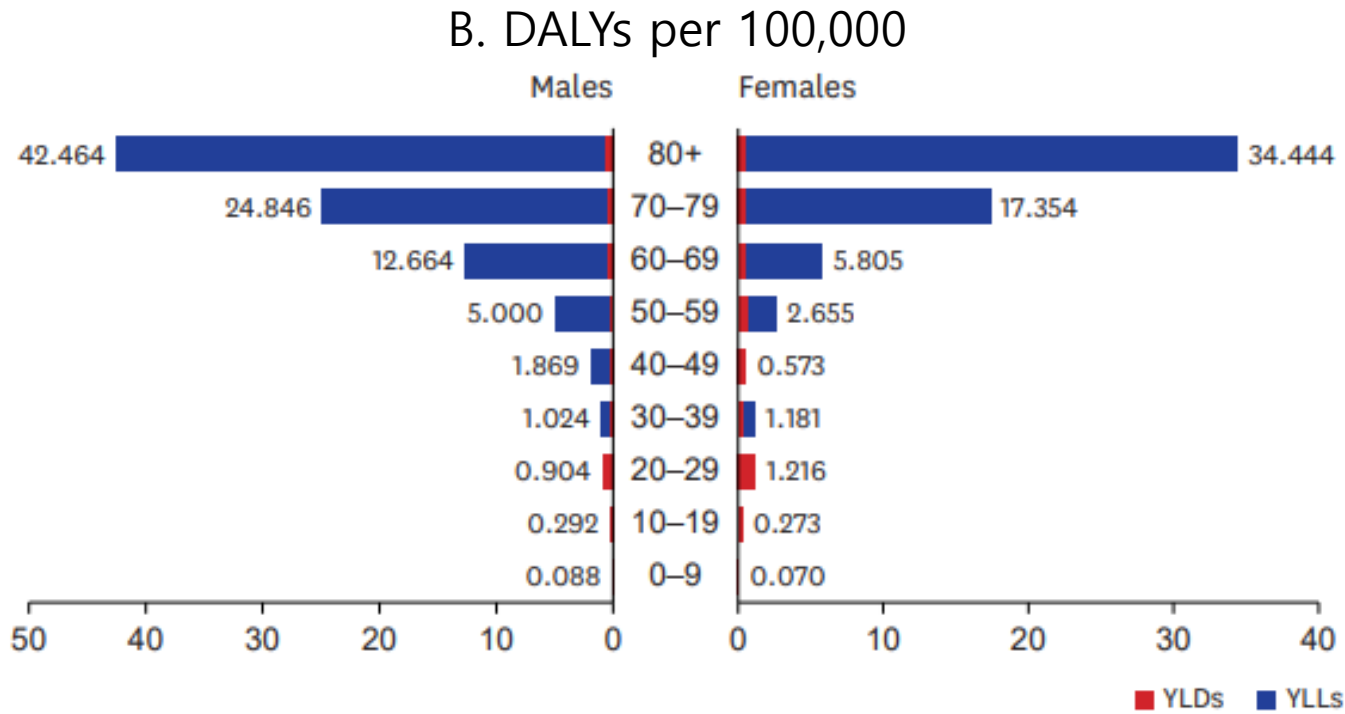
Results

A. DALYs

Totally, 2,531 DALYs by 24 April 2020
- 260 YLDS & 2271 YLLs

Comparison with the results of KNBD 2016
- 0.017% of total DALYs

B. DALYs per 100,000

Conclusions

- This is the first study to characterize the disease burden caused by COVID-19 in Korea using DALYs

- This method also can be applied to other countries where disease notification data are collected by the government

- To control the burden from COVID-19, decision-makers should focus on reducing case fatality for preparing the second wave of COVID-19

Thank you very much for your attention!