

# Clan Decomposition of Gaifman Graphs as a Graphical Tool

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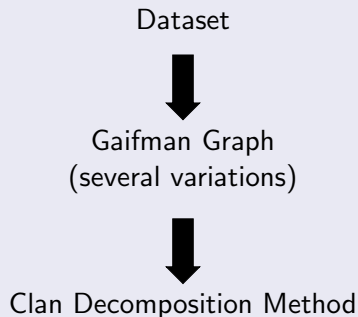
Joint work with José L. Balcázar and M. Ely Piceno

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- 1 Procedure
- 2 Hospitalization Dataset
- 3 Clan Decomposition Method
- 4 Hospitalization Graph Decomposition
- 5 Conclusions
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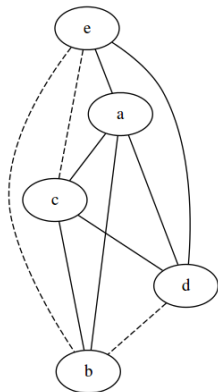
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# Hospitalization Dataset

428.0	INSUFICIENCIA CARDIACA CONGESTIVA IN	427.31	FIBRIL.LACIO AURICULAR	276.1	HIPOSMOLARITAT I/O HIPONATREMIA;
381.10	OTITIS MITJANA SEROSA CRONICA, SIMPLE				
784.3	AFASIA	401.9	HIPERTENSIO ESSENCIAL INESPECIFICADA	519.8	ALTRES MALALTIES D'APARELL RESPIRA
599.0	INFECCIO VIES URINARIES, LOCALITZACIO N	041.9	INFECCIO BACTERIANA INESPECIFICADA	873.42	FERIDA OBERTA DE FRONT, NO COMPL
584.9	FALLIDA RENAL AGUDA NO ESPECIFICADA	564.00	RESTRENYIMENT, INESPECIFICAT	724.2	LUMBAGO; DOLOR LUMBAR; SINDROM
041.6	INFECCIO PER PROTEUS (MIRABILIS)(MORC	041.49	ALTRES INFECCIONS PER ESCHERICHIA C	041.85	INFECCIO BACTERIANA PER ALTRES OR
511.9	EMBASSAMENT PLEURAL INESP.; EMBASSA	414.8	ALTRES FORMES ESPECIF.DE CARDIOP.IS	427.31	FIBRIL.LACIO AURICULAR
569.89	ALTR.TRAST.INTESTINALS ESPECIF.; ENTERC	285.9	ANEMIA INESPECIFICADA; ANEMIA: NOS	403.90	NEFROPATIA HIPERTENSIVA INESP. S/M
518.84	FALLIDA RESPIRATORIA AGUDA I CRONICA	276.2	ACIDOSI; ACIDOSI: NOS, LACTICA, META	401.9	HIPERTENSIO ESSENCIAL INESPECIFICA
519.8	ALTRES MALALTIES D'APARELL RESPIRATOR				
V45.71	ABSENCIA ADQUIRIDA DE MAMA I MUGRO	305.1	TRASTORN PER US DE TABAC; DEPENDEN	305.02	ABUS D'ALCOHOL, SENSE DEPENDENCIA
276.0	HIPEROSMOLARITAT I/O HIPERNATREMIA;	780.39	ALTRES CONVULSIONS	580.89	GLOMERULONEFRITIS AG.AMB ALTRES
584.9	FALLIDA RENAL AGUDA NO ESPECIFICADA	458.9	HIPOTENSIO INESPECIFICADA; HIPOTEN	427.31	FIBRIL.LACIO AURICULAR
276.7	HIPERPOTASSEMIA; HIPERKALEMIA; POTAS	276.8	HIPOPOTASSEMIA; DEFICIT POTASSI [K];		
414.01	ATEROSCLEROSI D'ARTERIA CORONARIA N.	584.9	FALLIDA RENAL AGUDA NO ESPECIFICADA	998.59	ALTRA INFECCIO POSTOPERATORIA
403.90	NEFROPATIA HIPERTENSIVA INESP. S/MEN	496	OBSTRUCCIO CRONICA VIES AERIES, NCC	585.9	INSUFICIENCIA RENAL CRONICA NO ES
751.3	MAL.DE HIRSCHPRUNG I ALTR.TRAST.FUNC	999.82	EXTRAVASACIO D'UN ALTRE AGENT VESI		
782.3	EDEMA; ANASARCA; HIDROPESIA; EDEMA	1356.2	NEUROPATIA SENSORIAL HEREDITARIA	719.7	DIFICULTAT DE CAMINAR

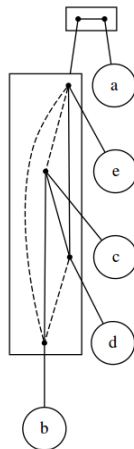
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# Clan Decomposition Method



Patients

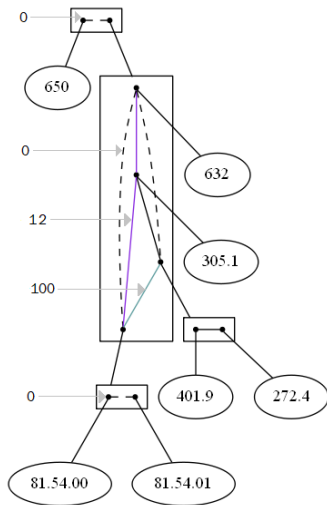
p1:	a	b	c
p2:	a	d	e
p3:	a	c	d





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# Hospitalization Graph Decomposition



- 650 Normal delivery.
- 632 Missed abortion.
- 305.1 Tobacco use disorder.
- 401.9 Unspecified essential hypertension.
- 272.4 Other and unspecified hyperlipidemia.

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## Purpose

To be an exploratory tool from data.

## After the analysis...

- To have a general view about co-occurring diagnostics.
- To complement statistical approaches.

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M. E. Piceno and L. Rodríguez-Navas

A graphical tool for the interpretation of medical data.

[https://womencourage.acm.org/2019/wp-content/uploads/2019/07/womENCourage\\_2019\\_paper\\_10.pdf](https://womencourage.acm.org/2019/wp-content/uploads/2019/07/womENCourage_2019_paper_10.pdf)



J. L. Balcázar, M. E. Piceno and L. Rodríguez-Navas

Hierarchical Visualization of Co-Occurrence Patterns on Diagnostic Data.

<https://doi.org/10.1109/CBMS.2019.00043>



J. L. Balcázar, M. E. Piceno and L. Rodríguez-Navas

Decomposition of Quantitative Gaifman Graphs as a Data Analysis Tool.

[https://doi.org/10.1007/978-3-030-01768-2\\_20](https://doi.org/10.1007/978-3-030-01768-2_20)

# THANK YOU!