

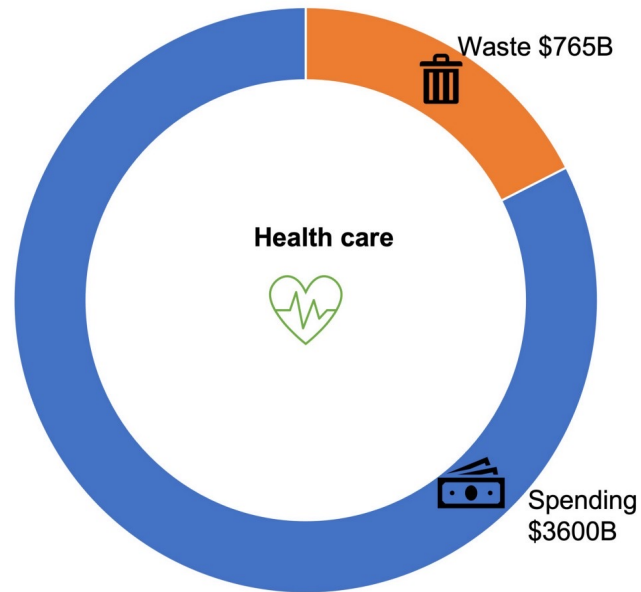


AFFORDABLE HEALTH CARE

CMPE-255 Sec 48 Data Mining

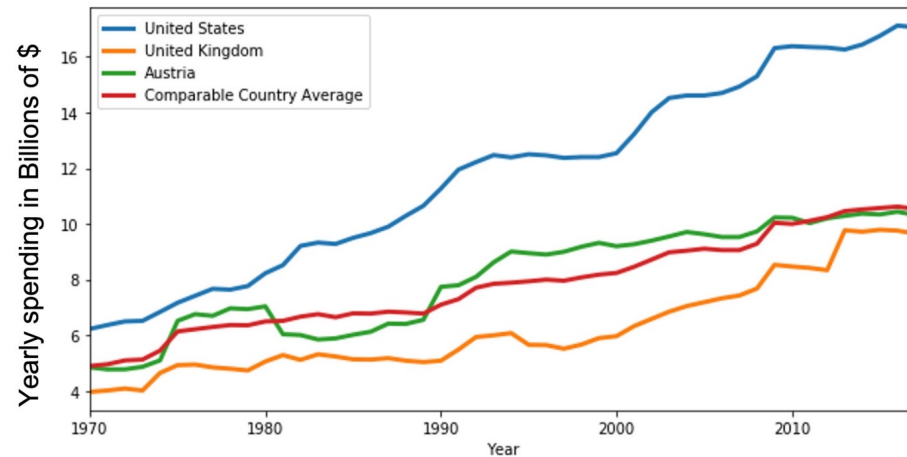
Parvathi Pai

US yearly health care cost



- The US health care industry is huge and there is lot of data coming out of it. It's also very expensive — the overall spending is 3.8 trillion dollars per year!
- There is massive waste in US health care — around \$765 billion dollars per year.
- Not only is cost an issue, but the quality of personal health care is perceived to be poor

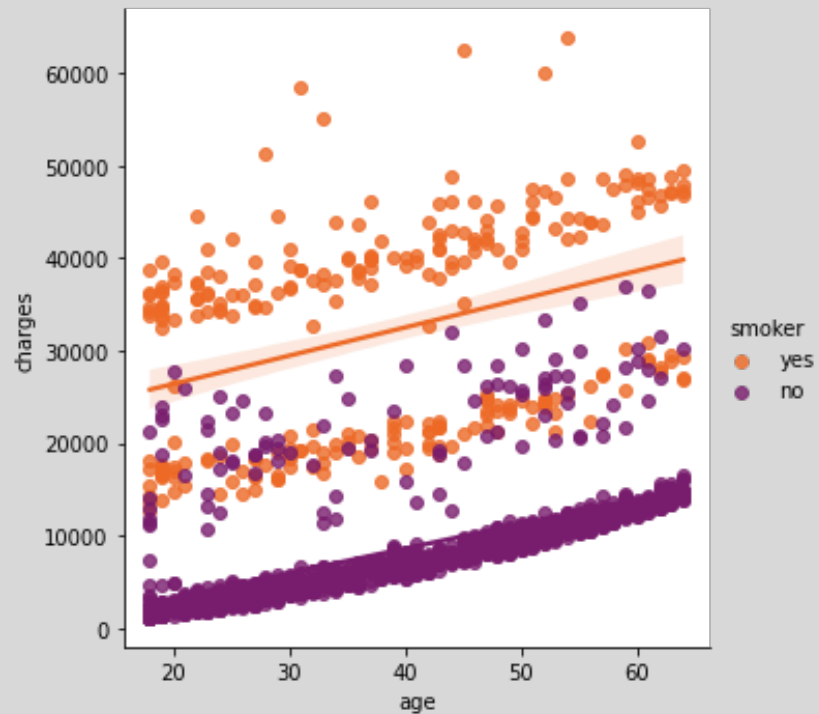
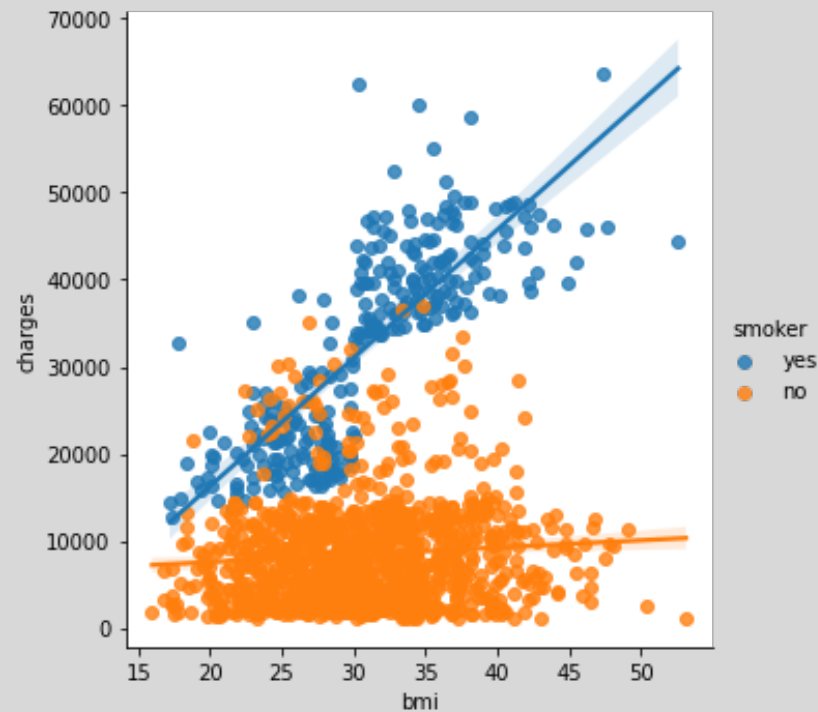
COST OF HEALTH CARE IN US WHEN COMPARED TO THE OTHER COUNTRIES



- We can observe that US has 60% higher rates in the insurance when compared to UK, Austria, and other countries average.
- Why is this a case in USA?

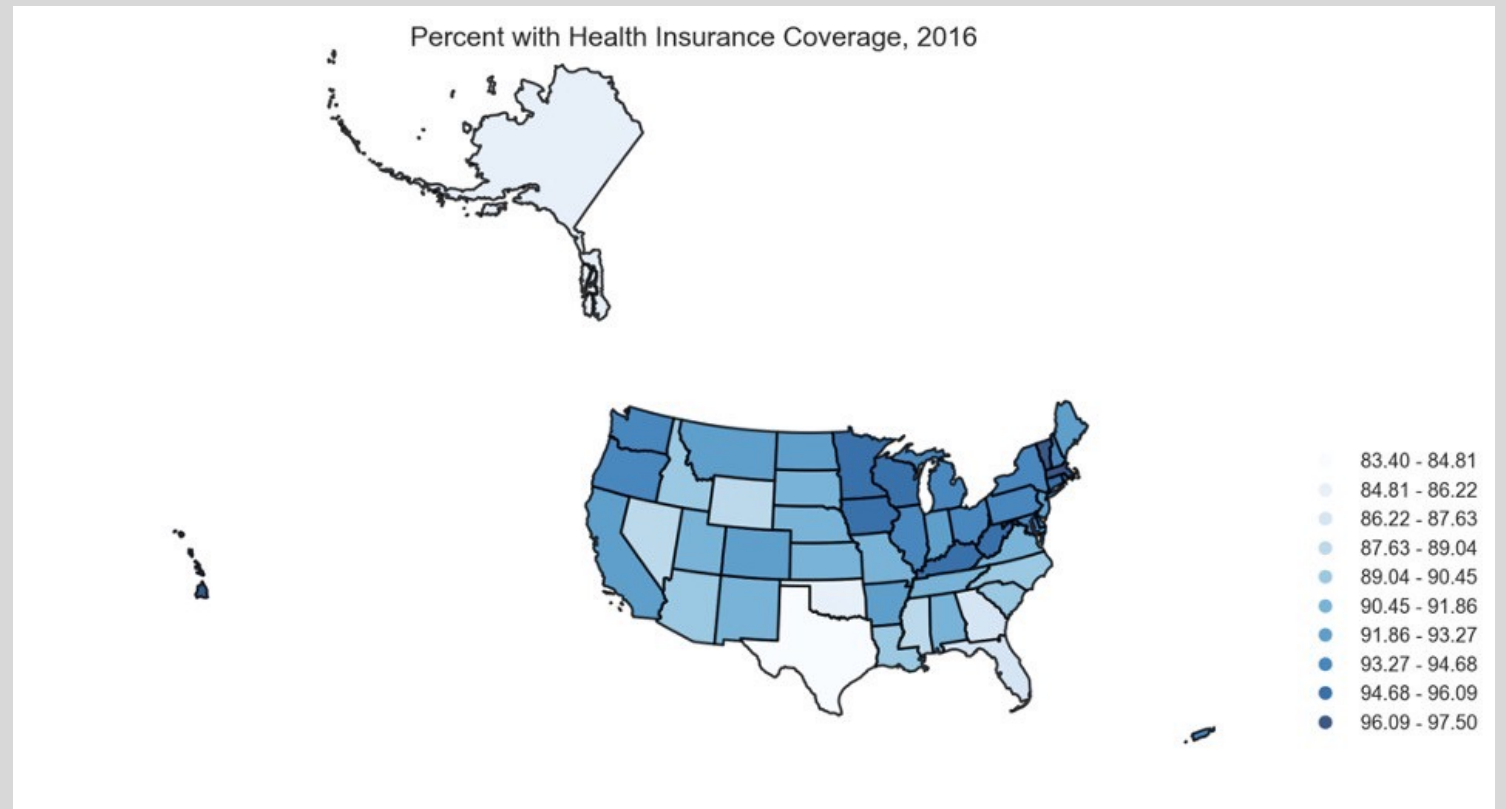
Understanding insurance cost

Several factors contribute to higher insurance rates a few being BMI and age for smoker and non-smoking people



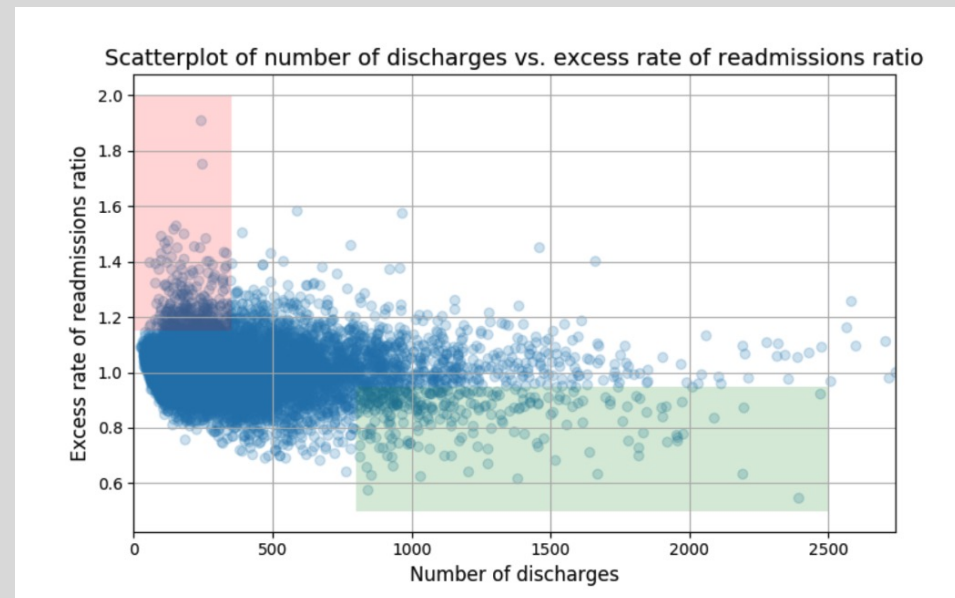
Despite higher cost are people having insurance?

Yes, most of the states have insurance providers.
Texas and Alaska have only 83% covered by insurance.



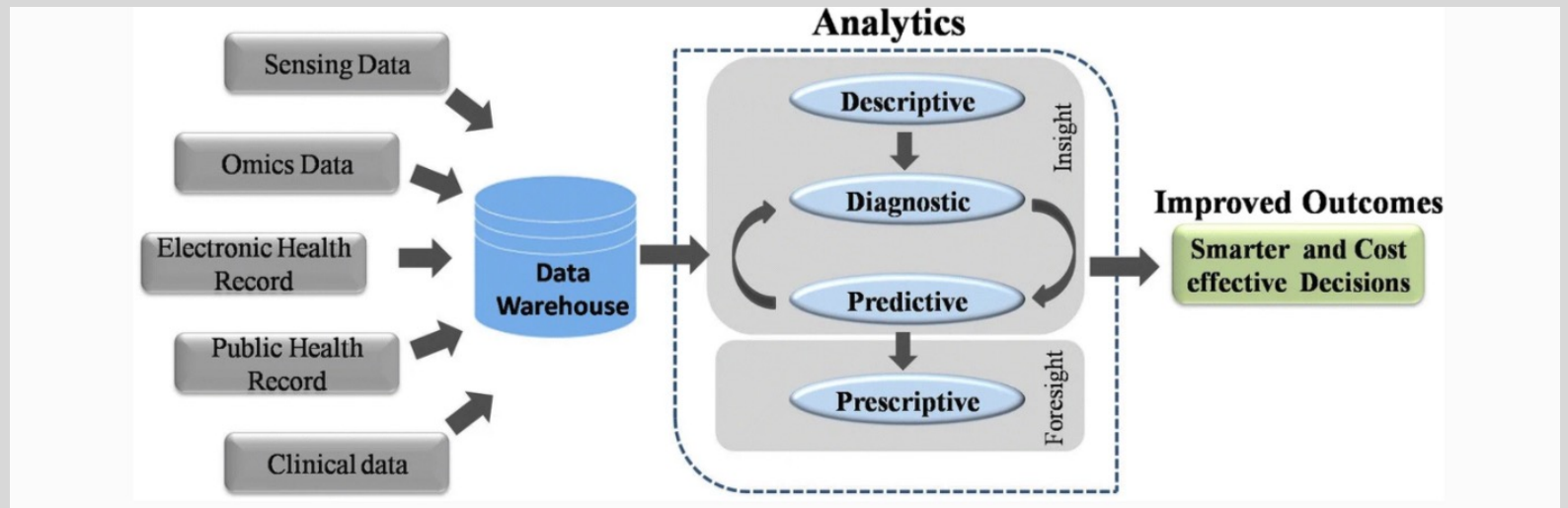
Hospital readmission ratio

- According to the above chart the rate of readmission is trending down with the increase in the number of discharges.
- With lower number of discharges there is excess rate of readmission.
- With higher number of discharges lower rate of readmission.

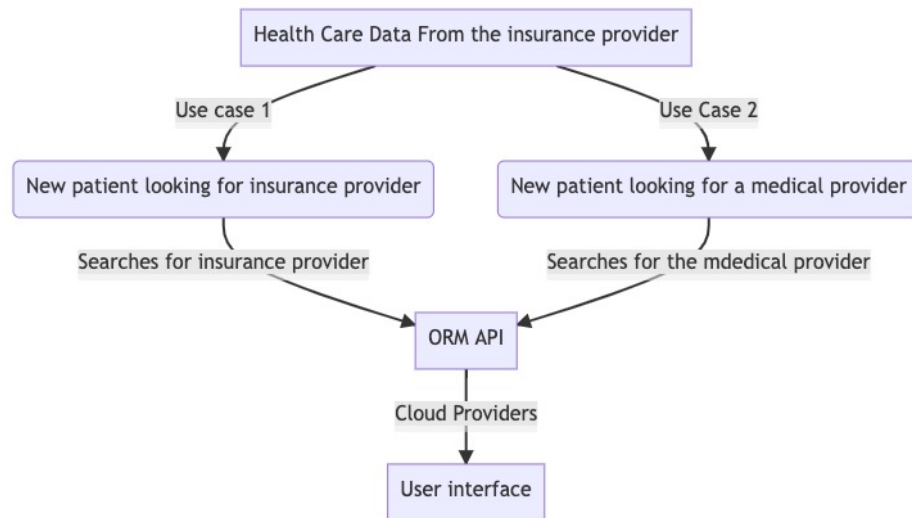


Data Collection

Health care data is available every where but not used



How technology can help solve this problem?



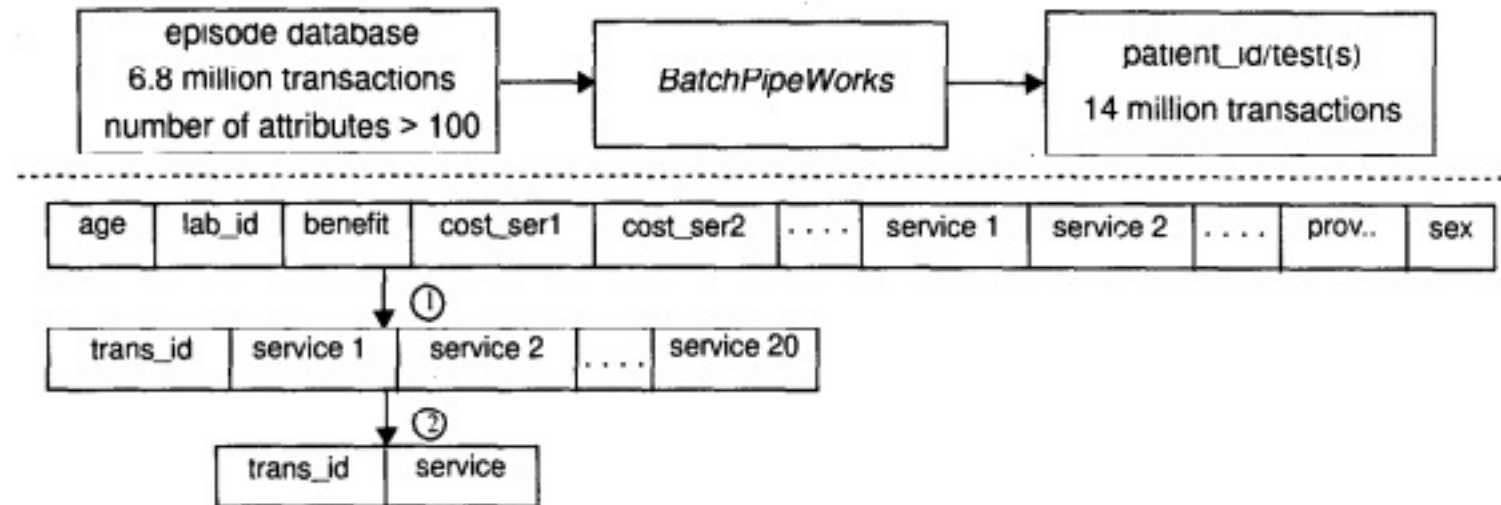
- Use data mining techniques to assist new patients in an unfamiliar area discover local low-cost high-quality insurance providers based on several factors
- Use relevant historic data to recommend low-cost high-quality care for a patient with a particular insurance provider.

Algorithms

Associative pattern mining, similar to recommendation using matrix factorization.

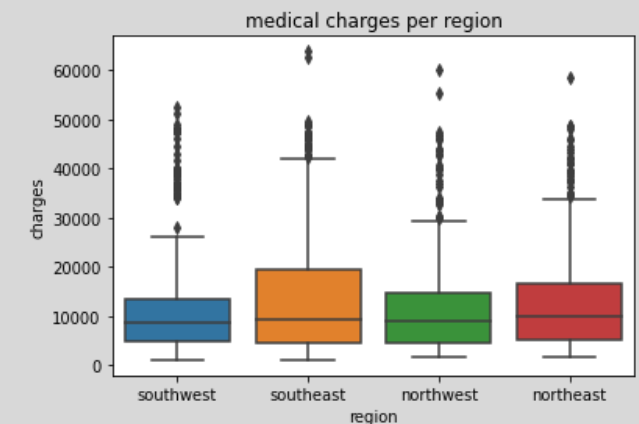
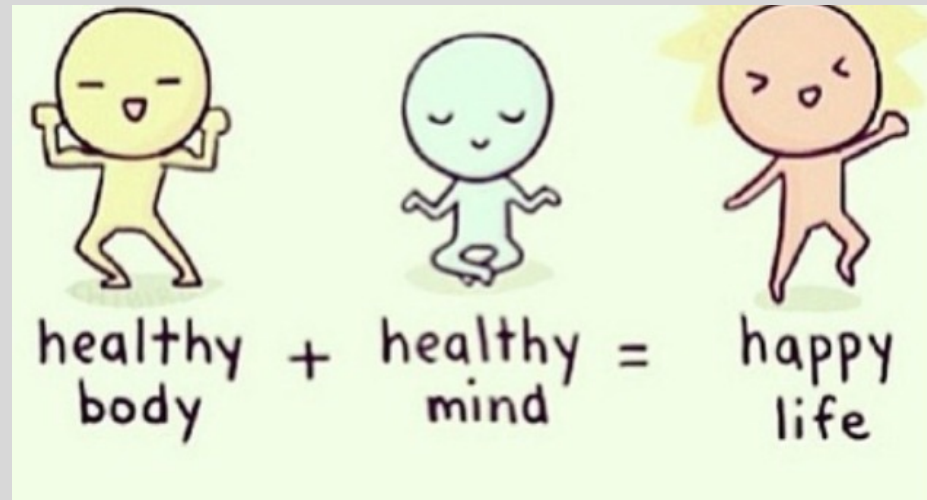
Support: Number of items that are contained in a given set

Confidence: Increase in the frequency of items in the given set



Summary

- Providing the health insurance APIs to the customers helps them make a better decision in choosing the right treatment at the right place and at a better rate.
- If people cultivate healthy life-style then medical cost reduces.
- The south east region has higher fluctuations in medical cost.
- For smokers the medical cost increases indisputably with BMI and age. It's better to prefer hospital with higher rate of discharge and lower readmission ratio.



Future scope

- Many APIs available in the market place with health care data with no useable application available for customers.
- The APIs are now getting integrated with the voice assistance devices.
- This health application could also be extended to animal health care.
- These might help to reduce the hospital rates in the future

References

[1] Viveros, M. S., Nearhos, J. P., & Rothman, M. J. (1996, December). Applying data mining techniques to a health insurance information system. In *VLDB* (Vol. 96, pp. 286–294).

[2] Chae, Y. M., Ho, S. H., Cho, K. W., Lee, D. H., & Ji, S. H. (2001). Data mining approach to policy analysis in a health insurance domain. *International journal of medical informatics*, 62(2–3), 103–111.

Link to my medium article: <https://medium.com/@parvathi.pai/affordable-health-care-2061f46b6f69>

Link to my colab:

https://colab.research.google.com/drive/1zve73ABBDKxMIRX0Erxp_qoB2CmvD5CJ?usp=sharing

Link to the dataset:

<https://drive.google.com/drive/folders/1aK6yeHwUxOjTFa60rh5z668tTD8CsAXK?usp=sharing>