

10a Jornada de  
Recerca de l'ICS

11a Jornada de  
Recerca de l'IDIAP



La recerca amb  
grans bases de  
dades clíniques  
millora la salut

7 de juny de 2018

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COSMOCAIXA

# Big Data en Investigació Cardiovascular Aplicada

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- Programa Cardiologia Comunitària **Hospitalet Sud**
- Programa Territorial Insuficiència Cardíaca **Gerència Metropolitana Sud**

# Què és **Big Data** en Recerca Cardiovascular?



# Què és **Big Data** en Recerca Cardiovascular?



Big Data is like teenage sex:  
everyone talks about it,  
nobody really knows how to  
do it, everyone thinks  
everyone else is doing it, so  
everyone claims they are  
doing it.

Dan Ariely

QuoteAddicts.com



#01

## **BASES DE DADES GEGANTS (>1x10<sup>6</sup>)**

Dades administratives & mèdiques (sistemes informació clínica)

#02

## **FORTALESES**

Mostres gegants (poblacionals) & informació exhaustiva

#03

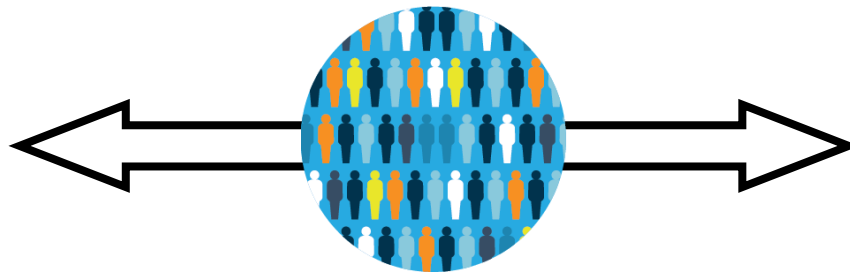
## **INFORMACIÓ QUE APORTEN**

Epidemiologia, perfils clínics, aspectes assistencials/gestió



Bases de Dades Administratives Actualitzades  
(N>7,500,000)

Atenció  
Primària



Hospital

Registre Central de Població (RCA)  
CMBD-HA, CMBD-AP, CMBD\_RSS, CMBD-SM, CMBD-UR  
Facturació  
Farmàcia  
Mortalitat



Servei Català  
de la Salut



Institut Català  
de la Salut

**IDIBELL**  
Institut d'Investigació Biomèdica de Bellvitge



JOHNS HOPKINS  
BLOOMBERG SCHOOL  
of PUBLIC HEALTH



UNIVERSITAT DE  
BARCELONA



RESEARCH ARTICLE

## Real world heart failure epidemiology and outcome: A population-based analysis of 88,195 patients

Núria Farré<sup>1,2,3\*</sup>, Emili Vela<sup>4</sup>, Montse Clèries<sup>4</sup>, Montse Bustins<sup>4</sup>, Miguel Cainzos-Achirica<sup>5,6</sup>, Cristina Enjuanes<sup>1,2,3</sup>, Pedro Moliner<sup>1,2,3</sup>, Sonia Ruiz<sup>1,2</sup>, José María Verdú-Rotellar<sup>2,3,7</sup>, Josep Comín-Colet<sup>2,8,9,10</sup>

PLoS One. 2017 Feb 24;12(2):e0172745



**Table 1. Baseline characteristics according to group of diagnosis.**

	Total	Never admitted due to HF	Remote HF hospitalization	Recent HF hospitalization	p-value
Cases	88,195	12,407	62,982	12,806	
Age, years, mean $\pm$ SD	77.4 $\pm$ 12.0	79.9 $\pm$ 10.5	76.6 $\pm$ 12.4	79.0 $\pm$ 10.6	<0.001
Female, n (%)	48,320 (54.8)	8,173 (65.9)	33,026 (52.4)	8,173 (55.6)	<0.001
Number of comorbidities, mean $\pm$ SD	5.7 $\pm$ 2.0	5.1 $\pm$ 2.0	5.7 $\pm$ 2.0	6.4 $\pm$ 2.0	<0.001
Hypertension, n (%)	85,803 (97.3)	12,407 (100.0)	60,659 (96.3)	12,737 (99.5)	<0.001
Ischemic heart disease, n (%)	42,215 (47.9)	4,375 (35.3)	31,065 (49.3)	6,775 (52.9)	<0.001
Atrial fibrillation, n (%)	41,950 (47.6)	4,464 (36.0)	29,639 (47.1)	7,847 (61.3)	<0.001
Diabetes mellitus, n (%)	37,188 (42.2)	4,259 (34.3)	26,613 (42.3)	6,316 (49.3)	<0.001
Anemia, n (%)	29,429 (33.4)	2,521 (20.3)	21,235 (33.7)	5,673 (44.3)	<0.001
COPD, n (%)	28,612 (32.4)	2,802 (22.6)	20,920 (33.2)	4,890 (38.2)	<0.001
Valve heart disease, n (%)	28,263 (32.0)	1,539 (12.4)	21,074 (33.5)	5,650 (44.1)	<0.001
Chronic kidney disease, n (%)	25,974 (29.5)	2,447 (19.7)	18,207 (28.9)	5,320 (41.5)	<0.001

PLoS One. 2017 Feb 24;12(2):e0172745



European Journal of Heart Failure (2016)  
doi:10.1002/ejhf.549

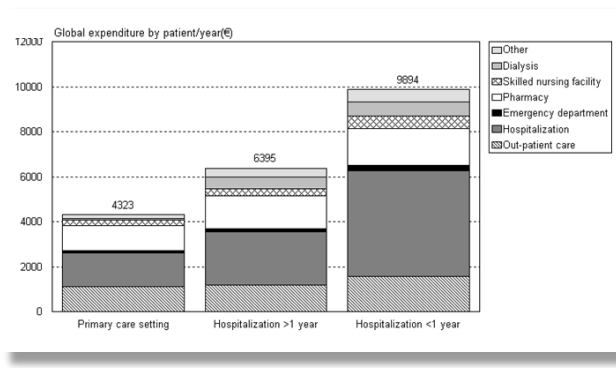
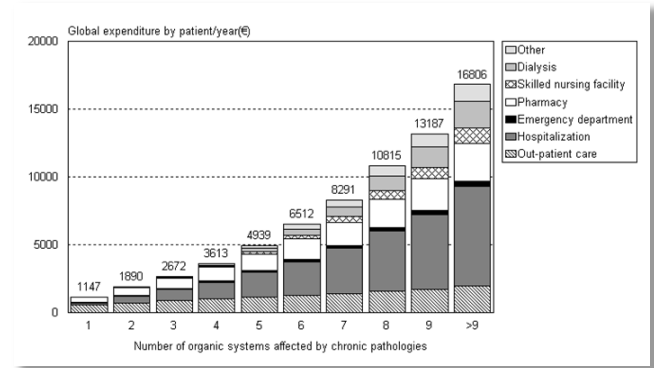
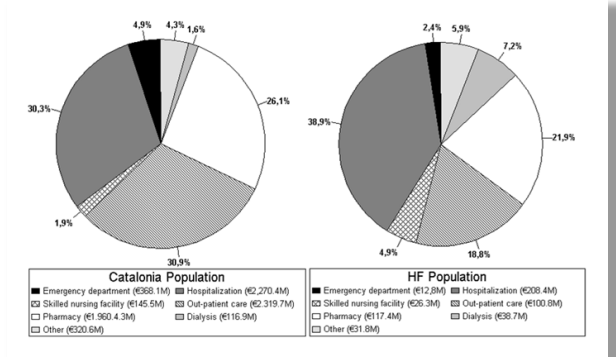
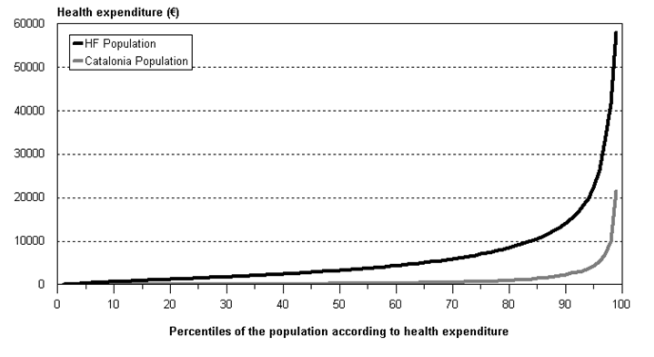
## Medical resource use and expenditure in patients with chronic heart failure: a population-based analysis of 88 195 patients

Nuria Farré<sup>1,2</sup>, Emili Vela<sup>3</sup>, Montse Clèries<sup>3</sup>, Montse Bustins<sup>3</sup>,  
Miguel Cainzos-Achirica<sup>4,5</sup>, Cristina Enjuanes<sup>1,2,6</sup>, Pedro Moliner<sup>1,2,6</sup>, Sonia Ruiz<sup>1,2</sup>,  
Jose Maria Verdú-Rotellar<sup>2,6,7</sup>, and Josep Comín-Colet<sup>1,2,6\*</sup>

Eur J Heart Fail 2016 ;18(9):1132-40.



# Avaluar ús recursos i despesa sanitària



Eur J Heart Fail 2016 ;18(9):1132-40.



Rev Esp Cardiol. 2014;67(4):283–293

## Original article

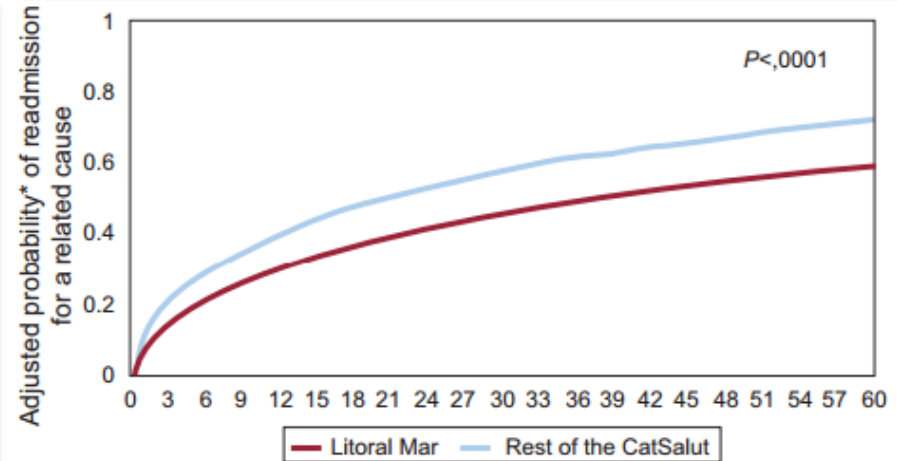
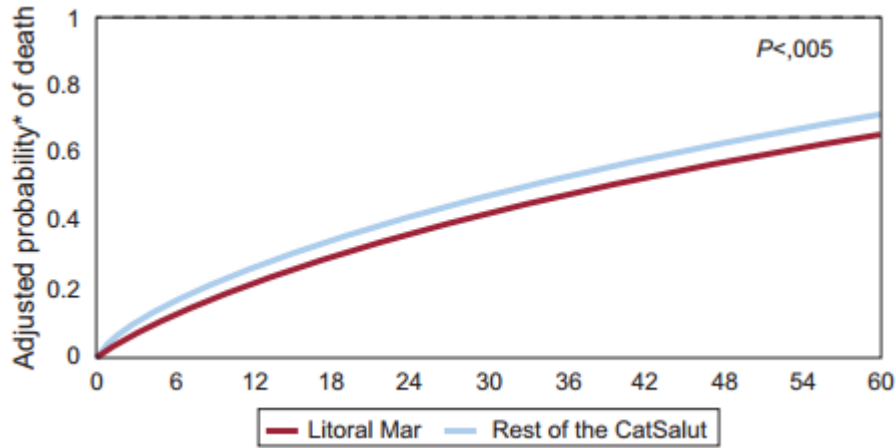
### Efficacy of an Integrated Hospital-primary Care Program for Heart Failure: A Population-based Analysis of 56 742 Patients



Josep Comín-Colet,<sup>a,b,c,d,\*</sup> José María Verdú-Rotellar,<sup>b,c,d,e,f</sup> Emili Vela,<sup>g</sup> Montse Clèries,<sup>g</sup> Montserrat Bustins,<sup>g</sup> Lola Mendoza,<sup>b,h</sup> Neus Badosa,<sup>a,b,c</sup> Mercè Cladellas,<sup>c,d</sup> Sofia Ferré,<sup>b</sup> and Jordi Bruguera<sup>a,b,c</sup> on behalf of the working group of the Integrated Program for Heart Failure Management of the Barcelona Litoral Mar Integrated Health Care Area, Spain  $\diamond$

Rev Esp Cardiol. 2014;67(4):283–293

# Avaluar intervencions amb base territorial



Rev Esp Cardiol. 2014;67(4):283-293



The screenshot displays the American Heart Journal (AHJ) website interface. At the top, the AHJ logo is prominent, with navigation links for 'Login', 'Register', 'Claim Subscription', and 'Subscribe'. Below the logo, a horizontal menu includes 'Home', 'Articles & Issues', 'Collections', 'Free CME', 'For Authors', 'Journal Info', 'Subscribe', and 'More Periodicals'. A search bar is located below the menu, with a dropdown menu set to 'All Content' and a 'Search' button. The main content area features a blue header for 'Articles in Press' with navigation arrows for 'Previous Article' and 'Next Article'. A red message box states: 'To read this article in full, please review your options for gaining access at the bottom of the page.' The article title is 'Challenges of Evaluating Chronic Heart Failure and Acute Heart Failure Events in Research Studies Using Large Healthcare Databases'. The authors listed are Miguel Cainzos-Achirica, MD, MPH; Cristina Rebordosa, MD, PhD; Emili Vela, PhD; Montse Cleries, PhD; Kunihiro Matsushita, MD, PhD; Estel Plana, MSc, PhD; Elena Rivero-Ferrer, MD, MPH; Cristina Enjuanes, MD, PhD; Santiago Jimenez-Marrero, MD; Luis Alberto Garcia-Rodriguez, MD, MSc; Josep Comin-Colet, MD, PhD; and Susana Perez-Gutthann, MD, MPH, PhD. The article has a PlumX Metrics icon and a DOI link: <https://doi.org/10.1016/j.ahj.2018.05.005>. On the right side, there is an 'Article Tools' section with options for 'PDF (1 MB)', 'Download Images(.ppt)', 'Email Article', 'Add to My Reading List', 'Export Citation', 'Create Citation Alert', and 'Cited by in Scopus (0)'. Below this is a 'Related Articles' section with a link to 'Toward personalized risk assessment in patients with chronic heart failure: Detailed temporal patterns of NT-proBNP, troponin T, and CRP in the Bio-SHIFT study'. A 'Feedback' button is located at the bottom right of the article content area.

Am Heart J 2018 (in press). DOI: <https://doi.org/10.1016/j.ahj.2018.05.005>



# Circulation

JOURNAL OF THE AMERICAN HEART ASSOCIATION

## AHA SCIENTIFIC STATEMENT

# The Learning Healthcare System and Cardiovascular Care

A Scientific Statement From the American Heart Association

Circulation. 2017;135:e826-e857



#01

## POTENCIAR

La recerca amb Big Data en els grups de recerca clínica

#02

## INTERCONNECTAR

Amb els sistemes informació clínica

#03

## LEARNING HEALTHCARE SYSTEMS

Aprofitar el potencial predictiu per impactar en clínica

#04

## ESCALAR

Resultats recerca al sistema i al ciutadà



Generalitat de Catalunya  
**Departament de Salut**



Institut Català  
de la Salut



**IDIAP**  
Jordi Gol

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