

OSCAR ANDRÉS ESPINOSA ACUÑA

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PROFILE

Economist Graduated with Honors (2013), Master in Statistical Sciences with Meritorious Distinction at Universidad Nacional de Colombia (2016), MicroMaster in Data Science at Institute for Data, Systems, and Society - MIT (2020), and MBA at Universidad Rey Juan Carlos with Honorable Mention (2021). Scholar of the Doctoral Summer School in Neurosciences at Pontificia Universidad Católica de Chile (2019).

Senior management experience in situations of uncertainty and result-oriented projects. High performance in managing interdisciplinary technical and operational teams. With leadership attitude, managerial-financial skills, and ability to work in highly efficient teams. Extensive knowledge and more than 10 years of work experience (in the private, public, and mixed sectors) in topics related to risk management, health economics (cost-effectiveness, cost-benefit, budgetary impact analysis, among others), challenges in analytical modelling, reimbursement, artificial intelligence and international scientific cooperation.

Since 2010, I have participated as a speaker in more than 100 different congresses inside and outside the country, and I have published more than 60 scientific articles in national and international indexed journals. I am also an advisor for Master Thesis in Actuarial Science, Finance, Statistics, Economics and Epidemiology, and Co-Tutor for Ph.D. Thesis in Engineering, in the main Universities of Colombia.

WORK EXPERIENCE

- **SENIOR CONSULTANT ON TOPICS OF SOCIAL PROTECTION, ARTIFICIAL INTELLIGENCE AND STATISTICAL-ACTUARIAL METHODOLOGIES.** In entities such as the Inter-American Development Bank, World Bank, District Health Secretariat of Bogotá, D.C., Faculty of Medicine of the Universidad Nacional de Colombia, Ministry of Science, Technology and Innovation, among others. 2024 - present.
- **HEAD OF ANALYTICAL, ECONOMIC AND ACTUARIAL STUDIES IN HEALTH.** Institute of Technological Assessment in Health of Colombia (IETS). 2020 - 2023.

COORDINATOR OF THE HEALTH ANALYTICS AND ACTUARIAL UNIT, 2018 - 2020.

EXPERT STATISTICAL-ACTUARY. 2017 - 2018.

- **SPECIALIZED PROFESSIONAL.** Office of Risk Analysis and Supervision Methodologies, National Superintendence of Health. 2016 - 2017.
- **JUNIOR PROFESSIONAL.** Technical Chamber of Occupational Risks. Federation of Colombian Insurers (Fasecolda). 2015 - 2016.
- **RESEARCH ASSOCIATE.** Research Group in Evolutionary and Institutional Economics, Center for Basic and Applied Interdisciplinary Studies in Complexity (CEIBA). 2012 - 2015.

RESEARCH EXPERIENCE

- **FOUNDER AND DIRECTOR OF THE RESEARCH GROUP ON ECONOMIC MODELS AND QUANTITATIVE METHODS (IMEMC).** Recognized by the Ministry of Science, Technology and Innovation of Colombia and attached to the Center for Development Research (CID), Universidad Nacional de Colombia. 2012 - present.

- ASSOCIATE EDITOR IN *VALUE IN HEALTH REGIONAL ISSUES*, ISPOR & ELSEVIER. 2024 - present.
EDITORIAL ADVISORY BOARD. 2023 - 2024.
- RESEARCH STAY IN HEALTH ECONOMICS, ACTUARIAL SCIENCE AND MATHEMATICAL EPIDEMIOLOGY (*Ad Honorem*), with Prof. Michael Drummond Ph.D. (University of York), Prof. Lisa White Ph.D. (Oxford University) and Prof. Rocco Friebe Ph.D. (London School of Economics). London, United Kingdom. 2023 - 2024.
- DIRECTOR OF THE RESEARCH GROUP IN HEALTH TECHNOLOGIES ASSESSMENT. Recognized by the Ministry of Science, Technology, and Innovation of Colombia -Category A-. 2018 - 2023.
- YOUNG RESEARCHER with Professor Andrés Fernández Díaz Ph.D. Former Dean of the Faculty of Economic and Business Sciences at Universidad Complutense de Madrid. 2013 - 2023.
- YOUNG RESEARCHER with Professor Nikolaos Georgantzis Ph.D. Former Director of the Laboratory of Experimental Economics at Jaume I University - Castellón. 2011 - 2013.

MEMBERSHIPS. International Biometric Society (2013 - present), High IQ International Society MENSA (2018 - 2025), International Society for Pharmacoeconomics and Outcomes - Colombia (2019 - 2020), Health Systems Global (2017 - 2019), The European Society for the History of Economic Thought (2012 - 2013).

ACADEMIC DISTINCTIONS AND RECOGNITIONS

- Scholar for the British Embassy in Colombia - Training in Health Technology Assessment (in Brasilia, Brazil), THE NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE (NICE) & UNIVERSITY OF YORK, 2022.
- Young Ambassador Award, INTERNATIONAL STATISTICAL INSTITUTE / INTERNATIONAL BIOMETRIC SOCIETY, 2021.
- TOYP Outstanding Young Award from Colombia, INTERNATIONAL JUNIOR CHAMBER, 2020
- Recognition of Academic Excellence, NATIONAL PROFESSIONAL COUNCIL OF ECONOMY, 2020.
- Grant from the Ministry of Education, Government of Chile, Doctoral Summer School in Neuroscience / Medical Sciences. PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE, 2019.
- First Place - Best Scientific Poster, XXIX INTERNATIONAL STATISTICS SYMPOSIUM, 2019.
- Best Research Work, XVI Research Day, FUNDACIÓN CARDIOINFANTIL - INSTITUTO DE CARDIOLOGÍA, 2018.
- Honorable Mention for Scientific Poster, LATIN AMERICAN ASSOCIATION OF HEALTH ECONOMICS, 2018.
- Research Commission Grant to the Netherlands. WORLD BANK, 2017.
- Young Researcher. MINISTRY OF SCIENCE, TECHNOLOGY AND INNOVATION OF COLOMBIA, 2016.
- Academic Excellence Award: Research & Innovation. UNITED STATES-COLOMBIA EDUCATIONAL AND CULTURAL FOUNDATION, 2015.
- Second Prize Winner, International Young Researchers Award Competition. UNIVERSIDAD AUTÓNOMA DE MADRID, 2013.
- Honorable Mention for Best University Student in the Country. *PORTAFOLIO AWARDS*, 2013.

- Graduate Scholarship for belonging to the Best Academic Averages (during the 5 years of undergraduate studies). UNIVERSIDAD NACIONAL DE COLOMBIA, 2008 to 2012.
- First Place, X National Forum of Students of Economy, Finance and International Trade. UNIVERSIDAD DEL ROSARIO with support from the CENTRAL BANK OF COLOMBIA, 2012.
- Order of Academic Merit "*Jesús Antonio Bejarano*" and First Place in the XI *Jesús Antonio Bejarano* National Contest of Lectures. NATIONAL FEDERATION OF ECONOMY STUDENTS with support from the CENTRAL BANK OF COLOMBIA, 2012.
- Distinctive Mention in the I and II International Forum of Students for Integration. ASSOCIATION OF UNIVERSITIES OF LATIN AMERICA AND THE CARIBBEAN FOR INTEGRATION, 2011 and 2012.

SPORTS DISTINCTIONS AND RECOGNITION. In Tennis, Swimming and Hockey, at the district and national level.

ORGANIZATION OF CONFERENCES. Since 2012, I have coordinated more than 20 Conferences with researchers of recognized trajectory in economic sciences and management sciences.

CONFERENCES-SEMINARS. Since 2010, I have participated in more than 100 different scenarios inside and outside the country: ISPOR International, International Statistical Symposium, Analytics Forum, International Congress of Knowledge and Innovation, Latin American Congress of Health Economics, International Symposium on Experts in Finance, Congress of Colombian Economy, International Finance Conference, International Workshop on Applied Statistics, I Conference of Planning ILPES-UN, National Symposium of Microeconomics, Conference of European Society for the History of Economic Thought, among others.

LANGUAGES. Spanish, English, and Sign.

SCIENTIFIC PUBLICATIONS. I have published research articles in indexed journals such as: *The Lancet Regional Health - Americas* (ISSN: 2667-193X), *Annals of Internal Medicine* (ISSN: 0003-4819), *Scientific Reports* (ISSN: 2045-2322), *British Actuarial Journal* (ISSN: 1357-3217), *North American Actuarial Journal* (ISSN: 1092-0277), *Applied Health Economics and Health Policy* (ISSN: 1179-1896), *Applied Soft Computing Journal* (ISSN: 1568-4946), *International Journal for Equity in Health* (ISSN: 1475-9276), *Health Policy and Planning* (ISSN: 0268-1080), *Value in Health* (ISSN: 1098-3015), *Journal of Economic Issues* (ISSN: 0021-3624), *Vaccine: X* (ISSN: 2590-1362), *Value in Health Regional Issues* (ISSN: 2212-1099), *Journal of Quantitative Methods for Economics and Business Administration* (ISSN: 1886-516X), *Colombian Journal of Anesthesiology* (ISSN: 2256-2087), *Economía: Teoría y Práctica* (ISSN: 0188-3380), *Revista Desarrollo y Sociedad* (ISSN: 0120-3584), among others.

Research articles

1. Espinosa, O., Smith, A., Bejarano, V., Puentes, G., Pino, L., Wiesner, C., de Vries, E., Cardona, A., & Friebe, R. (2026). Patterns of sex differences in cancer mortality in Colombia: a population-based analysis, 1980–2023. *The Lancet Regional Health – Americas*, 58, 101465. <https://doi.org/10.1016/j.lana.2026.101465>
2. Espinosa, O., Estrada-Orozco, K., García-Ruiz, J., Vargas-González, J., Mora-Moreo, L., Bolívar, M., Mesa-Melgarejo, L., Arias, C., Prada, S., & Rodríguez-Lesmes, P. (2026). Narratives, evidence, and the material reality of Colombia's current health system crisis. *Medicina*, 48(1), 171-175. <https://doi.org/10.56050/RM-48-1-21>

3. Murphy, P., Griffin, S., Walker, S., Vallejo-Torres, L., Espinosa, O., Gloria, A., & Ochalek, J. (2026). Cost-effectiveness thresholds in policy and practice: do HTA guidelines align with estimates of health opportunity cost? *Health Economics, Policy and Law*, 1-29. <https://doi.org/10.1017/S1744133126100395>
4. Vallejo-Torres, L., Edney, L., Espinosa, O., Karnon, J., Longo, F., Paulden, M., Howdon, D., & Vanness, D. (2026). Politicised changes to the NICE threshold risk making cost-effectiveness analysis performative, not informative. *Applied Health Economics and Health Policy*. <https://doi.org/10.1007/s40258-025-01026-y>
5. Espinosa, O., Puentes, G., Bejarano, V., Romero, J., Arias, L., Hedgire, S., Daye, D., Mohan, S., & Duszak, R. (2025). Expenditure and use on radiology imaging in urban and rural areas in a developing country. *Cost Effectiveness and Resource Allocation*, 23, 74. <https://doi.org/10.1186/s12962-025-00681-1>
6. Espinosa, O., Rodríguez, P., Bejarano, V., León, S., & Ortiz, J. (2025). Health for all? A cost-utility evaluation of Colombia's policy to enroll Venezuelan migrants (2021–2023). *Journal of Migration and Health*, 12, 100374. <https://doi.org/10.1016/j.jmh.2025.100374>
7. Espinosa, O., Bejarano, V., Mejía, A., Arias, L., Vargas-Gonzalez, J., & Sanchez-Pedraza, T. (2025). Mental health spending in Colombia: an analysis of rural and urban areas. *Annals of General Psychiatry*, 24, 54. <https://doi.org/10.1186/s12991-025-00589-3>
8. Espinosa, O., Smith, A., Bejarano, V., García-Ruiz, J. (2025). Differences between male and female mortality in Colombia: a population-based analysis since 1980. *The Lancet Regional Health - Americas*, 52, 101263, <https://doi.org/10.1016/j.lana.2025.101263>
9. Espinosa, O., Buitrago, G., Bejarano, V., & Castaño, R. (2025). Lorenz curves of urban and rural health care expenditure in Colombia: analysis of a cohort of 4.6 million patients. *Health Economics Review*, 15, 74. <https://doi.org/10.1186/s13561-025-00662-3>
10. Puentes, G., Espinosa, O., & Gutiérrez, J. (2025). Generative artificial intelligence and scientific integrity. *Revista Colombiana Cardiología*, 32(4): 282-283. <https://doi.org/10.24875/RCCAR.25000007>
11. Espinosa, O., Suárez-Morales, Z., Álvarez, V., Bejarano, V., Torres, M., & Luna, J. (2025). Sociodemographic characterization of domestic service workers in Colombia: a 10-year analytical-descriptive study. *Discover Social Science and Health*, 5, 122. <https://doi.org/10.1007/s44155-025-00279-1>
12. Espinosa, O., Friebe, R., Bejarano, V., & García-Ruiz, J. (2025). Estimating inequalities in excess mortality and years of potential life lost by health conditions across ethnic minorities in Colombia: a population-based study, 2018-2022. *BMJ Open* 15(7), e098028. <https://doi.org/10.1136/bmjopen-2024-098028>
13. Espinosa, O., Bejarano, V., Mejía, A., Castro, H., & Paternina-Caicedo, A. (2025) Bayesian inference in racial health inequity analyses for noncommunicable diseases: a systematic review. *Systematic Reviews*, 14, 145. <https://doi.org/10.1186/s13643-025-02898-w>
14. Espinosa, O., Bejarano, V., Arias, L., & González, J. (2025). Informal workers in the rural sector in Colombia: living conditions and social security. *Regional Science Policy & Practice*, 17(8), 100200. <https://doi.org/10.1016/j.rspp.2025.100200>
15. Espinosa, O., Rodríguez-Lesmes, P., Rodríguez, J., Ávila, D., Basto, S., Romano, G., Mesa, L., & Enríquez, H. (2025). The impact of periodic updates to health benefits plan: access gains without cost savings? *International Journal of Health Economics and Management*, 25, 317-336. <https://doi.org/10.1007/s10754-025-09394-7>

16. Espinosa, O., Rodríguez-Lesmes, P., Prada, S., Bolívar, M., Mejía-Becerra, D., & Vecino-Ortíz, A. (2025). Health insurance premium in Colombia for 2025: a strictly political-ideological decision without technical-scientific arguments? *Health Economics Review*, 15(31). <https://doi.org/10.1186/s13561-025-00620-z>
17. Paternina-Caicedo, A., Espinosa, O., Sheth, S., Hupert, N., & Saghafian, S. (2025). Excess mortality rate in black children since 1950 in the United States: a 70-year population-based study of racial inequalities. *Annals of Internal Medicine*, 178(4). <https://doi.org/10.7326/ANNALS-24-02794>
18. Rivera, N., Calderón, S., & Espinosa, O. (2025). Forecasting based on a multivariate autoregressive threshold model (MTAR) with a multivariate Student's t error distribution: a Bayesian approach. *Communications in Statistics - Theory and Methods*, 54(22), 7084-7104. <https://doi.org/10.1080/03610926.2025.2466738>
19. Espinosa, O., Arias, L., & López, S. (2025). Pension reform bill in Colombia: a critical analysis from a risk management approach. *The Journal of Retirement*, 12(4), 54-64. <https://doi.org/10.3905/jor.2025.1.179>
20. Espinosa, O., Bejarano, V., Franky, I., Pagali, S., Drummond, M., & Franco, O. (2025). Mortality causes and health spending by gender and health conditions in octogenarians, nonagenarians and centenarians in Colombia. *Scientific Reports*, 15, 918. <https://doi.org/10.1038/s41598-024-84150-4>
21. Espinosa, O., Drummond, M., Russo, E., Williams, D., & Wix, D. (2025). How can actuarial science contribute to the field of health technology assessment? An interdisciplinary perspective. *International Journal of Technology Assessment in Health Care*, 41(1), e3. <https://doi.org/10.1017/S0266462324004781>
22. Espinosa, O., White, L., Bejarano, V., Aguas, R., Rincón, D., Mora, L., Ramos, A., Sanabria, C., Rodríguez, J., Barrera, N., Álvarez-Moreno, C., Cortés, J., Saavedra, C., Robayo, A., Gao, B., & Franco, O. (2024). Predictive modelling of the effectiveness of vaccines against COVID-19 in Bogotá: Methodological innovation involving different variants and computational optimisation efficiency. *Heliyon*, 10(21), e39725. <https://doi.org/10.1016/j.heliyon.2024.e39725>
23. Chamorro, C., Fernández, M. & Espinosa, O. (2025). The effect of the exit of an insurer, due to government liquidation, on access to health care: evidence from Colombia. *International Journal of Health Economics and Management*, 25, 51-65. <https://doi.org/10.1007/s10754-024-09381-4>
24. Espinosa, O., Friebel, R., Bejarano, V., Arias, L., Husereau, D., & Smith, A. (2024). Study on the concentration, distribution, and persistence of health spending for the contributory scheme in Colombia. *BMC Health Services Research*, 24, 1225. <https://doi.org/10.1186/s12913-024-11636-2>
25. Puentes, G., Bejarano, V., Guarnizo, A., & Espinosa, O. (2024). Spending on neuroradiology by epidemiological regions: An analytical approach in a developing country. *Clinical Neuroimaging*, 1, 1-4. <https://doi.org/10.1002/neo2.70003>
26. Espinosa, O., Rodríguez, J., Arias, L., Pinzón, D., & Valdez, E. Analysis of the financial situation of the maximum budgets of the Health-Promoting Entities in Colombia. (2024). *World Medical & Health Policy*, 16, 745-758. <https://doi.org/10.1002/wmh3.635>
27. Espinosa, O., Rodríguez-Lesmes, P., Romano, G., Orozco, E., Basto, S., Ávila, D., Mesa, L. & Enríquez, H. (2024). Use of cost-effectiveness thresholds in healthcare public policy: progress and challenges. *Applied Health Economics and Health Policy*. <https://doi.org/10.1007/s40258-024-00900-5>

28. Espinosa, O., Puentes, G., Bejarano, V., Hedgire, S., Daye, D., Arias, L., Duszak, R. (2024). Which health conditions report the most spending on medical imaging? Evidence for Colombia. *Current Problems in Diagnostic Radiology*, 53(5), 567-569. <https://doi.org/10.1067/j.cpradiol.2024.05.003>
29. Espinosa, O., Puentes, G., Rodríguez, J., Robayo, A., & Anaya, J. (2024). Science, technology, and innovation in health for the next twenty years: A survey analysis in Colombia. *Health Care Science*, 3(2), 78-87. <https://doi.org/10.1002/hcs2.87>
30. Espinosa, O., Mora, L., Sanabria, C., Ramos, A., Rincón, D., Bejarano, V., Rodríguez, J., Barrera, N., Álvarez-Moreno, C., Cortés, J., Saavedra, C., Robayo, A., & Franco, O. (2024). Predictive models for health outcomes due to SARS-CoV-2, including the effect of vaccination: a systematic review. *Systematic Review*, 13, 30. <https://doi.org/10.1186/s13643-023-02411-1>
31. Rosado, A., Calderón, L., & Espinosa, O. (2024). Data preprocessing to improve fairness in machine learning models: an application to the reintegration process of demobilized members of armed groups in Colombia. *Applied Soft Computing*, 152, 111193. <https://doi.org/10.1016/j.asoc.2023.111193>
32. Espinosa, O., Drummond, M., Orozco, L., Ordóñez, A., Sanmartín, D., Mora, L., & Ochalek, J. (2024). Estimation of societal values of health states preferences at the national level for low- and middle-income countries. *Value in Health Regional Issues*, 39, 40-48. <https://doi.org/10.1016/j.vhri.2023.07.004>
33. Urdinola, P., Bejarano, V., Espinosa, O. y Silva, P. (2023). Estudio de caracterización socioeconómica y demográfica de los afiliados al régimen subsidiado de salud, Colombia 2019-2020. *Ensayos de Economía*, 33(63), 85-116. <https://doi.org/10.15446/ede.v33n63.104918>
34. Espinosa, O., & Nieto, F. (2023). Leverage effect on financial series using a Bayesian TAR model. *Journal of Modern Applied Statistical Methods*, 22(2), 5. <https://doi.org/10.56801/Jmasm.V22.i2.5>
35. Espinosa, O., Bejarano, V., Sanabria, C., Rodríguez, J., Basto, S., Rodríguez-Lesmes, P., & Robayo, A. (2023). Detecting unexpected growths in health technologies expenditures: the case of MIPRES in Colombia. *BMC Health Services Research*, 23, 1153. <https://doi.org/10.1186/s12913-023-10155-w>
36. Espinosa, O., Rodríguez, J., Urdinola, B., Do Nascimento, P., Sánchez, A., Arias, M., Valdez, E., Cheng, T., & Fisher, S. (2023). Loss ratio of the capitation payment unit of the health-promoting entities in Colombia between 2017 and 2021: a financial-actuarial approach. *Cost Effectiveness and Resource Allocation*, 21, 73. <https://doi.org/10.1186/s12962-023-00481-5>
37. Espinosa, O., Ramos, J., Rojas-Botero, M., & Fernández-Niño, J. (2023). Years of life lost to COVID-19 in 49 countries: a gender- and life cycle-based analysis of the first two years of the pandemic. *PLOS Global Public Health*, 3(9), e0002172. <https://doi.org/10.1371/journal.pgph.0002172>
38. Espinosa, O., Franco, O., Ospina, M., Carabalí, M., & Baeza-Yates, R. (2023). The value of mathematical modelling approaches in epidemiology for public health decision making. *Colombian Journal of Anesthesiology*, 51, e1079. <https://doi.org/10.5554/22562087.e1079>
39. Mesa-Melgarejo, L., Espinosa, O., Estrada-Orozco, K., Ramírez-Moreno, J., & Robayo-García, A. (2023). Determinantes de la gestión del riesgo en salud en el Régimen Subsidiado en Colombia: estudio cualitativo. *Salud UIS*, 55. <https://doi.org/10.18273/saluduis.55.e:23035>
40. Espinosa, O., Bejarano, V., & Ramos, J. (2023). Predictability and financial sufficiency of health insurance in Colombia: an actuarial analysis with a Bayesian approach. *North American Actuarial Journal*, 28(2), 320-336. <https://doi.org/10.1080/10920277.2023.2197475>

41. Espinosa, O., Bejarano, V., Ramos, J., & Martínez, B. (2023). Statistical actuarial estimation of the Capitation Payment Unit from copula functions and deep learning: historical comparability analysis for the Colombian health system, 2015–2021. *Health Economics Review*, 13(15). <https://doi.org/10.1186/s13561-022-00416-5>
42. Chamorro, C., Cañon, L., Espinosa, O., Ramírez, J., & Arregocés, L. (2023). Revisión sistemática realista sobre las opciones de incentivos en Colombia para la gestión en salud. *Lecturas de Economía*, 98, 157–189. <https://doi.org/10.17533/udea.le.n98a348472>
43. Barrera, N., Torres, R., Rodríguez, J., Espinosa, O., Avellaneda, S., & Ramírez, J. (2023). A recommender system for occupational hygiene services using natural language processing. *Healthcare Analytics*, 3, 100148. <https://doi.org/10.1016/j.health.2023.100148>
44. Mora-Moreo, L., Estrada-Orozco, K., Espinosa, O., & Mesa-Melgarejo, L. (2023). Characterization of the population affiliated to the subsidized health insurance scheme in Colombia: a systematic review and meta-analysis. *International Journal for Equity in Health*, 22(28). <https://doi.org/10.1186/s12939-022-01818-x>
45. Arias-Bello, L., Gómez-Villegas, M., & Espinosa, O. (2022). Effects of corporatization on the financial performance of nonfinancial state-owned enterprises in Latin America between 1999 and 2018. *Brazilian Journal of Public Policy*, 12(3), 666-687. <https://doi.org/10.5102/rbpp.v12i3.8522>
46. Espinosa, O., Enríquez, H., Ávila, D., Basto, S., Rivera, D., López, D., Avellaneda, P., & Riveros, P. (2022). Evaluation of drug pricing regulation policies within Colombian health expenditure, 2010-2017. *Journal of Economic Issues*, LV1(3), 805-819. <https://doi.org/10.1080/00213624.2022.2093574>
47. Espinosa, O., Rodríguez, J., Robayo, A., Arregocés, L., Agudelo, N., Suárez, C., Herrera, A., Wills, D., & Aguilar, D. (2022). Advance Market Commitments (AMC) model application for Colombian purchase strategy of COVID-19 vaccines. *Vaccine: X*, 12, 100197. <https://doi.org/10.1016/j.jvax.2022.100197>
48. Morales-Zamora, G., Espinosa, O., Puertas, E., Fernández, J., Hernández, J., Zakzuk, V., Cepeda, M., Alvis-Gúzman, N., Castañeda-Orjuela, C., & Paternina-Caicedo, A. (2022). Cost-effectiveness analysis of strategies of covid-19 vaccination in Colombia: comparison of high-risk prioritization and no prioritization strategies with the absence of a vaccination plan. *Value in Health Regional Issues*, 31, 101-110. <https://doi.org/10.1016/j.vhri.2022.04.004>
49. Espinosa, O., Rodríguez-Lesmes, P., Orozco, L., Ávila, D., Enríquez, H., Romano, G., & Ceballos, M. (2022). Estimating cost-effectiveness thresholds under a managed healthcare system: experiences from Colombia. *Health Policy and Planning*, 37(3), 359-368. <https://doi.org/10.1093/heapol/czab146>
50. Espinosa, O., & Zarruk, A. (2021). The importance of actuarial management in insurance business decision-making in the twenty-first century. *British Actuarial Journal*, 26, E14. <https://doi.org/10.1017/S1357321721000155>
51. Espinosa, O., Rodríguez, J., Robayo, A., Arias, L., Moreno, S., Ospina, M., Insuasti, D., & Oviedo, J. (2021). Vulnerability interactive geographic viewer against COVID-19 at the block level in Colombia: analytical tool based on machine learning techniques. *Regional Science Policy & Practice*, 13(S1), 187-197. <https://doi.org/10.1111/rsp3.12469>
52. Espinosa, O. (2020). Clasificación de estados de salud y metodologías de valoración de preferencias para el cálculo de AVAC: una revisión de literatura. *Ensayos de Economía*, 30(57), 175-193. <https://doi.org/10.15446/ede.v30n57.89801>

53. Espinosa, O., Morales-Zamora, G., & Rodríguez, J. (2020). Insurer-provider relations in the Colombian healthcare system. *Value in Health*, 23, S297. <https://doi.org/10.1016/j.jval.2020.04.1080>
54. Espinosa, O., & Pinzón, D. (2017). Análisis de georreferenciación de servicios TEP que trasladan víctimas de accidentes de tránsito, 2017-I. *Horizontes Empresariales*, 16(2), 15-24. <https://doi.org/10.22320/hem.v16i2.3104>
55. Espinosa, O., & Pinzón, D. (2017). Análisis de la estacionalidad del gasto en salud en Colombia. Una aproximación cuantitativa para la segunda década del siglo XXI. *Semestre Económico*, 20(44), 137-158. <https://doi.org/10.22395/seec.v20n44a>
56. Espinosa, O., & Vaca, P. (2017). Ajuste de modelos GARCH clásico y bayesiano con innovaciones t-student para el índice COLCAP. *Revista Economía del Caribe*, 19, 1-32. <https://doi.org/10.14482/ecoca.19.8343>
57. Espinosa, O. (2016). Evaluación de pronósticos de las reservas internacionales netas en Colombia. *Revista Ensayos de Economía*, 26(48), 115-140. <https://doi.org/10.15446/ede.v26n48.60019>
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