

# Insurance Health companies of a southern region of Colombia: Company behavior and survival 2012-2016



This article describes the behavior of insurance health companies registered during 2012 to 2016, from the state of Huila - Colombia. A retrospective observational descriptive study was performed; the source of information was a national database "Registro Único Comercial y Social - RUES"; taking into account only registered health insurance companies, their economic activity, size and location. It was found an inverse association between company size and survival, and a direct association between size and number of companies that are registered under a specific economic activity. This information can be useful for future projects, strategies, interventions for new and established health insurance companies.

**Keywords:** business success, health companies, health sector, business behavior

## Introduction

Social ministry of Colombia has changed the health system significantly and also the structure for health workers. Before the Law 100 of 1991, there were three subsystems: social security, public and private health [1].

The social security included the Social Security Institute (SSI), which provided its service throughout the network of public hospitals, and the private subsystem which covered groups that had prepaid or private medicine plans [1-2].

Law 100 of 1993 incorporated a new competition based schemes which regulated market and price mechanisms with the goal of increasing coverage, improving efficiency / quality of services, throughout the adoption of an obligated health insurance plans and a regulated competition scheme [3].

These changes in the health system allowed the creation of the Health Promoter Companies (HPC), the outsourcing of the health service to the Health Care Institutes (HCI), leading to formation of the Small and Medium companies. Although this reform has influenced the formation of many small and medium size companies [4], this puts a big uncertainty for survival in the market National.

Several studies, in different countries, show that 50% or more of those companies created can survive for at least five years [5-7]. In fact, in OECD countries, about 20-40% of new firms leave their operation within the first two years of life and only 40 to 50% survive beyond the seventh year [8,9]. There are various factors that determine the company survival: economic environment and capacity to innovate [10-15], growth rate, size and age of companies [16-20], level of concentration and reactivity to market changes [21,22] and making strategic decisions [23,24].

In Latin America there are a similar behavior, according to the national association of commerce of Latin America survival for companies is defined when 50% or more of those companies created can survive for at least five years. In Colombia only forty percent remain open [25] evidencing that a low company survival [7,26].

However, in Colombia the determinants for company survival are not clear. There have been made several studies about company survival in certain cities of Colombia [27-29], but most of them excludes health companies and have not reached to solid conclusions [30], and have very singular inclusion criteria [31]. Although these studies have established a baseline in Colombia,

Cristian Rincón-Guio<sup>1</sup>,  
Ana María Mañosa  
Ramírez<sup>2</sup>,  
Jesús Roa Polanía<sup>3</sup>,  
Katherin Torres P<sup>4</sup>,  
José D. Charry<sup>5\*</sup>

<sup>1</sup>Department of Engineering,  
Fundación Universitaria Navarra-  
Uninavarra, Colombia

<sup>2</sup>Department of Health Science,  
Fundación Universitaria Navarra-  
Uninavarra, Colombia

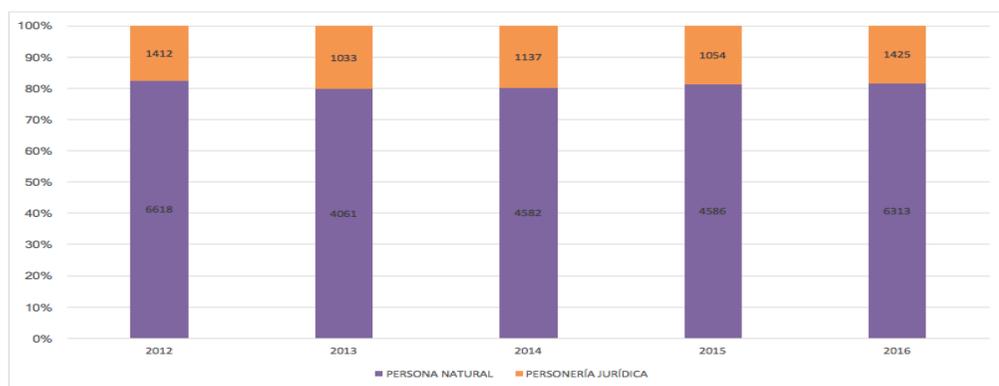
<sup>3</sup>Research Department, Fundación  
Universitaria Navarra- Uninavarra,  
Colombia

<sup>4</sup>Department of Humanities and Social  
Science, Fundación Universitaria  
Navarra- Uninavarra, Colombia

<sup>5</sup>Research Department, Fundación  
Universitaria Navarra- Uninavarra,  
ColombiaA

\*Author for correspondence:

danielcharry06@gmail.com



**FIGURE 1. Type of company registration by period.**

they cannot be considered current since economic conditions change rapidly over time.

Regarding the health sector, the dynamics of these companies are not yet established. Therefore, the objective of this study is to describe the survival factors of health companies that were included in the National Market Register between 2012 to 2016 in a southern state of Colombia.

## Methods

A retrospective observational descriptive study was performed; the source of information was a national database “Registro Único Comercial y Social - RUES”; taking into account only registered health insurance companies between 2012 to 2016, their economic activity, size and location.

Data analysis was restricted to companies with a legal status and registered under human health care and social assistance as their main economic activity. The analysis was performed for the Uninavarra Research Center team using the statistical program IBM-SPSS® 23 version.

Central tendency and dispersion measurements were used for the quantitative variables; in addition, bivariate analysis was performed to correlate economic activity, size and location. Various statistical confidence tests were applied, such as spearman Rho and Chi2 (x2).

## ■ Inclusion and exclusion criteria

Company creation date was determined with the registration database and company death whenever it disappears from database, that could be for cancellation of the registration or due to no new updates of its registration in the

following years. Every missing data information of the companies was not considered for study.

## Results

Between 2012 to 2016 a total of 51 114 companies were registered, 63.04% of those were subscribed for a natural or legal person. From these productive units 18.81% were legal entities, and the constitution average was 18.97%, with constitution means ranged between 17% to 20% (**FIGURE 1**).

For the period of 2016 a total of 72.61% of companies were found registered and with an updated commercial register. Between 2012 - 2015 period 64.19% (n=2 976) updated their commercial registry, conforming 67.62% of the total active companies for 2016 (**TABLE 1**).

Data showed that during 2012-2016 the updating of the merchant registry was found to be inversely proportional with the time of creation. Updating for the first period companies was 41, 50% (n=586), for the second period 66,51% (n=687), for the third period was 73,97% (n=1137) and for the fourth was 81,78% (n=862) (**TABLE 1**).

During the study period, 67.94% of the companies registered were created in the northern region of the state, of which 71.78% were still active at the end of 2016, additionally presenting the lowest renovation rate compared to the other zones of the state, the other regions of the state presented different behavior (**TABLE 2**).

At the end of 2016, 70, 32% of the companies registered had also another economic activity registered. The most common was other

**Table 1. Updating of the merchant registry.**

Registration year	Registered	Renewed and registered in 2016	% renewed and registered in 2016 per period	% renewed and registered to 2016 on the total
2012	1412	586	41.50%	13.32%
2013	1033	687	66.51%	15.61%
2014	1137	841	73.97%	19.11%
2015	1054	862	81.78%	19.59%
2016	1425	1425	100%	32.38%
Grand Total	6061	4401	72.61%	100%

**Table 2. Geographical distribution of companies registered during 2012 to 2016 periods among the state of Huila-Colombia.**

Subregion	Registered	Renewed and Registered in 2016	% Registered	% renewed and Registered by area	% renewed and registered with respect to the total
Center	605	435	9.98%	71.90%	9.88%
North	4118	2956	67.94%	71.78%	67.17%
West	445	341	7.34%	76.63%	7.75%
South	893	669	14.73%	74.92%	15.20%
Grand Total	6061	4401	100%	72.61%	100%

**Table 3. Distribution of companies by size and economic sector.**

Section	Description	Company size*				Total	Participation by sector (%)
		Large	Medium	Micro	Small		
A	Agriculture, livestock, hunting, forestry and fishing		4	421	12	439	9.98%
B	Exploitation of mines and quarries			40	2	43	0.98%
C	Manufacturing industries		1	238	22	262	5.95%
D	Water distribution; evacuation and treatment of wastewater, waste management and environmental sanitation activities		1	48		51	1.16%
F	Building	2	8	445	39	496	11.27%
G	Wholesale and Retail; repair of motor vehicles and motorcycles	1	3	596	42	647	14.70%
H	Transportation and storage			109	15	124	2.82%
I	Accommodation and food services			112	6	121	2.75%
J	Information and communications			118		118	2.68%
K	Financial and insurance activities			58	3	62	1.41%
L	Real estate activities			58	7	65	1.48%
M	Professional, scientific and technical activities		1	478	9	491	11.16%
N	Administrative and support services activities		1	161	11	174	3.95%
Ñ	Public administration and defense; compulsory social security plans			35	1	38	0.86%
O	Education		1	58	2	64	1.45%
P	Human health care and social assistance activities	1	1	140	12	154	3.50%
Q	Artistic, entertainment and recreation activities		3	23	1	27	0.61%
R	Other service activities			945	4	1022	23.22%
T	Without activity			3		3	0.07%
	Grand Total	4	24	4086	188	4401	100%

\*The total value of the assets of the companies was taken into account. Medium with assets above 5,000 SMMLV and up to 30,000 SMMLV. Small with assets above 500 SMMLV and up to 5,000 SMMLV. The micro are companies with assets up to 500 SMMLV.

activities related to health care with 23.22%, 11.27%, professional, scientific and technical wholesale trade in 14.7%, construction activities 11-16% and agriculture, livestock,

hunting, forestry and fishing 9.98%. The most common size of the companies related were the micro-companies, that corresponded to 92.84% (n=4,086) of the total (TABLE 3).

About 45% of the companies from the health care and social assistance in the study period corresponded to a legal entity with an average of 45.61% of constitution per period. The lowest companies under this legal status (31%) were in the 2016 period, while the highest creation of companies of this type (57.50%) were the 2014 period (TABLE 4).

During the study period 81.91% (n=154) of the registered companies renewed their registration title for the year 2016 with a mean of 78.43% between 2012 - 2015 periods (TABLE 5). The companies registered during the 2012 to 2015 periods also presented a similar average of renovation ranging between 82.58% and 84.78 (TABLE 6).

Of the companies incorporated in 2012, 72.2% (n=526) renewed their registration in all periods of the study, 5.5% (n=2) did not renew in any period and 22.2% (n=8). They renewed

**Table 4. Type of company registration by period.**

Period	Person	Legal satus	Total firms	% person	% Legal status	% Legal status per period
2012	46	36	82	11.00%	8.61%	43.90%
2013	37	44	81	8.85%	10.53%	54.32%
2014	34	46	80	8.13%	11.00%	57.50%
2015	44	31	75	10.53%	7.42%	41.33%
2016	69	31	100	16.51%	7.42%	31.00%
Grand total	230	188	418	55.02%	44.98%	45.61%

**Table 5. Company Registration and updating by period.**

Registration year	Registered	Renewed and Registered in 2016	% Renewed and Registered in 2016 per period	% Renewed and Registered in 2016
2012	36	26	72.11%	16.88%
2013	44	33	75.00%	21.43%
2014	46	38	82.61%	24.68%
2015	31	26	83.87%	16.88%
2016	31	31	100%	20.13%
Grand total	188	154	81.91%	100%

**Table 6. Company register Updating by period.**

Constitution period	Renewal Period				Average number of companies renewed
	2013	2014	2015	2016	
2012	94.44%	86.11%	80.56%	72.22%	83.33%
2013		88.64%	84.09%	75.00%	82.58%
2014			86.96%	82.61%	84.78%
2015				83.87%	83.87%

**Table 7. Company register Updating following creation.**

Constitution year	Total companies incorporated	Continuous renewal	Without renewal	Some renovation
2012	36	26	2	8
2013	44	33	5	6
2014	46	38	6	2
2015	31	26	5	0
Total	188	123	18	16
Constitution year	% Continuous renewal	% Without renewal	% Some renovation	% Companies with renewal to 2016
2012	72.2%	5.5%	22.2%	72.11%
2013	75%	11.36%	13.63%	75.00%
2014	82.6%	13.04%	4.34%	82.61%
2015	83.87%	16.13%		83.87%
Average	78.42%	11.51%	13.39%	78.40%

in one of the periods described. The information discriminated from the behavior of the renewals by enrollment period is found in **TABLE 7**. Additionally, it was evidenced that the behavior of non-renewal of the registry increased exponentially period after period where in the first year it was 23.54%, 32.87 % for the second, 42.99% for the third and 58.50% for the fourth.

Most of the companies from the 2012 group 72.2% (n=526) renewed their registration at all periods, 22.2% (n=8) updated their registration

only for one period, and 5.5% (n=2) did not updated at any other period. Also, there was a relationship between time of registry and updating, where the oldest registries only renewed in 23.54%, 32.87 % for the second, 42.99% for the third and 58.50% for the fourth registry period (**TABLE 7**).

A total of 92.55% (n=174) companies were micro-companies in size. From those companies, 80.46% (n=140) remained in activities until the end of the 2016 period (**TABLE 8**).

The state region with the bigger number

**Table 8. Company register Updating by period by size.**

Size	Registration	% Registered companies	Active 2016	% Active companies 2016	% Companies renewed by size
Large Company	1	0.53%	1	0.65%	100%
Medium Company	1	0.53%	1	0.65%	100%
Micro Company	174	92.55%	140	90.91%	80.46%
Small company	12	6.38%	12	7.79%	100%
Grand total	188	100.00%	154	100%	81.91%

**Table 9. Company registration and updating by state subregion.**

Subregion	Registration	% registered companies	Active 2016	% companies renewed by sub-region	% active companies 2016
Center	8	4.26%	6	75.00%	3.90%
North	145	77.13%	121	83.45%	78.57%
West	12	6.38%	10	83.33%	6.49%
South	23	12.23%	17	73.91%	11.04%
Grand Total	188	100%	154	81.91%	100%

**Table 10. Company registration by period and economic activity.**

Economic activity	2012	2013	2014	2015	2016	Average registration
Activities of medical practice without hospitalization	27.78%	43.18%	52.17%	54.84%	41.94%	43.98%
Other activities of human health care	30.56%	15.91%	10.87%	19.35%	19.35%	19.21%
Activities of the dental practice	13.89%	11.36%	15.22%	6.45%	9.68%	11.32%
Diagnostic support activities	8.33%	13.64%	10.87%	3.23%	9.68%	9.15%
Therapeutic support activities	11.11%	11.36%	4.35%	3.23%	12.90%	8.59%
Generalized residential medical care activities	2.78%	0.00%	4.35%	0.00%	0.00%	1.85%
Other social assistance activities without accommodation	0.00%	4.55%	0.00%	3.23%	0.00%	1.55%
Activities of hospitals and clinics with hospitalization	2.78%	0.00%	0.00%	3.23%	3.23%	1.43%
Residential care activities for the care of patients with mental retardation mental illness and consumption of psychoactive substances	0.00%	0.00%	0.00%	6.45%	0.00%	1.29%
Other care activities in institutions with accommodation	0.00%	0.00%	0.00%	0.00%	3.23%	0.65%
Care activities in institutions for the care of the elderly and / or disabled	2.78%	0.00%	0.00%	0.00%	0.00%	0.43%
Social assistance activities without accommodation for the elderly and disabled	0.00%	0.00%	2.17%	0.00%	0.00%	0.56%
Grand Total	100%	100%	100%	100%	100%	

of companies registered as new was the north region with 77.13% of the total, and maintaining its representation in the number of active companies in 2016 with 78.57% of the total. The average turnover of companies in the other sub regions was 78.92% (TABLE 9).

The registration of new companies for non-

hospitalization health care remained constant over all periods of the study, with an average enrollment of 43.98%, followed by other activities of human health care 19.21%, and 11.32% for dental practice (TABLE 10).

The most part of the companies were related to basic health centers 74.47%, and the rest

**Table 11. Company registration by economic activity and size.**

Economic activity	Large Company	Medium Company	Micro-company	Small company	Grand Total	Participation by activity
Diagnostic support activities			15	3	18	9.57%
Therapeutic support activities			14	2	16	8.51%
Social assistance activities without accommodation for the elderly and disabled			1		1	0.53%
Care activities in institutions for the care of the elderly and / or disabled			1		1	0.53%
Residential care activities for the care of patients with mental retardation mental illness and consumption of psychoactive substances			2		2	1.06%
Generalized residential medical care activities			3		3	1.60%
Activities of hospitals and clinics with hospitalization		1	1	1	3	1.60%
Activities of medical practice without hospitalization			77	6	83	44.15%
Activities of the dental practice			22		22	11.70%
Other social assistance activities without accommodation			3		3	1.60%
Other activities of human health care	1		34		35	18.62%
Other care activities in institutions with accommodation			1		1	0.53%
Grand Total	1	1	174	12	188	100.00%

**Table 12. Registered and updated companies for the 2016 period by economic activity.**

Economic activity	Registered	% registered participation	Renewed and registered in 2016	% renovated
Activities of medical practice without hospitalization	83	44,15%	71	85,54%
Other activities of human health care	35	18.62%	24	68.57%
Activities of the dental practice	22	11.70%	18	81.82%
Diagnostic support activities	18	9.57%	15	83.33%
Therapeutic support activities	16	8.51%	13	81.25%
Generalized residential medical care activities	3	1.60%	3	100.00%
Other social assistance activities without accommodation	3	1.60%	3	100.00%
Activities of hospitals and clinics with hospitalization	3	1.60%	3	100.00%
Residential care activities for the care of patients with mental retardation mental illness and consumption of psychoactive substances	2	1.06%	1	50.00%
Other care activities in institutions with accommodation	1	0.53%	1	100.00%
Care activities in institutions for the care of the elderly and / or disabled	1	0.53%	1	100.00%
Social assistance activities without accommodation for the elderly and disabled	1	0.53%	1	100.00%
Grand Total	188	100%	154	81.91%

corresponded to other activities of human health care and dental practice. The largest portion of size companies were micro companies 92.55% (n=174), and its distribution corresponds, in the same order, with the activities of most common participation (TABLE 11).

The 36.3% of the economic activities in the health care sector registered during all the periods were diagnostic support, therapeutic support, day care management of patients, and those related to the dental practice. As the periods are passing we found decreasing

**Table 13. Company registered and updated for the 2016 period by economic activity.**

Economic activity	2012	2013	2014	2015
Diagnostic support activities	100.00%	66.67%	80.00%	100.00%
Therapeutic support activities	75.00%	60.00%	100.00%	100.00%
Social assistance activities without accommodation for the elderly and disabled			100.00%	
Care activities in institutions for the care of the elderly and / or disabled	100.00%			
Residential care activities for the care of patients with mental retardation mental illness and consumption of psychoactive substances				50.00%
Generalized residential medical care activities	100.00%		100.00%	
Activities of hospitals and clinics with hospitalization	100.00%			100.00%
Activities of medical practice without hospitalization	80.00%	78.95%	83.33%	88.24%
Activities of the dental practice	80.00%	100.00%	57.14%	100.00%
Other social assistance activities without accommodation		100.00%		100.00%
Other activities of human health care	45.45%	57.14%	100.00%	66.67%
Grand Total	72.22%	75.00%	82.61%	83.87%

**Table 14. Registered and updated companies for the 2016 period by economic activity and size**

Economic activity	Large Company	Medium Company	Micro-company	Small company	Grand Total	Participation by activity
Diagnostic support activities			12	3	15	9.74%
Therapeutic support activities			11	2	13	8.44%
Social assistance activities without accommodation for the elderly and disabled			1		1	0.65%
Care activities in institutions for the care of the elderly and / or disabled			1		1	0.65%
Residential care activities for the care of patients with mental retardation mental illness and consumption of psychoactive substances			1		1	0.65%
Generalized residential medical care activities			3		3	1.95%
Activities of hospitals and clinics with hospitalization		1	1	1	3	1.95%
Activities of medical practice without hospitalization			65	6	71	46.10%
Activities of the dental practice			18		18	11.69%
Other social assistance activities without accommodation			3		3	1.95%
Other activities of human health care	1		23		24	15.58%
Other care activities in institutions with accommodation			1		1	0.65%
Grand Total	1	1	140	12	154	100%

number of companies registered, for the 2012 period only 72% remained in activities in the 2016 period, and for the 2014 period around 80% remained in activities by the 2015 period (TABLE 12).

For the 2016 period 73.37% of the companies were registered for medical practice without hospitalization, other activities of human health care and activities of dental practice (TABLE 13).

The 90.90% (n=140) of the companies were micro companies in size, we found also that this kind of companies presented the bigger proportion of closure (TABLE 14).

---

## Conclusion

Creation and sustainability of companies are indicators of development and economic growth in a region. In our study we found that, from a global view, companies that did not update their commercial registration were most micro and small companies in size also were the companies that did not update their merchant registry. In addition, companies registered as medium and large maintained had more updates of their mercantile registry without reporting a cessation of activities. Therefore, the smaller the companies are more difficult it becomes to maintain activities over time. Similar behavior was explained for Martínez [30] and Hernández [31] who identified that the small companies have more probabilities of staying actives that other large ones.

We found a direct association between size of the company and economic activity. Activities related to the smaller companies were related to activities of medical practice without hospitalization, dental practice and other related

with health care. Similar behavior was found for companies that updated their registries, where the activities that had the most renewal of companies were activities of medical practice without hospitalization, diagnostic support activities and activities of dental practice. In addition, there was a direct association between the type of registered economic activity and the number of companies registered for each of them. Economic activities with less creation of new companies did not present cessation of activities or intermittency in the update of their merchant registry; but for those with high number of new registers presented more closure/cessation of activities. In different way, in Colombia, the level of concession of companies in economic subsectors is related to the probability of survival demonstrating that the companies registered in the sub-sectors with high levels are at greater risk of leaving the market [27-28,21-31].

These results have different contributions: for practical of business administration, for economic and management literature and for regional politics decision. Also, this study shows the business landscape of the health sector in a region of southern Colombia, serving as a national and international benchmark and a baseline for future studies.

Our conclusions in this study could help others for carrying out projects, strategies and interventions that encourage the creation of companies and strengthen their sustainability and success in a similar economic environment.

---

## Disclosure

The authors declare no conflict of interest, regarding the publication of this paper.

## REFERENCES

- Barón G. Cuentas de salud de Colombia 1993-2003: el gasto nacional en salud y su financiamiento. Bogotá: Impresol (2007).
- Hernández M. Reforma sanitaria, equidad y derecho a la salud en Colombia. *Cadernos de Saúde Pública* 18(4), 991-1001 (2002).
- Barón G. Gasto Nacional en Salud de Colombia 1993-2003: Composición y Tendencias. *Rev. Salud Pública* 9(2), 167-179 (2007).
- Departamento Administrativo Nacional de Estadísticas (DANE). Censo económico. Bogotá (2005).
- Mills D, Timmins J. Firm Dynamics in New Zealand: A Comparative Analysis with OECD Countries. New Zealand treasury working paper 04/11 (2004).
- Johnson P. Targeting Firm Births and Economic Regeneration in a Lagging Region. *Small Business Economics*, 24(5), 451-464 (2005).
- Franco M, Urbano D. El éxito de las PyMES en Colombia: un estudio de casos en el sector salud. *Estudios gerenciales* 26(114), 77-97 (2010).
- Bartelsman E, Scarpetta S, Schivardi F. Comparative analysis of firm demographics and survival: micro-level evidence for the OECD countries. *Industrial Corporate Change* 14(3), 365-391 (2005).
- Santarelli E, Vivarelli M. Entrepreneurship and the process of firms' entry, survival and growth. *Industrial Corporate Change* 16(3), 455-488 (2007).
- Highfield R, Smiley R. New Business Starts and Economics Activity. *Int. J. Industrial Organization* 5(1), 51-66 (1987).
- Audretsch D. New firm survival and the technological regime. *Rev. Econ. Stat.* 73(3), 441-450 (1991).
- Audretsch D. Innovation, growth and survival. *Int. J. Industrial Organization* 13(4), 441-457 (1995).
- Cefis E, Marsili O. Innovation premium and the survival of entrepreneurial firms in the Netherlands. Berlin: Springer (2006).
- Holmes P, Hunt A, Stone I. An analysis of new firm survival using a hazard function. *App. Econ.* 42(2), 185-195 (2010).
- Huggins R, Prokop D, Thompson P. Entrepreneurship and the determinants of firm survival within regions: human capital, growth motivation and locational conditions. *Entrepreneurship Reg. Dev.* 29(3-4), 357-389 (2017).
- Hall B. The Relationship between firm size and firm growth in the US manufacturing sector. *J. Industrial Econ.* 35(4), 583-606 (1987).
- Evans D. The relationship between firm growth, size and age: estimates for 100 manufacturing industries. *J. Industrial Econ.* 35(4), 567-581 (1987).
- Dunne T, Roberts M, Samuelson L. Patterns of Firm Entry and Exit in U.S. Manufacturing Industries. *RAND J. Econ.* 19(4), 495-515 (1988).
- Bentzen J, Madsen E, Smith V. Do Firms Growth Rates Depend on Firm Size? *Small Business Econ.* 39(4), 937-947 (2012).
- Barba G, Castellani D, Pieri F. Age and Firm Growth: Evidence from Three European Countries. *Small Business Econ.* 43(4), 823-837 (2014).
- Hannan M, Carroll G. Dynamics of Organizational Populations. New York: Oxford University Press, 1992.
- Audretsch D, Mahmood T. The Rate of Hazard Confronting New Firms and Plants in US Manufacturing. *Rev. Industrial Organization* 9(1), 41-56 (1994).
- Levinthal D. Adaptation on Rugged Landscapes. *Management Sci.* 43(7), 934-950 (1997).
- Rauch A, Rijsdijk S. 2013. The Effects of General and Specific Human Capital on Long-term Growth and Failure of Newly Founded Businesses. *Entrepreneurship Th. Pract.* 37(4), 923-941 (2013).
- Red de Cámaras de Comercio (Confecámaras). Determinantes de la supervivencia empresarial en Colombia. Bogotá (2017).
- Montoya A, Montoya I, Castellanos O. Situación de la competitividad de las pyme en Colombia: elementos actuales y retos. *Agronomía Colombiana* 28(1), 107-117 (2010).
- Arias A, Quiroga R. Cese de actividades de las pymes en el área metropolitana de Cali (2000-2004): un análisis de supervivencia empresarial. *Cuadernos de Administración* 21(35), 249-277 (2008).
- Parra J. Determinantes de la probabilidad de cierre de nuevas empresas en Bogotá. Revista de la facultad de ciencias económicas de la Universidad Militar Nueva Granada 19(1), 27-53 (2011).
- Franco M, Urbano D. El éxito de las PyMES en Colombia: un estudio de casos en el sector salud. *Estudios gerenciales* 26(114), 77-96 (2010).
- Martínez A. Determinantes de la supervivencia de empresas industriales en el área metropolitana de Cali 1994- 2003. *Revista Sociedad y Economía* 11, 112-144 (2006).
- Hernández C. Supervivencia de las microempresas en el departamento del Magdalena 2009-2012: un enfoque logístico. *Perfil de Coyuntura Econ.* 22, 197-204 (2013).

This special issue on Current Trends in Clinical Research was edited by Dr. Mohamed Elsayed.