

Prevalence of chronic diseases in the communities of *Miramar*
and *Puerto de Jobos* in the municipality of *Guayama*: one
investigation per survey.

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Historical background

- ▶ During the month of February 2018, a survey study was carried out in the communities of Miramar and Puerto de Jobos of the municipality of Guayama by Dr. Luis Bonilla Soto and his graduate students of the Environmental Health Principles course (SAAM 6528).
- ▶ The experience consisted of repeating the study made by biostatistics and epidemiology students of the Graduate School of Public Health during its research project in the summer of 2016 led by Dr. Gilberto Ramos and Dr. Rosa Rosario.
- ▶ Our purpose was to determine if the prevalence of chronic diseases found in communities of interest, during 2016, had changed over a period of two years.

Historical background (cont)

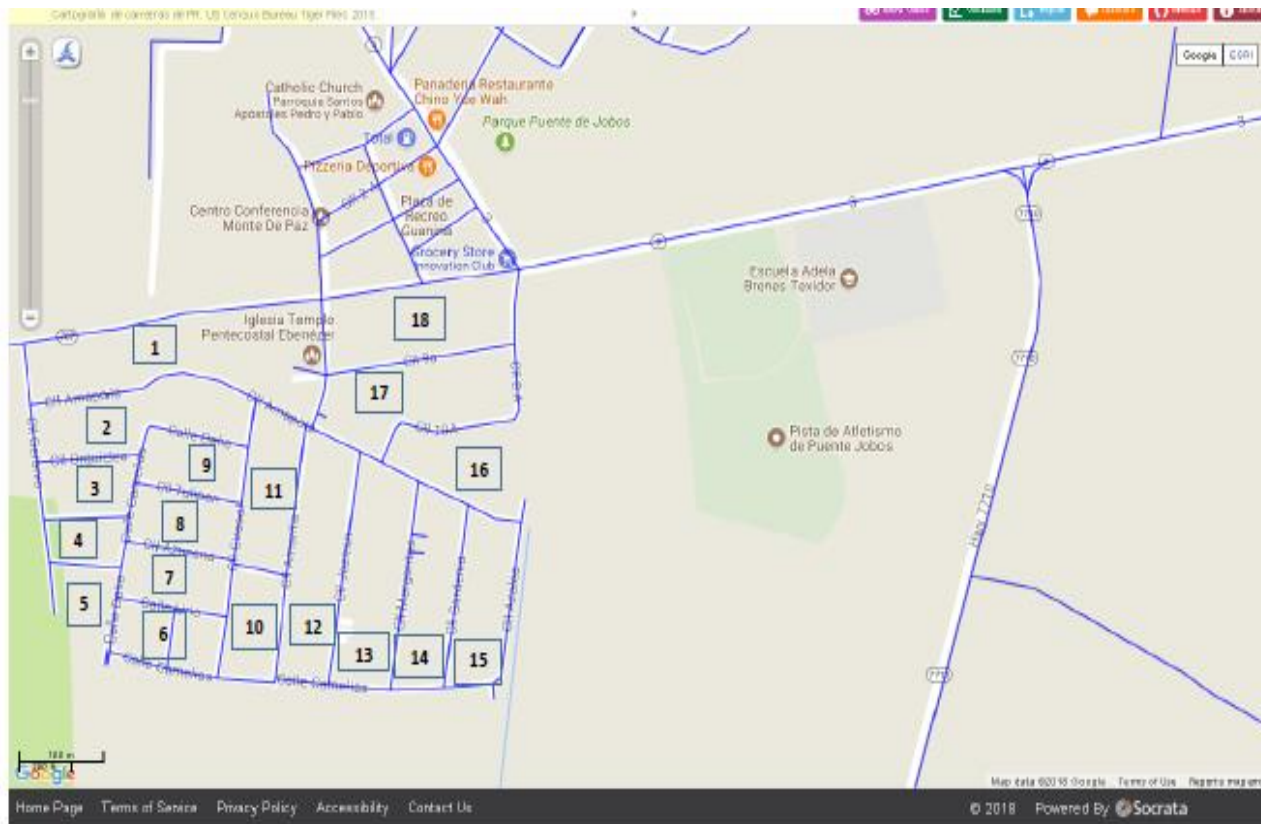
- ▶ The images shown below describes the general process of probabilistic sampling used to select the study sample in Miramar and Puerto de Jobos.
- ▶ At the end of a comparative table is presented with prevalence's found both in the 2016 study and in the 2018 study.
- ▶ The last column of the table shows the percentage difference found, due to chronic illness, between the 2016 study and the 2018 study.

Satellite Image of the communities of Miramar and Puerto de Jobos, Guayama, Puerto Rico



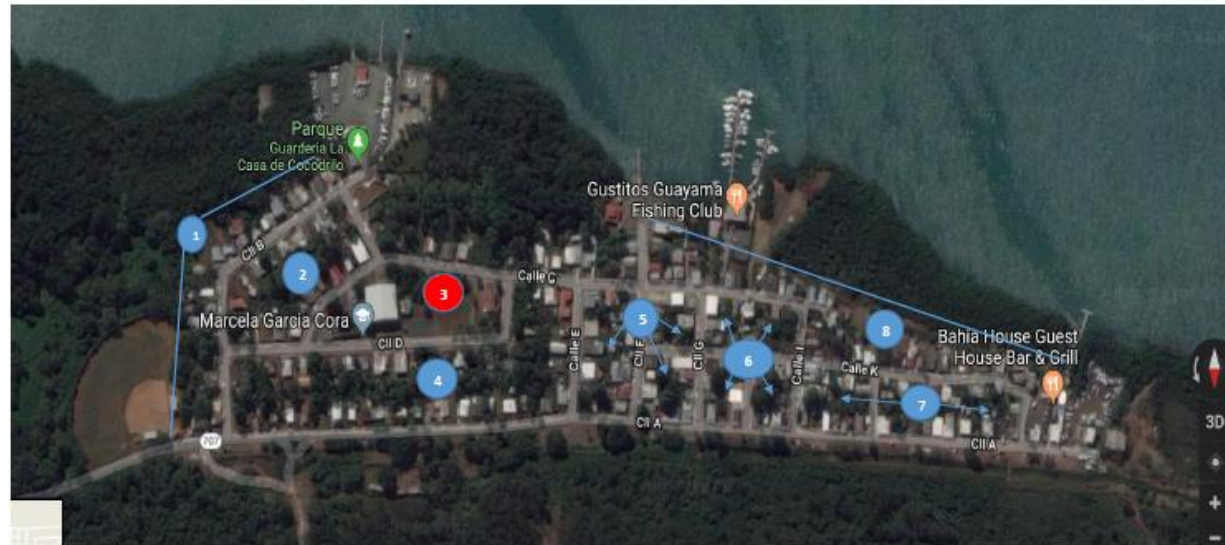
Google Maps Communities of Puerto de Jobos and Miramar of the municipality of Guayama. In an near area, the AES coal plant can be observed.

Map of Miramar showing the sampling conglomerates



Satellite image of Puerto de Jobos showing the sampling conglomerates

FOTO AÉREA DE PUERTO DE JOBOS, GUAYAMA, PUERTO RICO, CON LOS CONGLOMERADOS DE CASAS IDENTIFICADOS CON NÚMEROS



Legenda: ● = conglomerado que cayó en la muestra.
● = conglomerado que no cayó en la muestra

Aerial picture of Puerto de Jobos, Guayama, Puerto Rico, with conglomerates of houses identified by numbers.

Legend: **Blue** = conglomerate that was included in the sample.
Red - conglomerate that was not included in the sample.

Comparative table of chronic diseases prevalence in the communities of Miramar and Puerto de Jobos, Guayama (2016 and 2018)

Final data analysis on chronic diseases prevalence survey at the communities Miramar and Puerto de Jobos near the AES coal fired plant, Guayama, Puerto Rico as compared with the 2016 survey sample study *

Type of disease or event	Prevalence 2016 (%)	Prevalence 2018 (%)	SE** prevalence 2018	95% CI Prevalence 2018	Difference (%) between years 2016 & 2018
Respiratory diseases					
Asthma	17.8	25.2	0.035	18.3-32.1	+ 7.4
Respiratory failure	5.8	11.3	0.025	6.4-16.2	+ 5.5
Bronchiolitis	< 2%	2.5	0.012	0.10-4.9	+ 1.5
Emphysema	< 2%	2.5	0.012	0.10-4.9	+ 1.5
Allergic rhinitis	4.0	8.9	0.022	4.6-13.2	+ 4.9
Chronic bronchitis	5.8	8.2	0.022	3.9-10.4	+ 2.4
Lung fibrosis	< 2%	3.1	0.014	0.4-5.8	+ 2.1
Sinusitis	18.5	28.3	0.032	22.0-34.6	+ 9.8
Cardiovascular diseases					
All CVD	33.7	52.9	0.040	45.1-60.7	+ 19.2
Hypertension	29.0	43.4	.045	34.6-52.2	+ 14.4
Cardiac arrhythmia	2.2	5.7	0.017	2.4-9.0	+ 3.5
Myocardium stroke	2.9	3.8	0.014	1.1-4.1	+ 0.9
Skin diseases					
Allergic contact dermatitis	2.2	11.9	0.027	6.6-17.2	+ 9.7
Hives	2.3	3.8	0.014	1.1-4.1	+ 1.5
Cancer diagnosis					
All cancers	4.3	9.4	0.022	5.1-13.7	+ 5.1
Diabetes	14.5	30.2	0.036	23.1-37.3	+ 15.7
Spontaneous abortions	21.6	9.5	0.023	5.0-14.0	- 12.1

* 2018 data gathered during the month of February. The median age of the interviewed people was 64.0 years. Regarding educational level only 29.2 % of the residents completed secondary school and 44.0% had completed 11th grade or less. Therefore, 73.2% of the residents have an educational level of secondary school or less. The age group studied was ≥ 21 years old.

**SE = standard error

CONCLUSION

- ▶ The prevalence of all chronic diseases found during the 2016 study (respiratory diseases, cardiovascular diseases, diabetes, skin diseases and cancer) increased by 2018, except spontaneous abortions. The latter decreased from 21.6% (in 2016) to 9.5% (in 2018). In other words, a 12.1% decrease.
- ▶ A plausible explanation for the high prevalence of spontaneous abortions in communities of interest in Guayama, for the year 2016, is that Puerto Rico was at the height of the Zika virus epidemic. Precisely, one of the side effects of an infection of this virus in a pregnant woman is spontaneous abortions.

CONTENT ANALYSIS ARTICLE



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CONTENT ANALYSIS ARTICLE (CONT.)



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United States Congressmen support the legalization of environmental health injustice in Puerto Rico

Authors

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Luis A. Bonilla-Soto

Original Article

First Online: 02 July 2018

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Abstract

Objectives

Analyze the role of two members of the United States Congress, two private enterprises, and the government of Puerto Rico in the approval of the counterproductive law “Ban on the Deposit and Disposal of Coal Ash or Coal Combustion Residuals in Puerto Rico” (Law No. 40) in the framework of the four principles for environmental policy making.

Methods

The gathered text documents were structured, reviewed, and coded using a content analysis protocol to produce coding categories and the final analysis.

Results

Two US congressmen, apparently influenced by private enterprises, had a decisive role in the approval of Law No. 40 which failed to comply with any of the four principles for environmental public policy making.

Conclusions

Puerto Rico’s Government succumbed to the extortion strategy of two US congressmen and private economic interests, and finally approved Law No. 40 which mistreats the general public and the environmental health of two low socioeconomic status communities in the municipalities of Guayama and Peñuelas. This law has the potential to negatively affect public health and the environment island-wide.

CASE BEFORE THE HUMAN RIGHTS COMMITTEE OF THE UNITED NATIONS

**SUBMISSION TO THE U. N. HUMAN RIGHTS COMMITTEE IN RELATION TO THE
LIST OF ISSUES OF THE UNITED STATES CONCERNING THE UNSAFE DUMPING AND
MISMANAGEMENT OF COAL ASH IN PUERTO RICO.**

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FINAL REFLECTION

- ▶ The operation, emissions and handling of coal ash from the company AES in Puerto Rico is a case of environmental injustice, public health and violation of basic human rights.
- ▶ According to the " **National Academy of Sciences** ", in the study " **Hidden Cost of Energy: Unpriced Consequences of Energy Production and Use** " of 2009 the environmental and public health impact of a coal plant is \$ 177.2 million per year (data adjusted for inflation through 2017).
- ▶ The AES produces an average of 800 tons per day of coal ash because of the burning of about 8,000 tons of coal per day.
- ▶ According to Frumkin (2016) the approval of environmental public health policy must comply with the following principles:
 1. Environmental Justice
 2. Precautionary Principle
 3. The polluter pays
 4. Ecological sustainability
 5. Health and sustainability in all public policies.