Exploring the utilization of business intelligence and visual data analysis on chronic disease risk

A case study of the customers implementing Preventi Health Service in a Regional Teaching Hospital.

Author: Tz-Jie Liu[1,2], Mei-Tsu Chen[2], Wen-Chun Chen[2]

Reporter: Tz-Jie Liu

1. Department of Information Management, National Chung Cheng University

2. St. Martin De Porres Hospital

Keywords

Health promotion

Chronic disease risk assessment

Business intelligence

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ABSTRACT

- The purpose of this study is to use the business intelligence system to explore the prediction results of the chronic disease prevention and treatment platform, integrate big data to visualize the data to analyze the risk situation predicted by five chronic diseases in each mile of Chiayi City.

- Hope to collect the geographical relationship between these five chronic diseases and each li and formulate health promotion and education strategies based on this correlation, to promote people's health, reduce the occurrence of high-risk diseases and improve people's health.

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High in the top ten causes of death among residents

National Health Department of the Ministry of Health and Welfare

- According to the analysis of the top ten causes of death by Taiwan's Ministry of Health and Welfare over the years, since the 70 years of the Republic of China,chronic diseases such as

- Coronary heart disease
- Stroke
- Diabetes
- Hypertension
- Cardiovascular disease

Establish a risk assessment model for predicting chronic diseases in 10 years

National Health Department of the Ministry of Health and Welfare

Chronic diseases

Business intelligence system

- Business intelligence system to explore the prediction results of the chronic disease prevention and treatment platform, integrate big data to visualize the data.

Health promotion

- Risk situation
- Collect the geographical relationship between these five chronic diseases.
- Reduce the occurrence of high-risk diseases.

AGE	SEX	CHD	Diabetes	Hypertension	Stroke	MACE
65	F	93.1%	100.0%	100.0%	81.4%	93.8%
67	F	46.2%	50.5%	0.0%	29.3%	57.6%
61	M	63.5%	82.9%	200.0%	71.3%	104.9%
64	M	67.9%	63.9%	200.0%	60.6%	87.3%
65	F	43.1%	49.0%	0.0%	16.2%	47.8%
66	F	40.6%	54.4%	67.3%	13.0%	37.4%
67	F	47.2%	49.6%	69.1%	14.0%	40.7%
53	F	20.9%	100.0%	100.0%	21.7%	18.2%
54	F	22.7%	100.0%	100.0%	22.7%	19.4%
58	F	19.1%	29.6%	61.1%	11.9%	22.2%
65	F	26.6%	33.7%	0.0%	16.7%	32.5%
66	F	30.5%	31.7%	72.3%	15.6%	31.2%
67	F	31.9%	73.8%	100.0%	24.2%	28.4%
69	F	33.9%	0.0%	78.0%	13.6%	31.0%
70	F	46.0%	85.9%	84.2%	18.3%	39.7%

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Tableau business intelligence BI software

- This study was built using C# .Net application accesses chronic disease risk assessment case data and combines Tableau business intelligence BI software to develop platform data through data cleaning, screening, formalization, ETL extract, transform and load, data exploration and probe down query, agile self-service analysis data, and calculations combined with geographic map data, and finally with Power View interactive visual effects (visualization).

- The final rendering accelerates the delivery of optimization decisions.

Tableau business intelligence BI software

- Through VizQL, every mouse drag and drop of the user can be converted into SQL or MDX database query language, and finally "directly return query results in graphs", which is the key to creating Visual Analytics.

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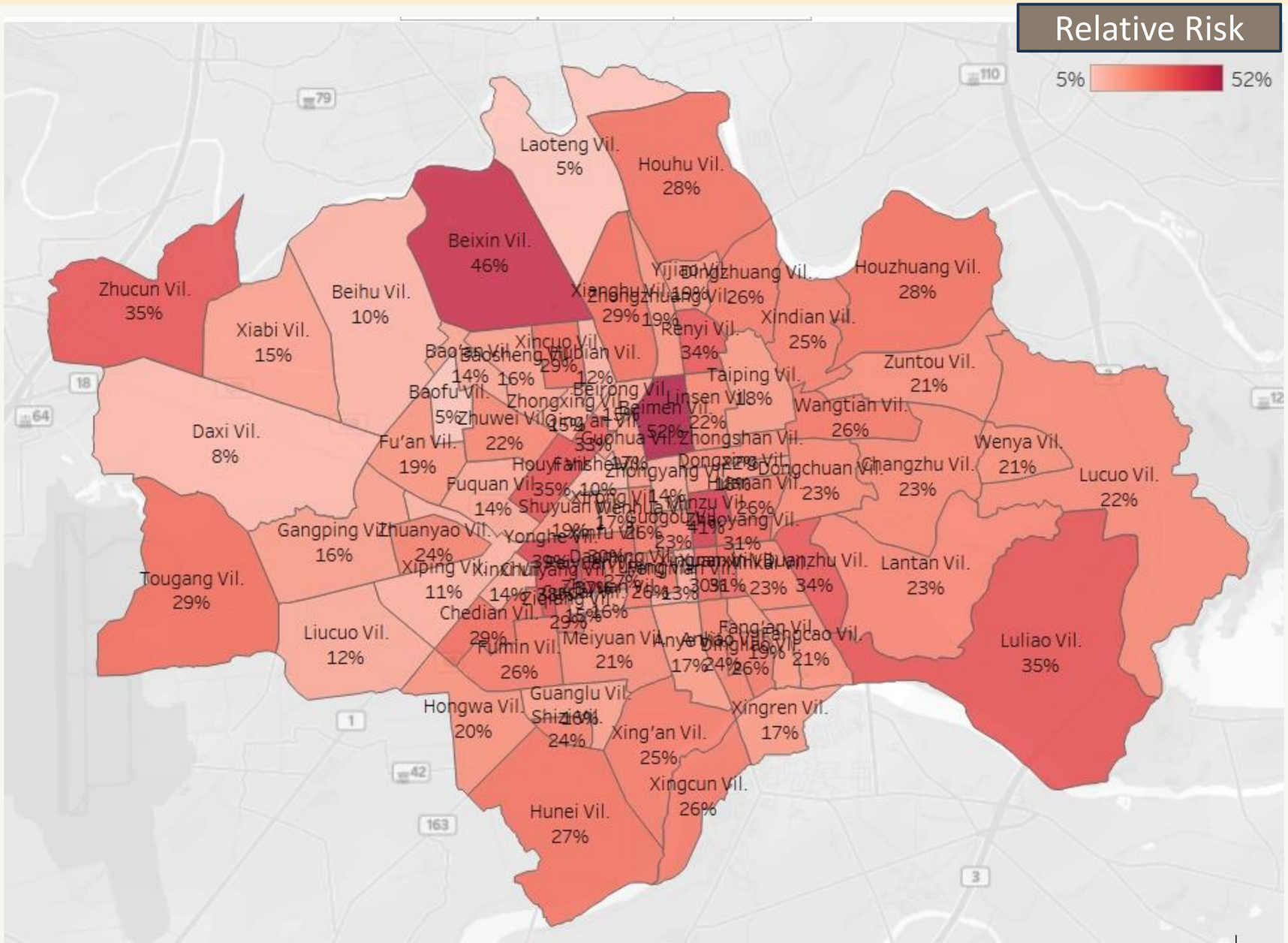
Chronic disease population results

- The results show that the participant in the screening was composed of 3,475 males (34.9%), and 6,481 females (65.1%).
- The age ranges from 35 to 70 years.

- The medium-risk and high-risk people with coronary heart disease 2,668 (26.8%) and 2,138 (21.5%),
- diabetes 2,703 (27.1%) and 5,630 (56.5%),
- hypertension 3,599 (36.1%) and 1,644 (16.5%)
- Stroke 2,759 (27.7%) and 2,186 (22%)
- cardiovascular dysfunction 3,038 (30.5%) and 3,683(37%)

Chronic disease population results



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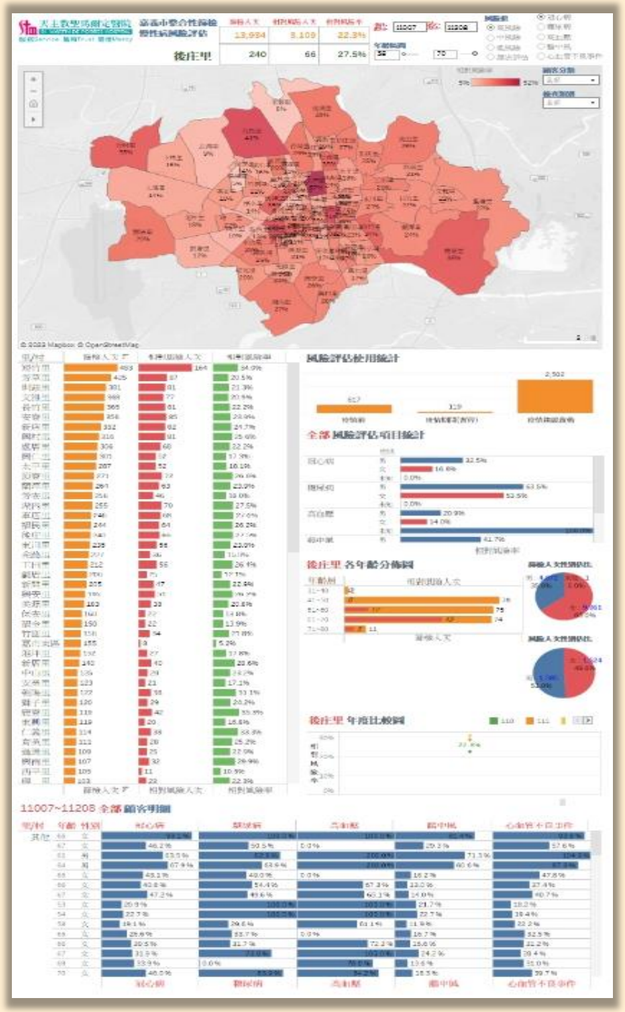
Visualize the data and BI

- Using the Business Intelligence (BI) architecture to integrate the big data predicted by the chronic disease prevention and treatment platform to visualize the data to analyze the risk situation of five chronic diseases predicted in each mile of Chiayi City
- Important study found that the risk situation of the five chronic diseases can be quickly and immediately grasped through geographic map data, improve staff efficiency and reduce workload, and combine each risk situation with community health stations to provide local high-risk disease health strategies and intervention measures.

Visualize the data and BI

- To reduce the risk of chronic diseases among the people, it will be introduced to the whole of Taiwan in the future and provide a reference for medical institutions to implement health promotion business.



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Thanks for listening!