

COVID-19-related Work Absenteeism and its Associated Lost Productivity Cost in Germany: A Population-based Study

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INTRODUCTION

- In Germany, 22.5% of those in employment had COVID-19-related time-off work (absenteeism) between March 2020 and July 2022¹.
- COVID-19 related absenteeism in Germany accounted for an average of 9.5 days-off per COVID-19 case¹.
- However, previous research has predominantly focused on the impact on the healthcare working population.² Further, little is known about work absenteeism in those who experienced a COVID-19 related hospitalization as well as how specific groups, such as those at high-risk of severe COVID-19 related outcomes, are affected.

OBJECTIVE

- This study aimed to describe COVID-19 related work absenteeism and absenteeism related costs (indirect costs) in employed adults of working age with a recorded COVID-19 diagnosis in the outpatient and hospital setting in Germany, separately

METHODS

Study design	Retrospective	Observational	Descriptive	Population-based	Real World
Data source	The German Statutory Health Insurance (SHI) claims database was used. This database contains anonymized record-level patient data from over 50 SHIs, covering approximately 6% of the German population, with age and sex distributions representative of the Germany population. ³				
Two non-mutually exclusive study cohorts	Outpatient Cohort: Patients who had a recorded COVID-19 diagnosis within the outpatient setting between April 2020 and December 2021. Due to lack of availability of diagnosis dates for the outpatient cohort, results were reported per diagnosis quarter and for the first COVID-19 diagnosis only. Note: Patients in this cohort may have also received COVID-19 care outside of the outpatient setting (e.g. inpatient care).				
	Hospitalized Cohort: Patients who had a recorded primary or secondary COVID-19 diagnosis at discharge, between April 2020 and December 2022. Results were reported per 90-day episode.				
Eligibility criteria	- Aged ≥18 and <65 years (i.e., working age). - A confirmed COVID-19 diagnosis where the first COVID-19 diagnosis observed within the index period - Continuously insured with an insurance provider within the SHI claims database for a minimum of 12 months prior to the index date.				

Figure 1. Outpatient cohort study design schematic

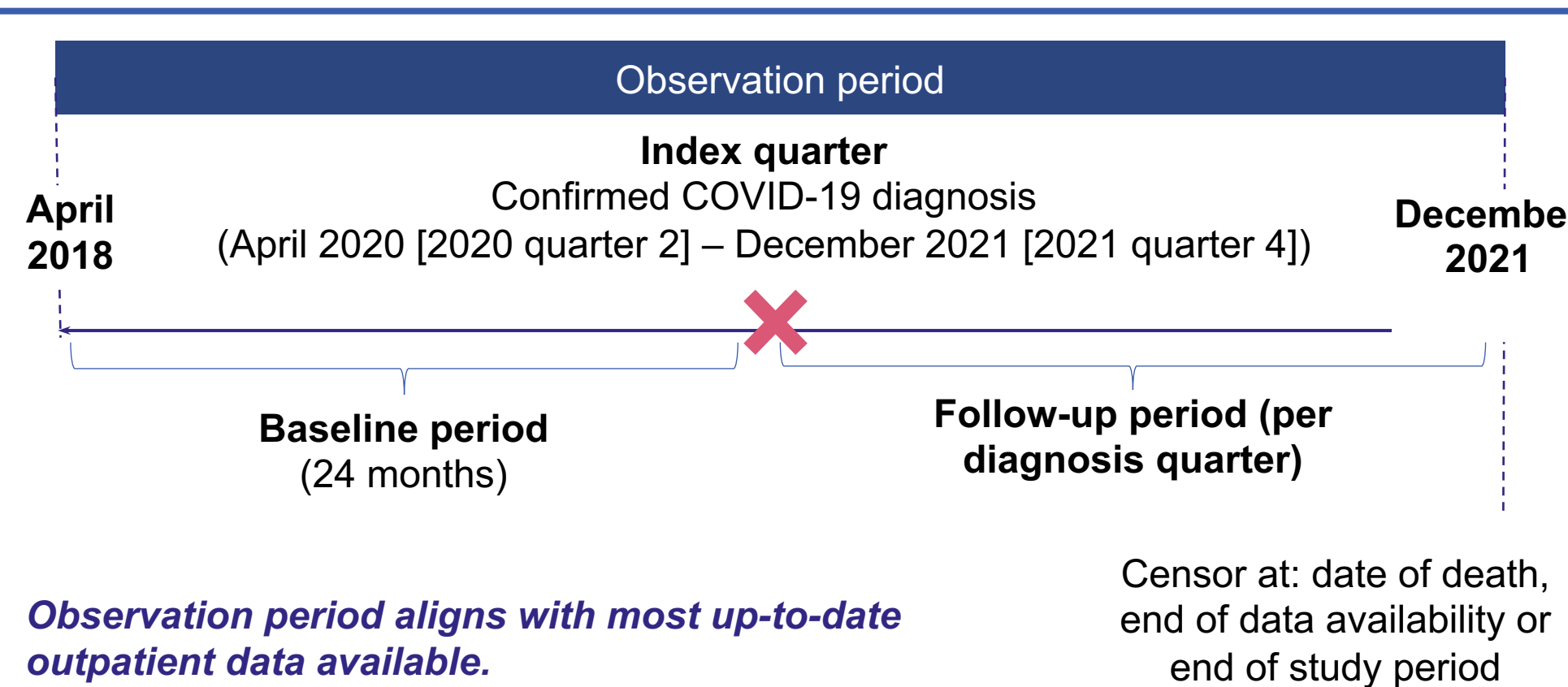
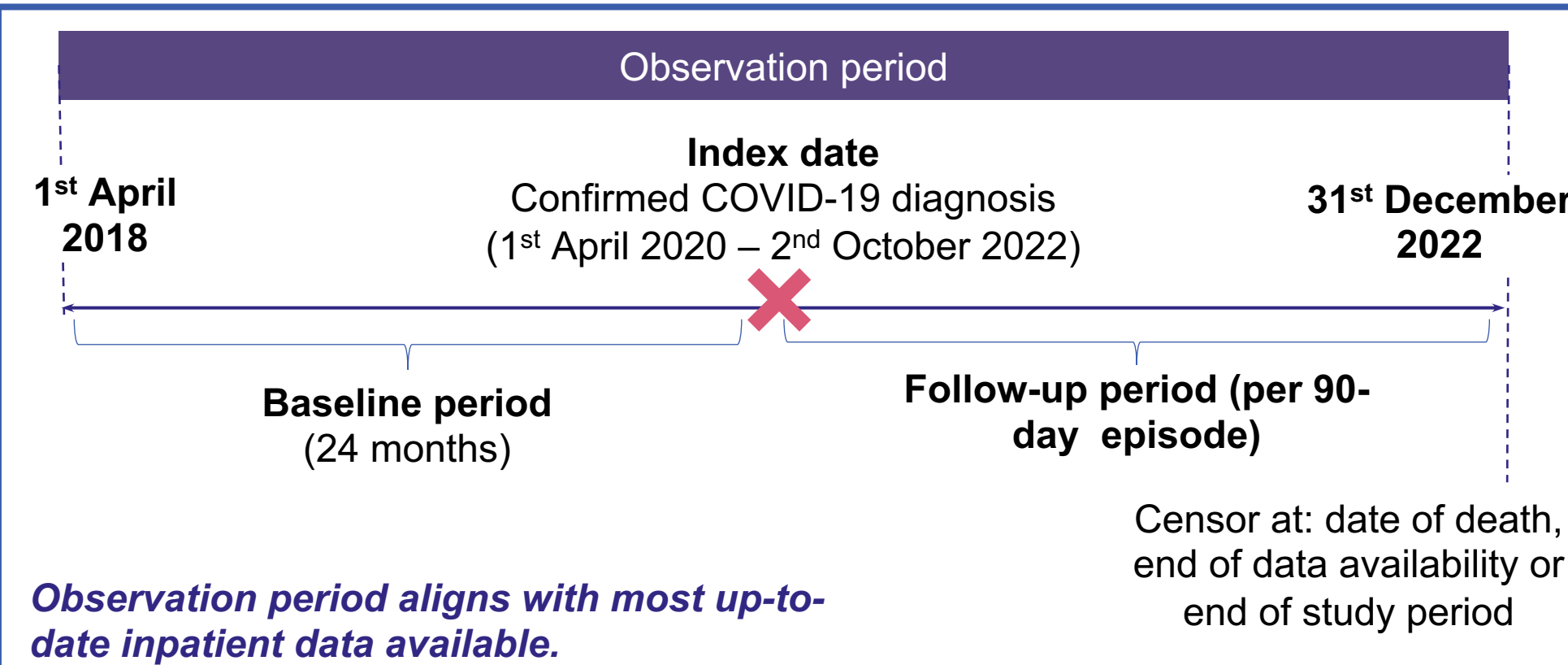


Figure 2. Hospitalized cohort study design schematic



	Sociodemographic and clinical characteristics
Outcomes	Absenteeism - COVID-19 related absenteeism was assessed during the diagnosis quarter (outpatient cohort) and the 90-day COVID-19 episode post-discharge (hospitalized cohort). - The proportion of people with absenteeism and average duration (median [Q1, Q3]) was reported. This was for those with any (≥1 day) absenteeism and using the following cut-offs: >5 days off, which was based on data from unpublished analyses showing mean 18-days off work within 12-months in 2022 >14 days off, which was based on COVID-19 quarantine measures > 42 days off, which was based on long-term sick leave (≥6 weeks), when insurance paid sickness benefits are triggered. Absenteeism-related costs (indirect costs) - Costs were derived using the average German salary
Stratifications	Age Risk of severe COVID-19⁴

RESULTS

- In total, 369,220 COVID-19 patients in employment and of working age (18-64 years) were included in the outpatient cohort, and 20,687 in the hospitalized cohort (Table 1).

Table 1. Baseline sociodemographic and clinical characteristics of COVID-19 patients who were employed and of working age within the outpatient and hospitalized cohorts

	Outpatient (n=369,220)	Hospitalized (n=20,687)
Age (in years) at index		
≥18 and <50, n (%)	260,294 (70.5%)	10,483 (50.7%)
≥50 and <65, n (%)	108,926 (29.5%)	10,204 (49.3%)
Sex (female), n (%)	193,788 (52.5%)	10,230 (49.5%)
Immunocompromised status (immunocompromised), n (%)	4691 (1.3%)	773 (3.5%)
At risk of severe COVID-19, n (%)	309,395 (83.8%)	20,155 (97.4%)
Quan-Charlson Comorbidity Index (CCI), median (IQR)	0 (1)	1 (3)

- In the **outpatient cohort**, approximately half were female, many were younger workers (<50 years), ~1% were immunocompromised, >80% were at risk of severe COVID-19 and the mean QCCI score was 0.6.
- In the **hospitalized cohort**, approximately half were female, ~50% were older workers (≥50 years), 3.5% were immunocompromised, the majority were at risk of severe COVID-19 and the mean QCCI score was 2.1.

ABSENTEEISM IN THE OUTPATIENT COHORT

- Amongst the outpatient cohort, 7.6% experienced any (≥1 day) COVID-19-related absenteeism within the first diagnosis quarter, 5.2% had >5 days-off and 2.3% had >14 days-off.
- Long-term work absenteeism (>42 consecutive days off) was observed in 0.1% of outpatients.

Absenteeism duration in the outpatient cohort (Table 3)

- The overall median COVID-19-related absenteeism duration, per quarter, was 10 days.
- When stratified by age, absenteeism duration was numerically higher in patients aged 50-64 than those aged 18-49 (12 days vs 9 days).
- Patients at risk of severe COVID-19 had higher absenteeism per quarter overall, than those not at risk (at risk: 10 days; not at risk: 9 days).
- Similar patterns were observed when assessing absenteeism using varying cut-offs (i.e., >5 days, >14 days, >42 days).

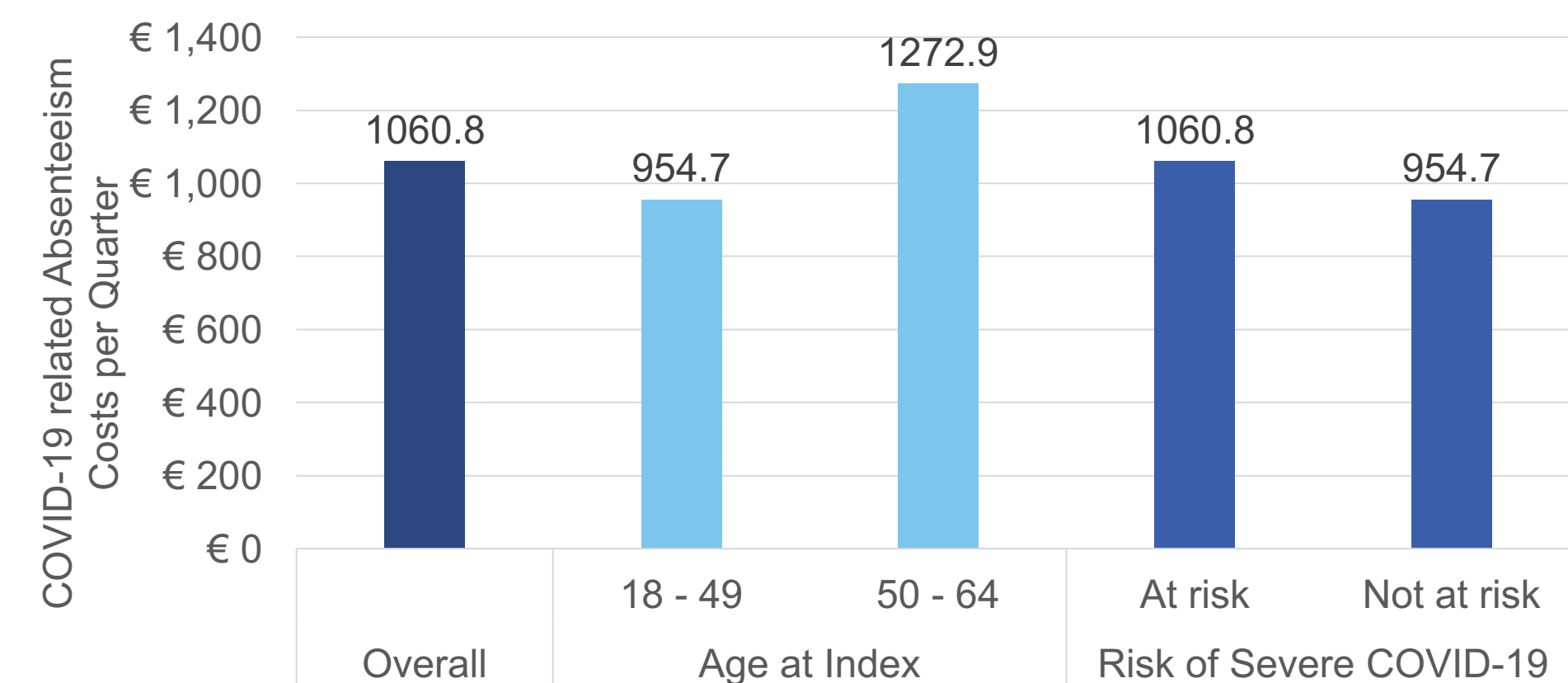
Table 2: Median duration of COVID-19 related absenteeism per COVID-19 diagnosis quarter

Outpatient cohort	Overall	Age at Index		Risk of Severe COVID-19	
Median (Q1, Q3) absenteeism duration (days)		18-49	50-64	At risk	Not at risk
Any absenteeism	10 (5, 15)	9 (5, 15)	12 (5, 17)	10 (5, 15)	9 (5, 14)
>5 days-off	13 (10, 17)	12 (9, 16)	15 (10, 20)	14 (10, 18)	12 (9, 15)
>14 days-off	18 (16, 25)	18 (15, 23)	19 (16, 27)	19 (16, 25)	17 (15, 20)
> 42 days-off	54 (46, 71)	54 (45, 66)	54.5 (46, 73)	54 (46, 70.5)	63 (49, 73.5)

COVID-19 related absenteeism costs in the outpatient cohort (Figure 3)

- In those with any absenteeism (≥ 1 day-off), the median cost of COVID-19-related absenteeism per diagnosis quarter was €1060.8
- COVID-19 related absenteeism costs increased with age (18-49 years: €954.7; 50-64 years: €1272.9).
- Indirect costs were higher in those at risk of severe COVID-19 than those not at risk (at risk: €1060.8; not at risk: €954.7)
- Similar patterns were observed across the stratifications, when using the various absenteeism cut-offs.

Figure 3: Median COVID-19 related absenteeism costs per COVID-19 diagnosis quarter



ABSENTEEISM IN THE HOSPITALIZED COHORT

- Amongst the hospitalized cohort, 7.2% experienced any (≥1 day) COVID-19-related absenteeism within the 90-day COVID-19 episode, 5.8% had >5 days-off and 3.7% had >14 days-off.
- Long-term work absenteeism (>42 consecutive days) was observed in 1.3% of hospitalized patients.

Absenteeism duration in the hospitalized cohort (Table 3)

- The overall median COVID-19 related absenteeism duration, per 90-day episode, was 15 days.
- Hospitalized patients aged 50-64 experienced higher absenteeism per episode, than those aged 18-49 (21 days vs. 11 days).
- When stratified by risk of severe COVID-19, patients at risk had higher absenteeism than those not at risk (16 days vs. 8 days).
- These patterns were observed when assessing absenteeism using the age stratification and the varying cut-offs.

RESULTS

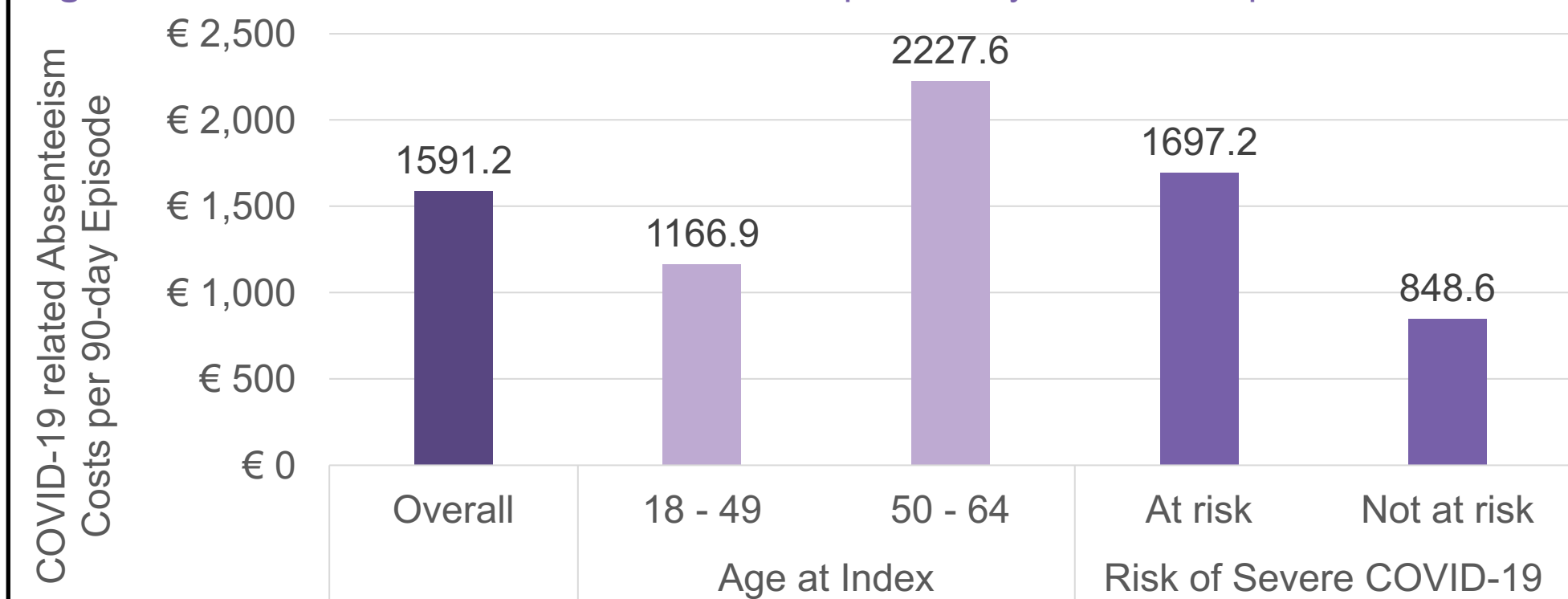
Table 3: Median duration of COVID-19 related absenteeism per 90-day COVID-19 episode

Hospitalized cohort	Overall	Age at Index		Risk of Severe COVID-19	
Median (Q1, Q3) absenteeism duration (days)		18-49	50-64	At risk	Not at risk
Any absenteeism	15 (7, 32)	11 (5, 23)	21 (11, 43.5)	16 (7, 33)	8 (3, 14)
>5 days-off	20 (12, 39)	15 (10, 30)	25 (15, 51)	20 (12, 39)	13 (8.5, 23.5)
>14 days-off	32 (21, 63)	28 (20, 47)	33 (22, 71)	32 (21, 63)	*
> 42 days off	86 (59, 91)	74 (53, 91)	90 (64, 91)	86 (59, 91)	*

COVID-19 related absenteeism costs in the hospitalized cohort (Figure 4)

- In those with any absenteeism (≥1 day-off), the median cost of COVID-19-related absenteeism per 90-day COVID-19 episode was €1591.2.
- COVID-19 related absenteeism costs increased with age (18-49 years: €1166.9; 50-64 years: €2227.6).
- Indirect costs were higher in those at risk of severe COVID-19 (at risk: €1697.2; not at risk: €848.6).
- Similar patterns across stratifications were observed when using the various absenteeism cut-offs.

Figure 4: COVID-19 related absenteeism costs per 90-day COVID-19 episode



CONCLUSIONS

- The hospitalized cohort had a greater proportion of patients that were immunocompromised, at risk of severe COVID-19, and with greater number of comorbidities.
- High COVID-19 related absenteeism costs are primarily driven by older working-age adults, and those at risk of severe COVID-19.
- A greater proportion of patients in the hospitalized cohort and had long-term work absenteeism when compared to the outpatient cohort.
- These data highlight a significant indirect cost associated with COVID-19-related absenteeism in the employed working age population, particularly in those who have been hospitalized.
- Future research should explore the longer-term burden of COVID-19-related absenteeism in the working population.

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