Overtime and Paid Leave Effects on Burnout: Conceptualizing an Anthroengineering Methodology to Predict Employee Turnover

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Background and Introduction

Anthroengineering has most recently been defined as "an approach that uses theories, methods and/or data from both anthropology and engineering to address questions within and beyond both disciplines" (Berthaume and Kramer).

Turnover is the act of replacing an employee with another employee, we see this as an event resulting from a lack of workload optimization and as a culturally legitimate site of investigation.

Work-life balance and burnout have been heavily cited in business media outlets as reasons for high turnover rates during the COVID-19 pandemic.

The World Health Organization defines burnout as “a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed” (2019).

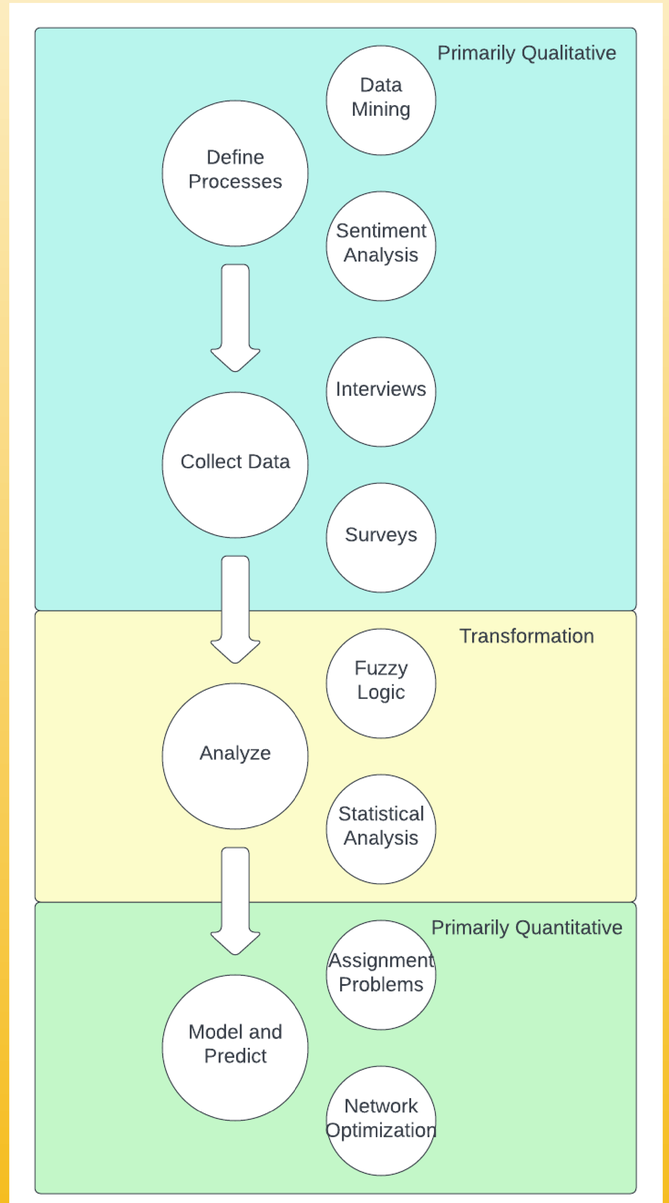
We propose a new interdisciplinary framework called Labor Gap Response Theory which borrows from sociocultural anthropology and industrial engineering.

Labor Gap Response Theory aims to answer the following questions: When turnover in an organization occurs, how does the organization respond, what shapes or directs that response, and how does that affect the remaining employees?

Our goal with this research is to propose a unique anthroengineering methodology to identify the relevant burnout indicators in an organization and predict turnover based on those factors.

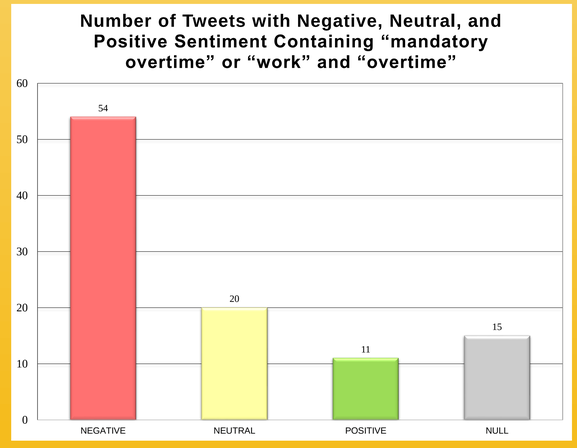
Methodological Outline

1. Define organizational and social processes related to overtime (OT) and paid time off (PTO)
2. Collect data on attitudes toward PTO and OT
3. Analyze the correlation of OT and PTO with burnout
4. Develop a model that can predict turnover

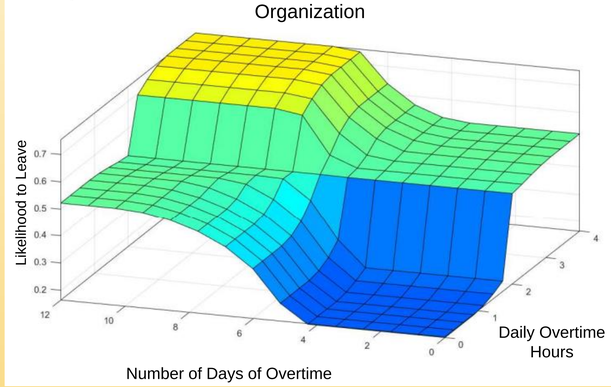


Current Approach and Results

At this time, certain **data mining** techniques on Twitter have proven useful for studying users to make generalizations about their practice (Lahuerta-Otera and Cordero-Gutierrez). With access to the Twitter API through Twitter’s developer portal an application was developed in Python using the Tweepy library to search for tweets by US users containing the phrases “mandatory overtime” or “work” and “overtime.” A sample of 100 tweets was then sorted for negative, neutral, or positive sentiment about OT using **sentiment analysis**. If mandatory overtime was unrelated to our research it was marked as null. For example: “school has my brain working overtime” was marked as null, “they keep calling me in for mandatory overtime I need a day off” was marked as negative, and “made the best money working mandatory overtime” was marked as positive. We found that 65% of relevant tweets had negative sentiment and 12% had a positive sentiment. The main themes in negative tweets were “unpaid” and “make ends meet” whereas positive tweets mostly contained the theme of “pay”. These findings indicate that although some people need or would like OT pay, working overtime itself may not be desired.



Desired Future Research Output: Hours of Overtime in a Day and Days with Overtime in the Past Month vs. Likelihood to Leave Organization



Conclusions and Future Work

Given the results of our small-scale **data mining** and **sentiment analysis** we believe that mandatory overtime is a worthwhile factor that requires more in-depth analysis which could be further automated at a much larger scale using the Python Natural Language Toolkit (NLTK). We also expect to find that people in salaried positions and hourly positions feel differently about mandatory OT. We make note that at this time, we have not yet tested for keywords related to PTO in our data mining.

While our data are useful for generalizing sentiment about OT, it is still unclear how workplaces themselves coordinate OT and organize workloads. In order to identify these processes, we propose the use of **interviews** and **surveys** which have been critical in institutional ethnography (Shange).

To transform our primarily qualitative data about OT to primarily quantitative data about turnover intention, we plan to use **fuzzy logic** which has proven a useful tool for quantifying highly subjective data such as “too hot” or “too cold” (Ross). Our desired outcome is a 3D output referred to as a *topography of burnout* which predicts likelihood to leave an organization based on OT practices.

We expect that the output produced by our fuzzy logic analysis can better inform the field of operations research and specifically in **assignment problems** or **network optimization** to optimize workloads and reduce both employee burnout and costs related to turnover such as hiring costs.

Literature cited

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