

Material suplementario: Análisis de supervivencia sobre el tiempo de permanencia en Unidades de Cuidados Intensivos para pacientes de COVID-19 en Cali, Colombia

Autor 1¹, Autor 2², and Sergio A. Barona M.³

^{1,2}Departamento de Ciencias Naturales y Matemáticas, Pontificia Universidad Javeriana — Cali.

³Departamento de Economía, Pontificia Universidad Javeriana — Cali.
Email ids

1. Análisis descriptivo

Cuadro S1: Non-parametric Mann–Whitney U test for two independent samples

	<i>Sex</i>		<i>Chronic</i>	
	<i>W</i>	<i>p-value</i>	<i>W</i>	<i>p-value</i>
Age	421358	0,2438	358133,5	2,07e−20***
ICU LoS	426576,5	0,4673	945516	0,0000***
Time from SO to ICU	459781,5	0,0385	470060	0,8274

Null hypothesis: The two populations have identical distributions. *ICU LoS* = Intensive Care Unit Length of Stay. *Time from SO to ICU* = Time from Symptoms Onset to ICU admission. *W* = Test statistic. Sex: 1 if female; 0 if male. Chronic: 1 if $T \geq 21$; 0 if $T < 21$. *** $p - value < 0,01$, ** $p - value < 0,05$, * $p - value < 0,1$.

Cuadro S2: Shapiro-Wilk normality test for continuous variables

	<i>Skewness</i>	<i>Kurtosis</i>	<i>W</i>	<i>p-value</i>
Age	-0,7328	3,3296	0,9623	3,98e-18***
ICU LoS	2,2575	8,4785	0,7129	1,59e-42***
Time from SO to ICU	2,8088	15,3450	0,7498	1,37e-44***

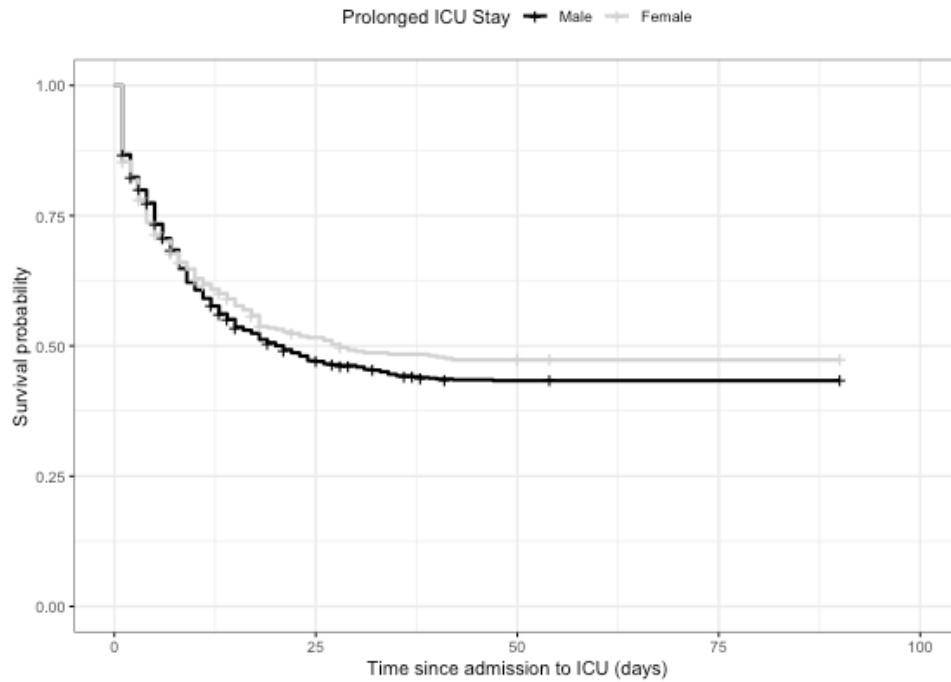
Null hypothesis: the sample comes from a Gaussian distribution. *ICU LoS* = Intensive Care Unit Length of Stay. *Time from SO to ICU* = Time from Symptoms Onset to ICU admission. *W* = Test statistic. ****p-value* < 0,01, ***p-value* < 0,05, **p-value* < 0,1.

Cuadro S3: Chi-square (χ^2) test of independence

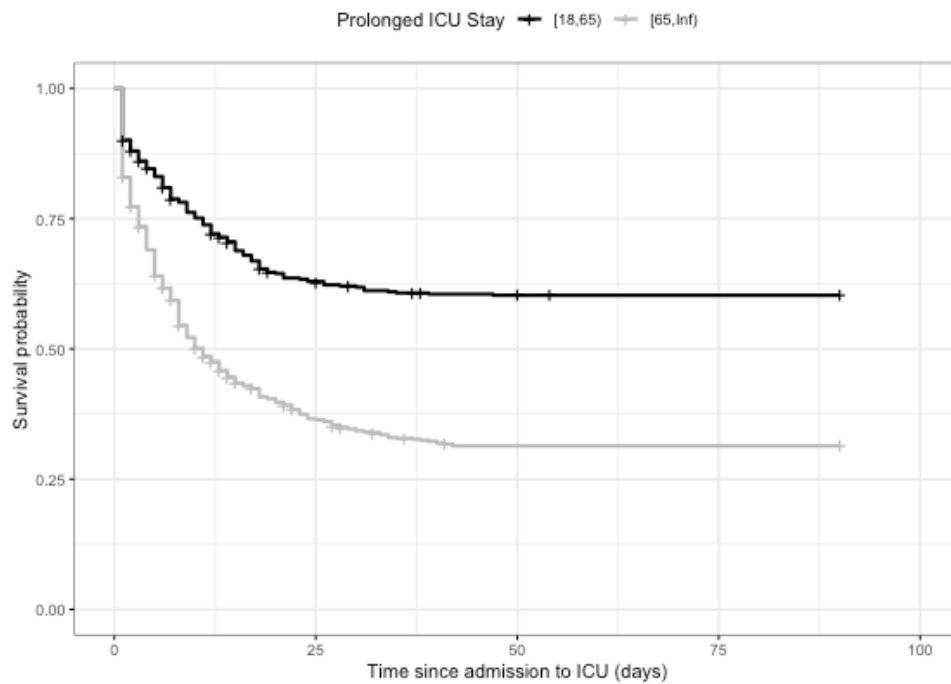
Z_1	Z_2	χ^2	<i>df</i>	<i>p-value</i>
Sex	Chronic	0,007858513	1	0,9293615
Sex	Outcome	4,18183966	2	0,1235734
Chronic	Outcome	327,9942	2	0,000***

Null hypothesis: the two variables are independent. Sex: 0 if female; 1 if male. Chronic: 1 if $T \geq 21$; 0 if $T < 21$. Outcome: 0 if censored; 1 if discharged alive; 2 if died from COVID-19. ****p-value* < 0,01, ***p-value* < 0,05, **p-value* < 0,1. It is found that Chi-square (χ^2) test of independence and Fisher's exact test yield the same conclusion.

2. Estimador no-paramétrico de Kaplan-Meier



(a)



(b)

Figura S1: Kaplan-Meier survival curves of critically ill patients with COVID-19. Cumulative survival rate at 90 days for study variables such as (a) sex (log-rank test: $p = 0.12$) and (b) age (log-rank test: $p = 0.000$). Tick marks indicate censored data.

3. Modelo paramétrico

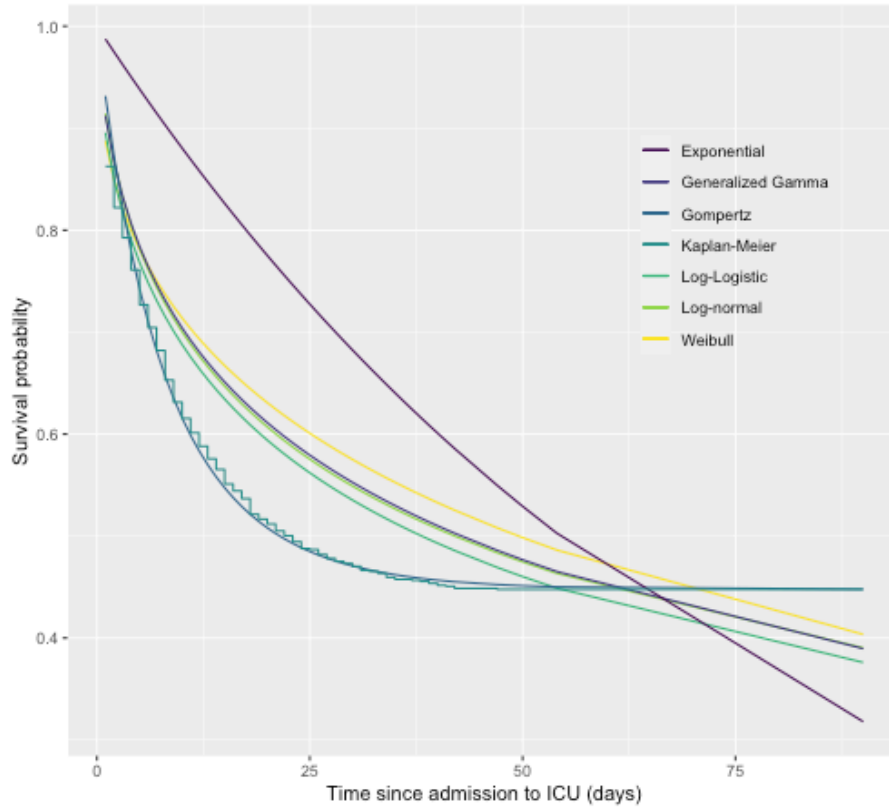


Figura S2: Parametric survival models for critically ill patients with COVID-19. Cumulative survival rate a 90 days. Parametric estimates are compared with the non-parametric estimate, *i.e.*, Kaplan-Meier estimator. (The step function corresponds to the Kaplan-Meier non-parametric estimator).

Cuadro S4: Akaike Information Criterion and Bayesian Information Criterion for Parametric Model Selection

	AIC	BIC	LRT
Weibull	5667.16	5677.16	-2831.58
Log-normal	5506.72	5516.73	-2751.36
Generalized Gamma	5533.54	5548.54	-2763.77
Log-logistic	5564.40	5574.40	-2780.20
Gompertz	5208.52	5218.60	-2602.26
Exponential	6352.83	6357.83	-3175.41

AIC = Akaike Information Criterion. BIC: Bayesian Information Criterion (or Schwarz Criterion). LRT: Log-likelihood Ratio Test.

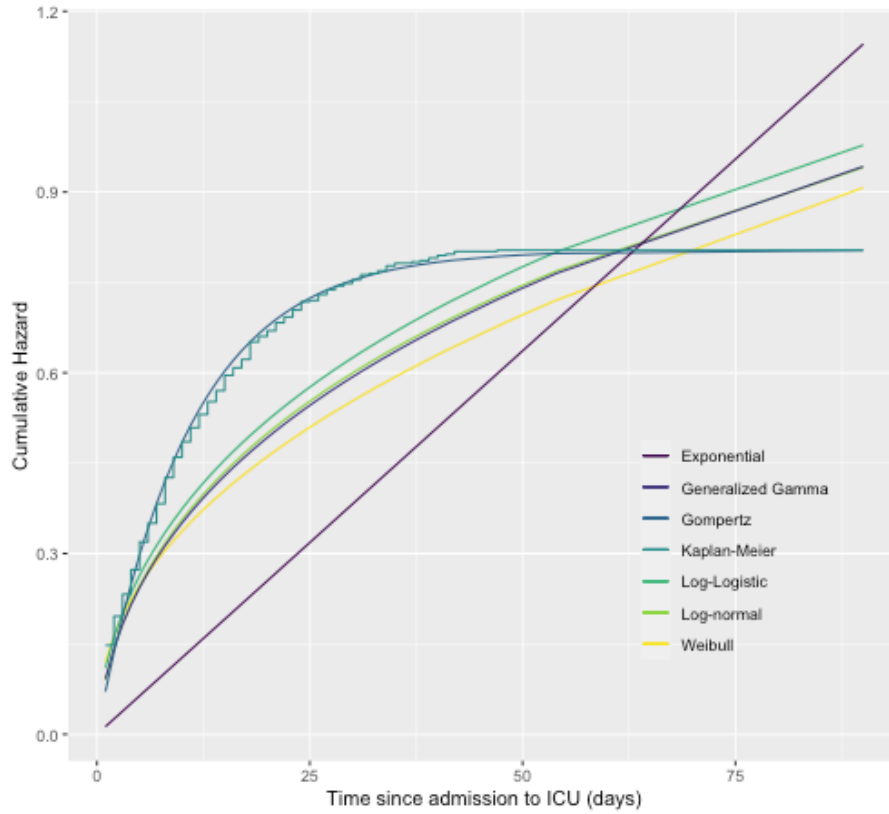


Figura S3: Parametric cumulative hazard models for critically ill patients with COVID-19. Cumulative hazard rate. Parametric estimates are compared with the non-parametric estimate, *i.e.*, Kaplan-Meier estimator. (The step function corresponds to the Kaplan-Meier non-parametric estimator).

4. Modelo de riesgos proporcionales de Cox

Cuadro S5: Multivariate Cox model for risk factors associated with ICU mortality of critically ill patients with COVID-19 (Age [years] as a continuous variable)

	<i>HR (95 % CI)</i>	<i>p-value</i>
<i>Sex</i> (Male vs. Female)	1.0857 (0.9164 – 1.2862)	0.3417468
<i>Age, an additional year</i>	1.0345 (1.0279 - 1.0412)	< 0,001***

HR = Hazard Ratio. *95 % CI* = Confidence Intervals at the 95% confidence level. *P-value* = P-value of Wald's test statistics. ****p-value* < 0,01, ***p-value* < 0,05, **p-value* < 0,1

Cuadro S6: Multivariate Cox model for risk factors associated with ICU mortality of chronic critically ill patients with COVID-19 (Age [years] as a continuous variable)

	<i>HR (95 % CI)</i>	<i>p-value</i>
<i>Sex</i> (Male vs. Female)	1.1564 (0.6926 - 1.9309)	0.5785
<i>Age, an additional year</i>	1.0478 (1.0265 - 1.0695)	< 0,001***

HR = Hazard Ratio. *95 % CI* = Confidence Intervals at the 95 % confidence level. *P-value* = P-value of Wald's test statistics. ****p - value* < 0,01, ***p - value* < 0,05, **p - value* < 0,1

Cuadro S7: Multivariate Cox model for risk factors associated with ICU mortality of non-chronic critically ill patients with COVID-19 (Age [years] as a continuous variable)

	<i>HR (95 % CI)</i>	<i>p-value</i>
<i>Sex</i> (Male vs. Female)	1.0966 (0.9163 - 1.3124)	0.3145
<i>Age, an additional year</i>	1.0298 (1.023 - 1.0366)	< 0,001***

HR = Hazard Ratio. *95 % CI* = Confidence Intervals at the 95 % confidence level. *P-value* = P-value of Wald's test statistics. ****p - value* < 0,01, ***p - value* < 0,05, **p - value* < 0,1