

Estimation of the epidemiological and economic burden of RSV and influenza infections in the hospital setting among adults 60 years and older in France, 2010-2020

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Introduction

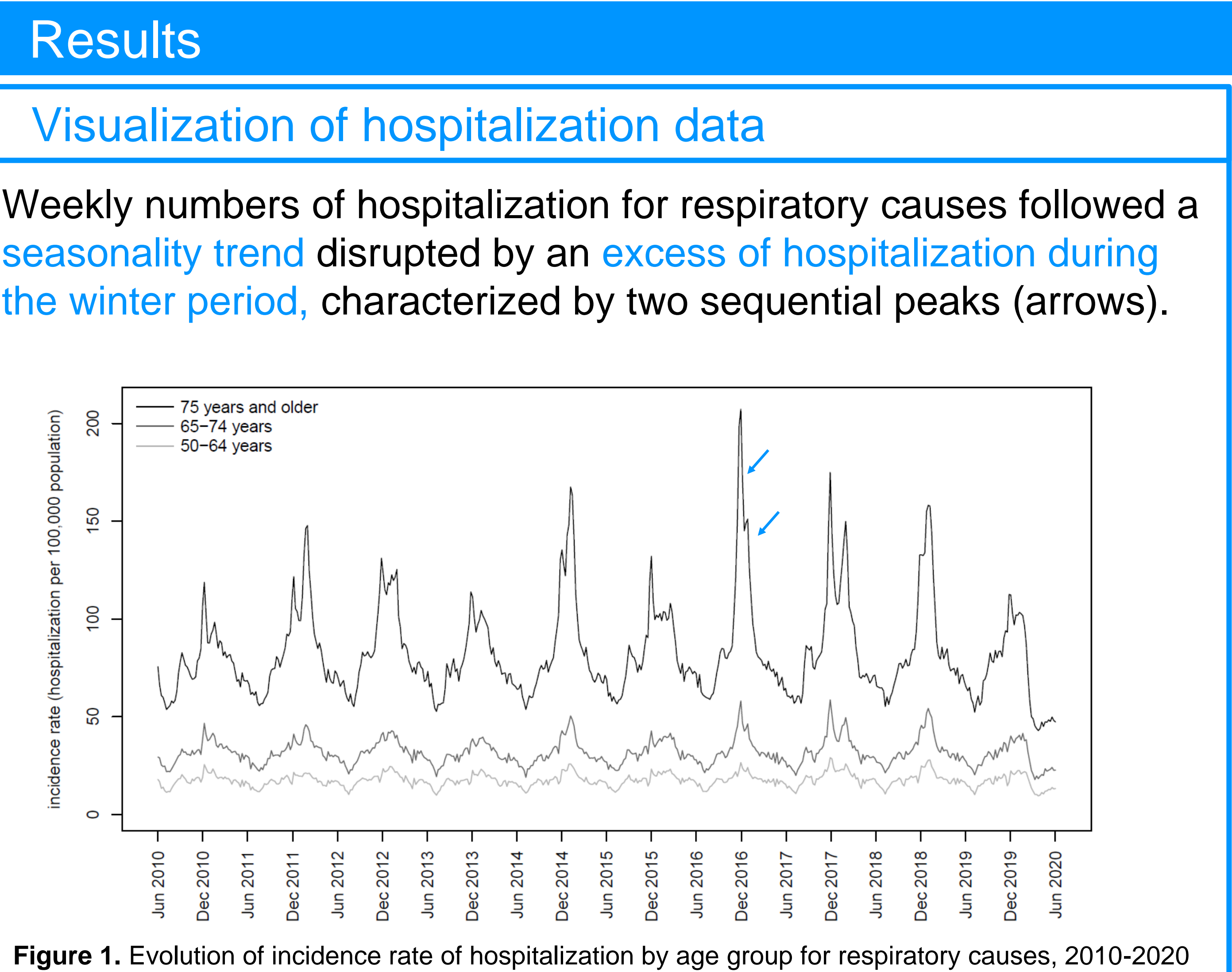
The epidemiology of respiratory syncytial virus (RSV) is poorly described and underestimated among older adults due to nonspecific symptomatology and insufficient testing. A few studies estimated the incidence of RSV using a model-based approach^{1,2}. However, this analysis has never been performed in France.

The objectives of this study were to estimate the incidence of hospitalized RSV infection and its associated economic burden in adults 60 years and older in France, and to compare it with influenza.

Methods

The numbers of hospitalizations for respiratory causes (J00-J99) coded as primary diagnoses were extracted from the national hospital discharge database. Poisson cyclic regressions integrating RSV and influenza circulations, time trends, and seasonal terms were used to estimate the weekly number of age-specific hospitalizations attributable to RSV and influenza from July 2010 to February 2020.

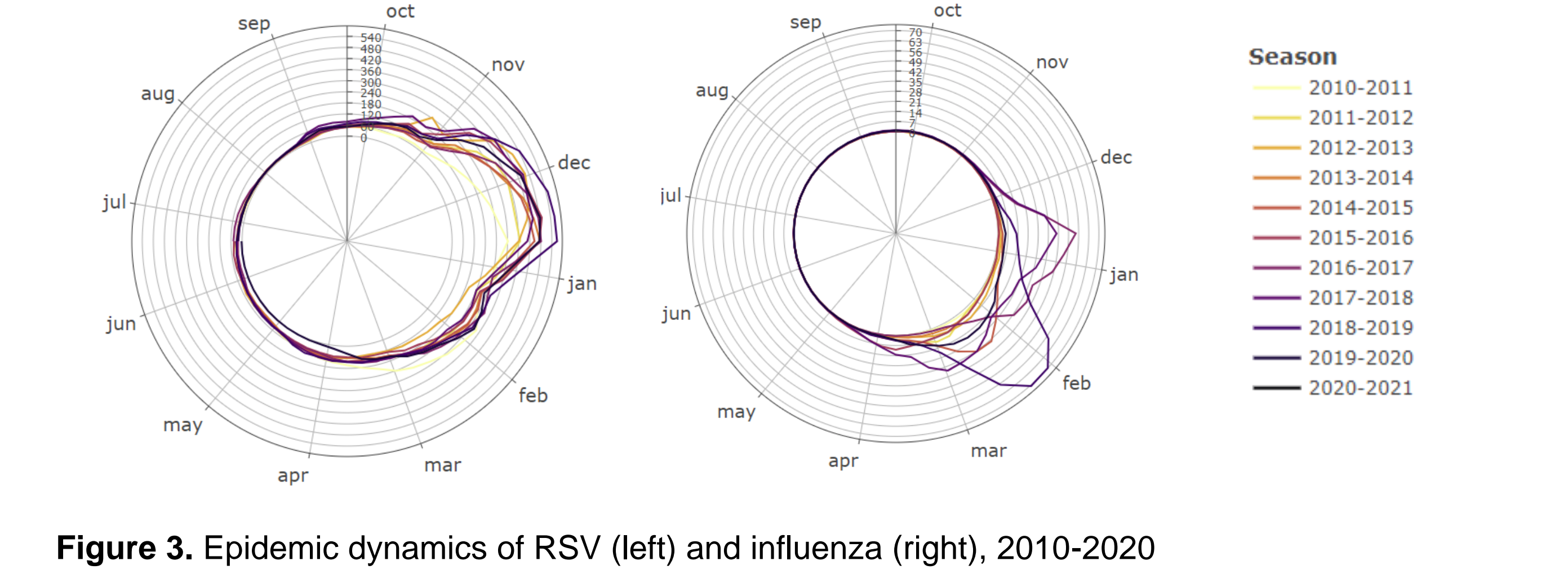
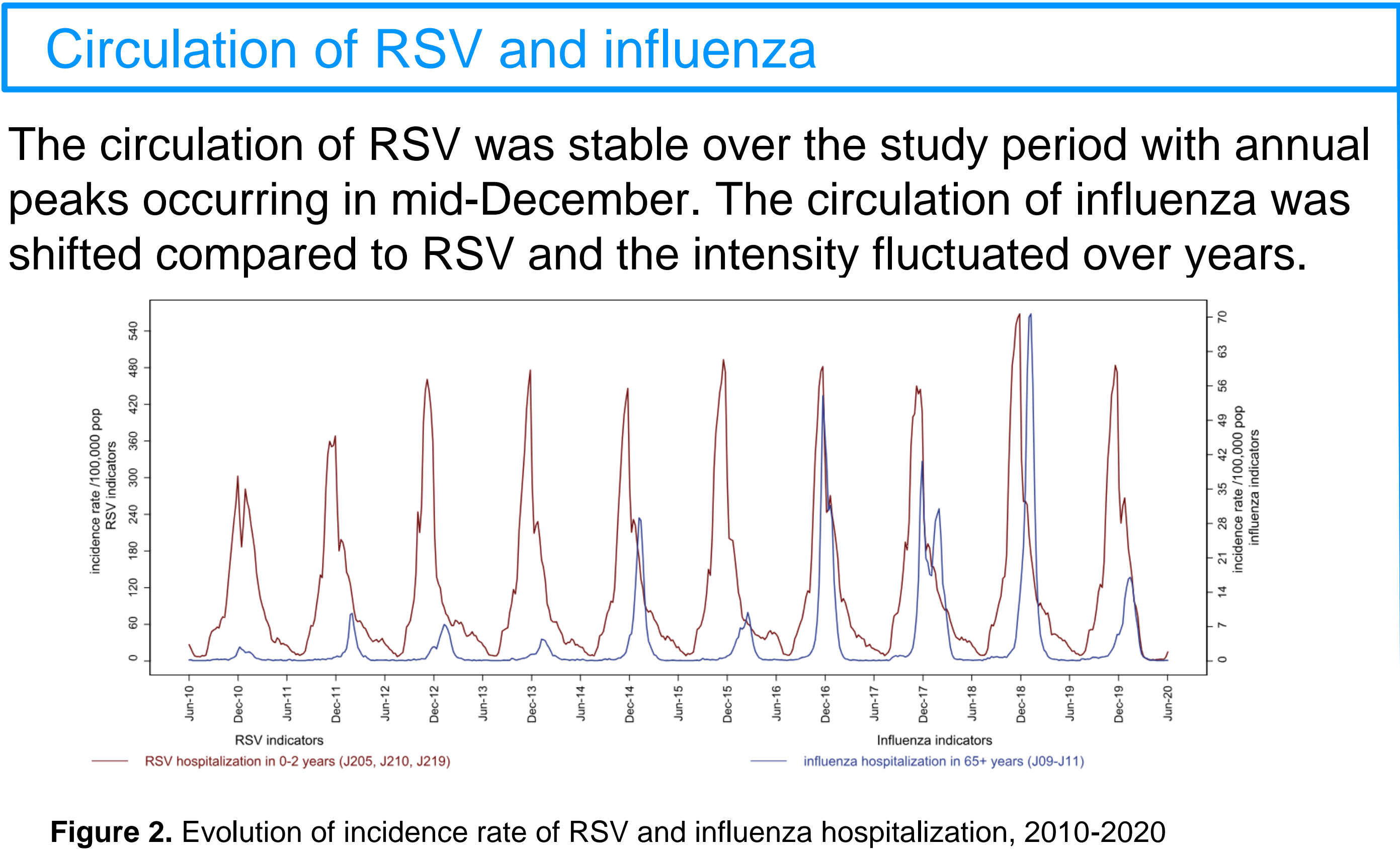
Patient characteristics and medical costs were collected from RSV and flu laboratory-positive patients from 2015 to 2019. The average costs were applied to the estimated incidences.



Estimation of incidence rate and costs

Over the study period, the average annual hospitalization rates attributable to RSV and influenza in adults 60 years and older were 127 [95%CI 124;157] and 153 [95% CI 149;157] hospitalizations per 100,000 inhabitants for respiratory causes, representing 22,147 and 26,672 yearly hospitalizations respectively. The associated cost was estimated at 118 and 129 M€ respectively.

		RSV	Influenza
		n	n
60 - 64 years	n	1,243 [1131 ; 1346]	2,353 [2250 ; 2450]
	n/100,000	31.3 [28.5 ; 33.9]	59.2 [56.6 ; 61.6]
	Length of stay (day)	8.0 (4.0; 14.0)	6.0 (2.0; 11.0)
	Stay in ICU (%)	37.3	29.9
	In-hospital death (%)	5.0	4.5
	Mean cost of stay* (€)	6,592 (7,955)	5,624 (9,085)
65 - 74 years	Cost* (M€)	8,2 [7,4 ; 8,9]	13,2 [12,6 ; 13,8]
	n	5,696 [5,467 ; 5,913]	8,007 [7,728 ; 8,280]
	n/100,000	93 [90 ; 97]	94 [92 ; 96]
	Length of stay (day)	8.0 (5.0; 15.0)	7.0 (3.0; 13.0)
	Stay in ICU (%)	35.8	26.6
	In-hospital death (%)	6.5	6.0
75 years and older	Mean cost of stay* (€)	6,239 (6,901)	5,499 (7,675)
	Cost* (M€)	35,5 [34,1 ; 36,9]	44,0 [42,5 ; 45,5]
	n	15,208 [14,952 ; 15,422]	16,312 [16,014 ; 16,602]
	n/100,000	256 [252 ; 259]	268 [265 ; 271]
	Length of stay (day)	9.0 (6.0; 15.0)	8.0 (4.0; 14.0)
	Stay in ICU (%)	19.0	13.4
	In-hospital death (%)	9.1	8.5
	Mean cost of stay* (€)	4,859 (4,375)	4,413 (3,899)
	Cost* (M€)	73,9 [72,6 ; 74,9]	72,0 [70,7;73,3]



Conclusion

The initial results demonstrated that RSV is responsible for a hospital burden similar to influenza infection among adults 60 years and older, for both incidence and economic consideration. This study focused on the respiratory cause; the burden is probably underestimated since it does not include the cardiovascular cause.

The average cost of stays associated with RSV is higher than that for influenza, probably because RSV is tested less in general, but is tested more in severe cases (transfer to ICU).

This study shows the need for widespread virological testing and demonstrates that implementing prevention policies for RSV in addition to influenza in France, may have a major impact in terms of public health and economics.

References

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2. Ashley Sharp et al., Estimating the burden of adult hospital admissions due to RSV and other respiratory pathogens in England, Influenza Other Respir Viruses (2022)

