



# Relationship Between EGFR Content and Cancer Rates

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## INTRODUCTION

**Epidermal Growth Factor Receptor**, also known as **EGFR**, is an important component in some types of cancer.<sup>5</sup> Since it is responsible for a very low percentage of cancer cases, it is a very under-addressed topic.<sup>3</sup> The lack of information on this topic resulted in gaps in research that inevitably led to the research question: How does EGFR content in cells correspond to cancer rates?

## RESEARCH METHODOLOGIES

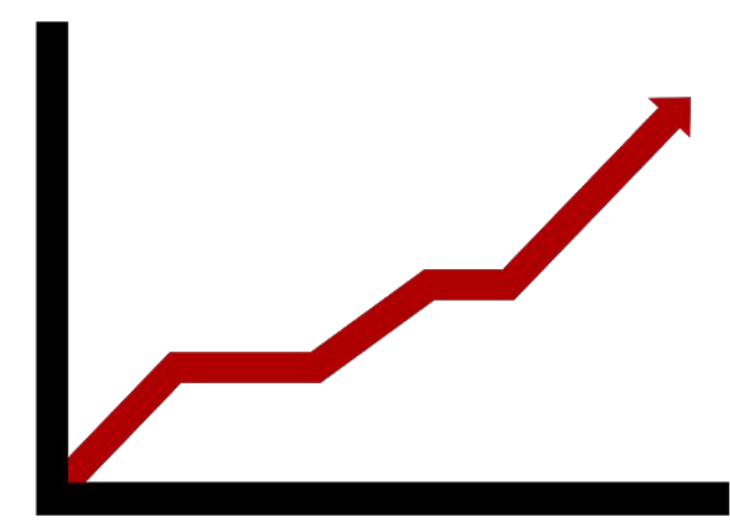


### RESEARCH

Finding sources and databases to pull data from. Organizing the collected data into spreadsheets.

### CODING

Coding and using correlational research to analyze the data.



### SYNTHESIZING DATA

Organizing the previously collected data into graphs.

## DATA AND FINDINGS

Figure 1: Spreadsheet Showing EGFR Content, Cancer Rate, and Percentage Deviation for both respectively.

EGFR in tissue type (TPM)	Cancer Rate (per 100,000 people)	EGFR Percentage Deviation	Cancer Percentage Deviation	Cell Type
22.3	6.5	57.54%	-64.44%	Cerebral Cortex
35.1	14.5	147.97%	-20.68%	Thyroid
2.9	23.6	-79.51%	29.10%	Lymph Node
7.6	2.6	-46.31%	-85.78%	Tonsil
3.2	3.6	-77.39%	-80.31%	Heart Muscle
22.7	58.3	60.37%	218.93%	Lung
19	9.8	34.23%	-46.39%	Liver
14.5	1.3	2.44%	-92.89%	Gallbladder
3.5	14.6	-75.27%	-20.13%	Pancreas
9.9	1.4	-30.06%	-92.34%	Salivary Gland
28.3	5.3	99.93%	-71.01%	Esophagus
9.3	7.4	-34.30%	-59.52%	Stomach
7.7	2.7	-45.60%	-85.23%	Small Intestine
12.5	38.4	-11.69%	110.07%	Colon
12	38.4	-15.22%	110.07%	Rectum
13.2	16.2	-6.75%	-11.38%	Kidney
11.8	19.8	-16.64%	8.32%	Urinary Bladder
8.2	5.5	-42.07%	-69.91%	Testes
26.8	95.5	89.33%	422.43%	Prostate
12.6	0.2	-10.99%	-98.91%	Epididymis

Figure 2: Graph of the Percent Deviation of EGFR Content and Cancer Rates

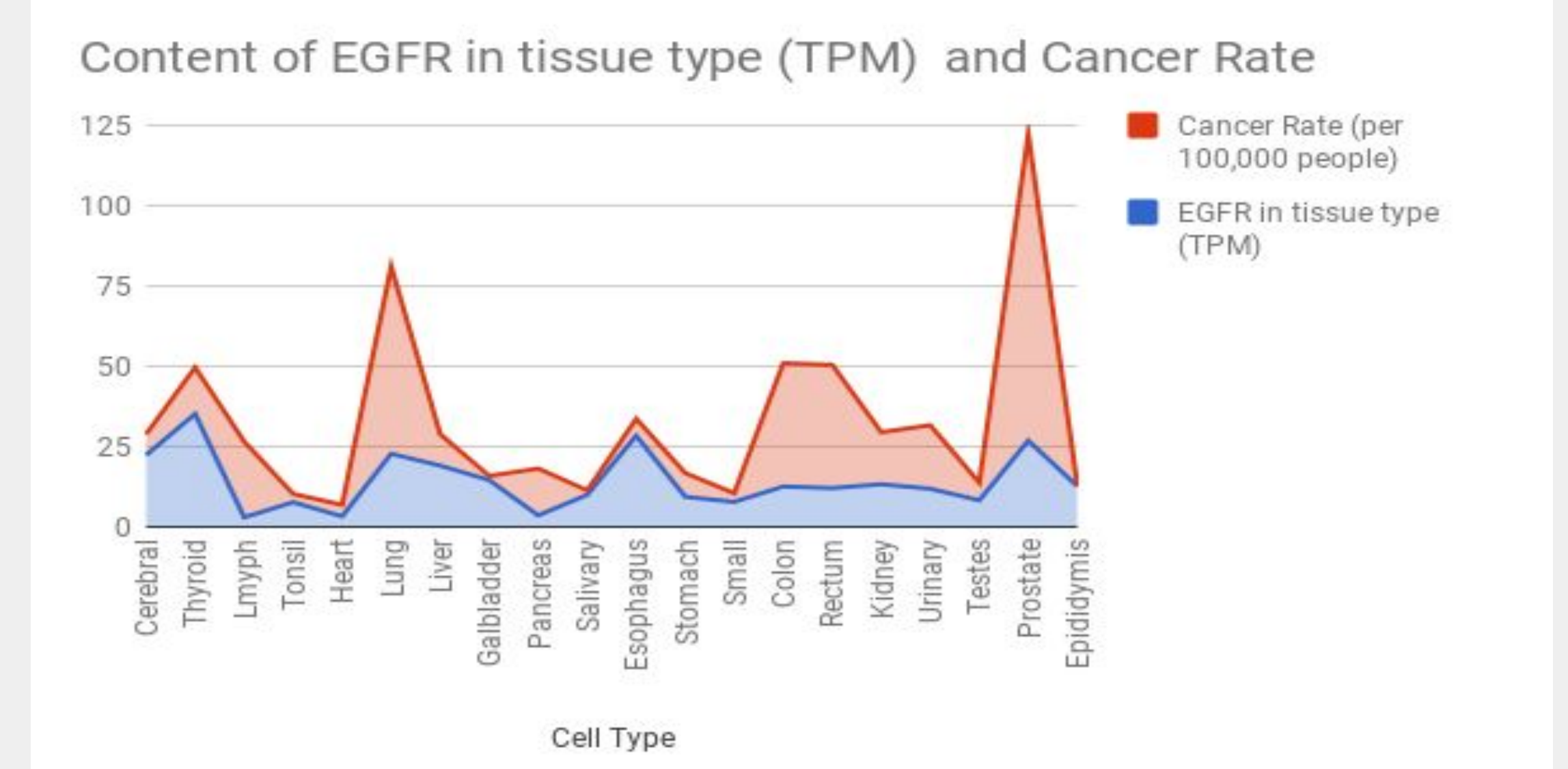
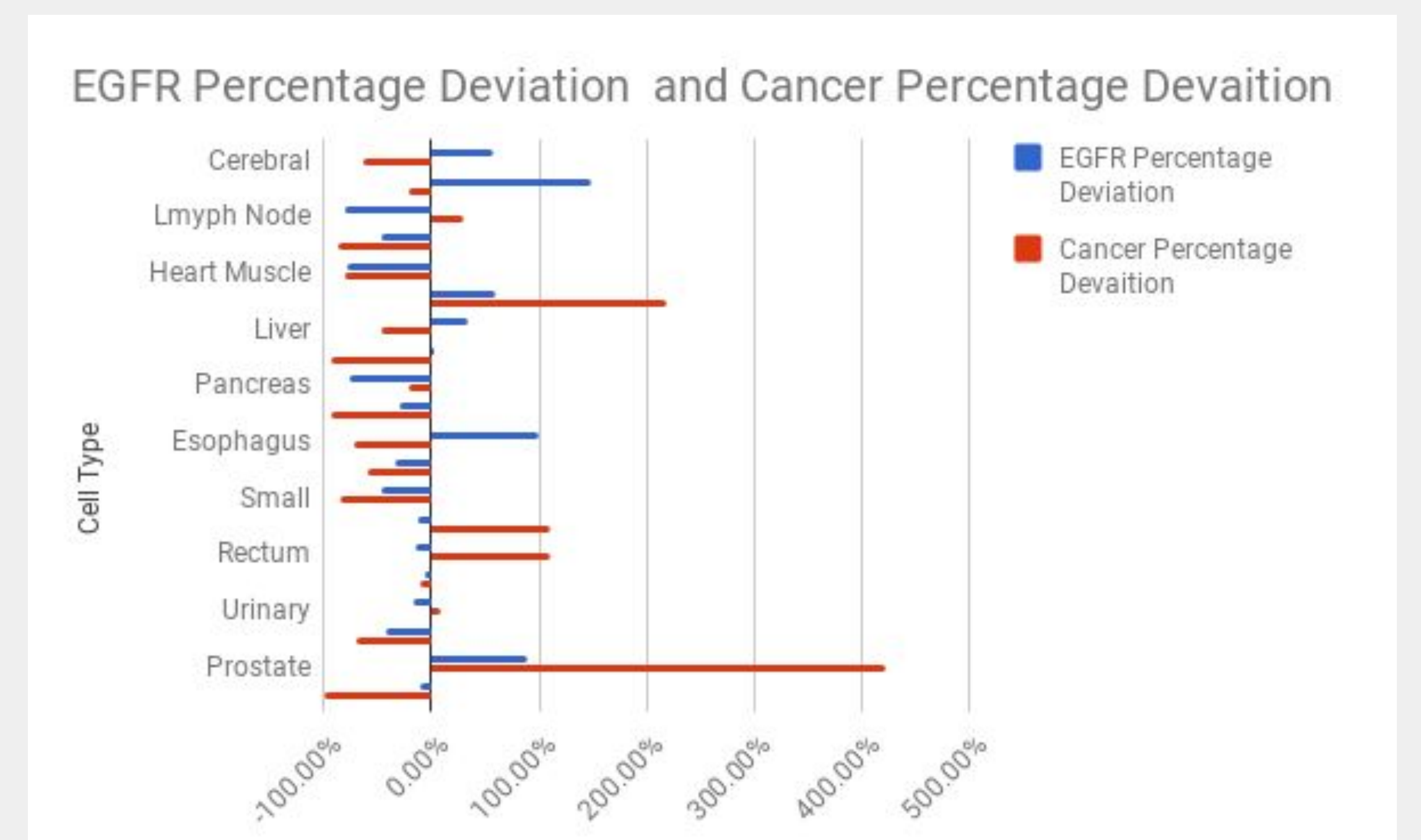


Figure 3: Graph depicting the Content of EGFR (TPM) and Cancer Rates (per 100,000 people)

## DISCUSSION, ANALYSIS, AND EVALUATION

The first two columns in Figure 1 consist of data collected from the Human Protein Atlas along with the United States Cancer Statistics. The next two columns are the calculated percentage deviation of EGFR content and Cancer Rates, respectively. The last column labels the cell type for each row.

Figure 2 is a graph highlighting the percentage deviation of **EGFR content** and **Cancer Rates**, using data from columns 3, 4, and 5.

Figure 3 is a graph showing the content of **EGFR** versus the rates of **Cancer**, using data from columns 1, 2, and 5.

There is not a large enough correlation between the two variables, EGFR Content and Cancer Rates, to be able to make the claim that they are in fact correlated.

The mean of the EGFR Content is 14.155, which is relatively similar to the mean of the Cancer Rates, which is at a value of 18.28.

## CONCLUSIONS, IMPLICATIONS, AND NEXT STEPS

The data shows a slight correlation between EGFR Content and Cancer Rate. In 45% of cases when the EGFR Content goes below the mean of 14.155, the Cancer Rate also goes below its mean of 18.28, and vice versa. While this is a relatively large percentage, there isn't enough data to make the claim that EGFR Rates and Cancer Rates are directly correlated.

If this project was continued in the future, it could collect enough sample data to show a correlation between EGFR Content and Cancer Rates. This piece of information could be crucial for doctors when diagnosing patients and prescribing medicine. This could also decrease the misuse of EGFR inhibitors.

## ACKNOWLEDGEMENTS / REFERENCES

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### PICTURES:

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