

# Chat-Based Customer Service: Using Big-Data to Connect Customer Emotion to Service Operations

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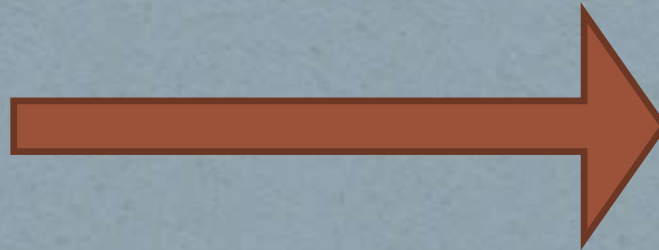
# Lots of Customer Emotions in Service

I work in customer service, so by all means, please use me as a verbal punching bag. It makes me much more likely to do what you want when you scream your request at me.



# Research Questions: What Happens in CHAT Service?

Customers



Agents



How does customer emotion in chat service  
influence employees?

# Available Research on Effects of Customer Emotion

Limited because ....

- Lots of Self-Report
- Limited External Validity
- Limited Operational Connections

Technology Mediated Service  
Great Opportunities!

# Platform: Chat Based Service

Multiple  
Data  
Sets

<http://LivePerson.com>

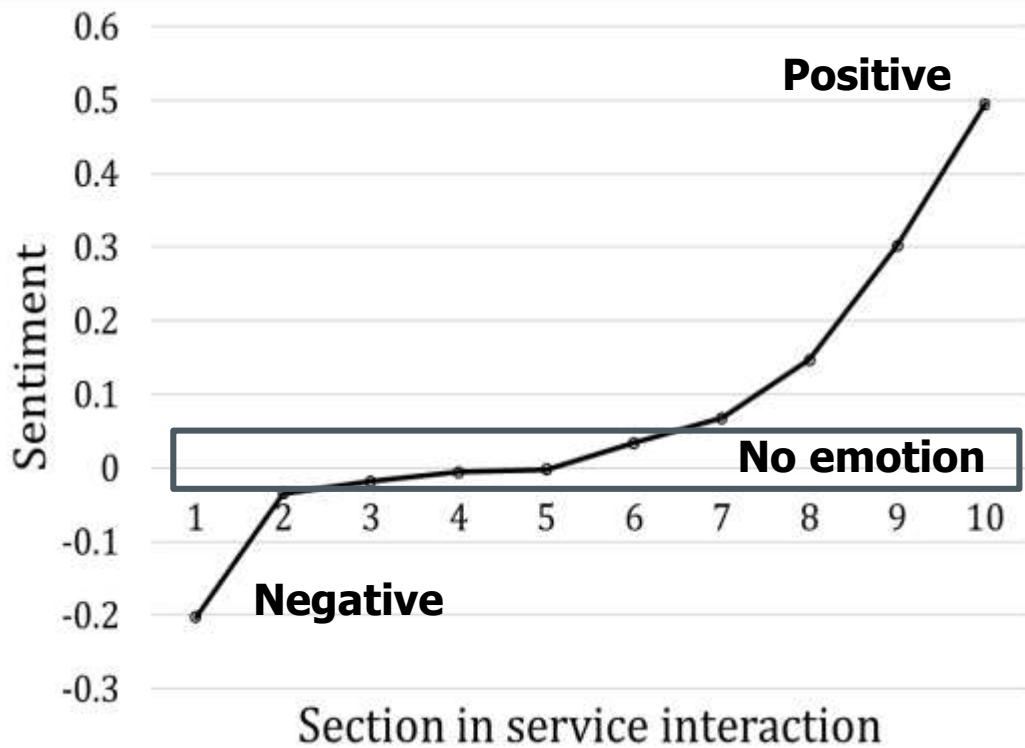
Automated  
Emotion  
Detection

Natapov et al. (2017)

The screenshot displays the LiveEngage chat interface. At the top, it shows 'LIVEPERSON LiveEngage' with 3 ENGAGEMENTS, an AVERAGE ENG. LENGTH of 8 min 30 sec, and 2.7 ENG. PER. The chat window is titled '1 Visitor' and shows a conversation starting at 4:04pm. The visitor asks, 'Hi, I can't understand my bill, why was I charged for overseas calls?' at 4:05pm. Beth A responds at 4:08pm, asking for the account number and home address. The visitor provides the address '23254658, 24th Hudson st.' at 4:08pm. Beth A then asks the visitor to wait while she finds the information, and finally provides the information at 4:14pm. The interface includes a rich text editor with bold, italic, underline, link, and image icons, and a bottom status bar showing 0 WAITING, 1 Visitor, 2 Visitor, and 3 Visitor.

# Tool: Automated Emotion Analyses

# Unfolding of Emotion During Interactions

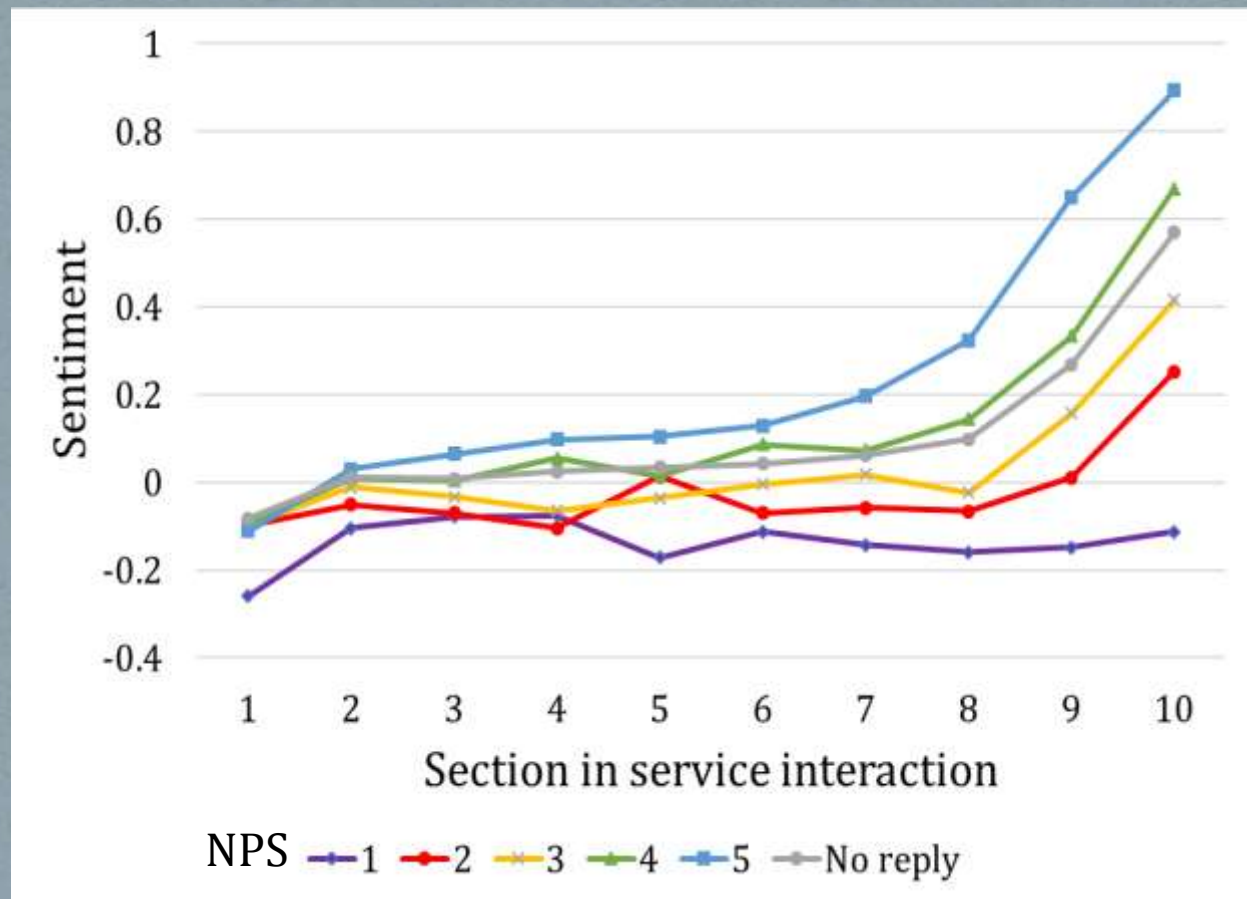


- 390,438 interactions;
- Sectioned into 10 units;
- Emotion in each section;
- Average for all interactions in sample (Telecom)

# Relating Customer Emotion to Service Evaluations

**Net Promoter Score:**  
“How likely is it that you would recommend our company to a friend or a colleague?”

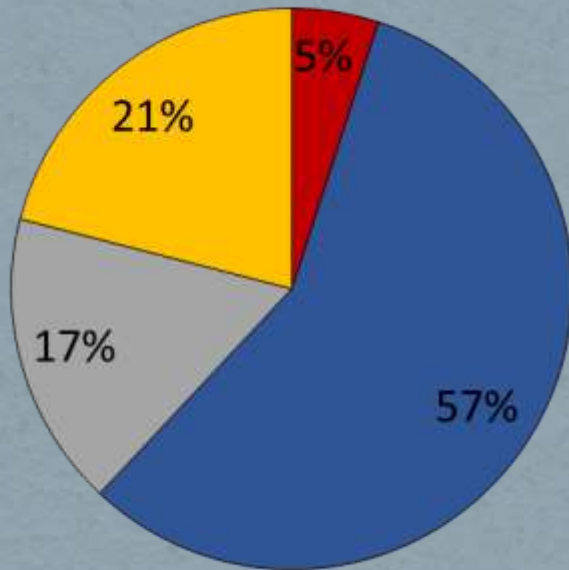
1- Not likely  
5- Highly likely



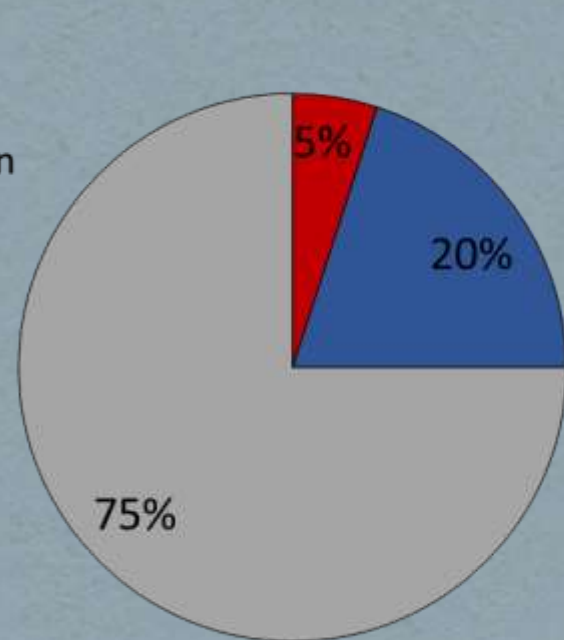


# Bottom Line: Not That Much Negative Emotion!

439,585 Full Interactions



3,659,053 Customer Messages



- Negative
- Positive
- No emotion
- Multiple

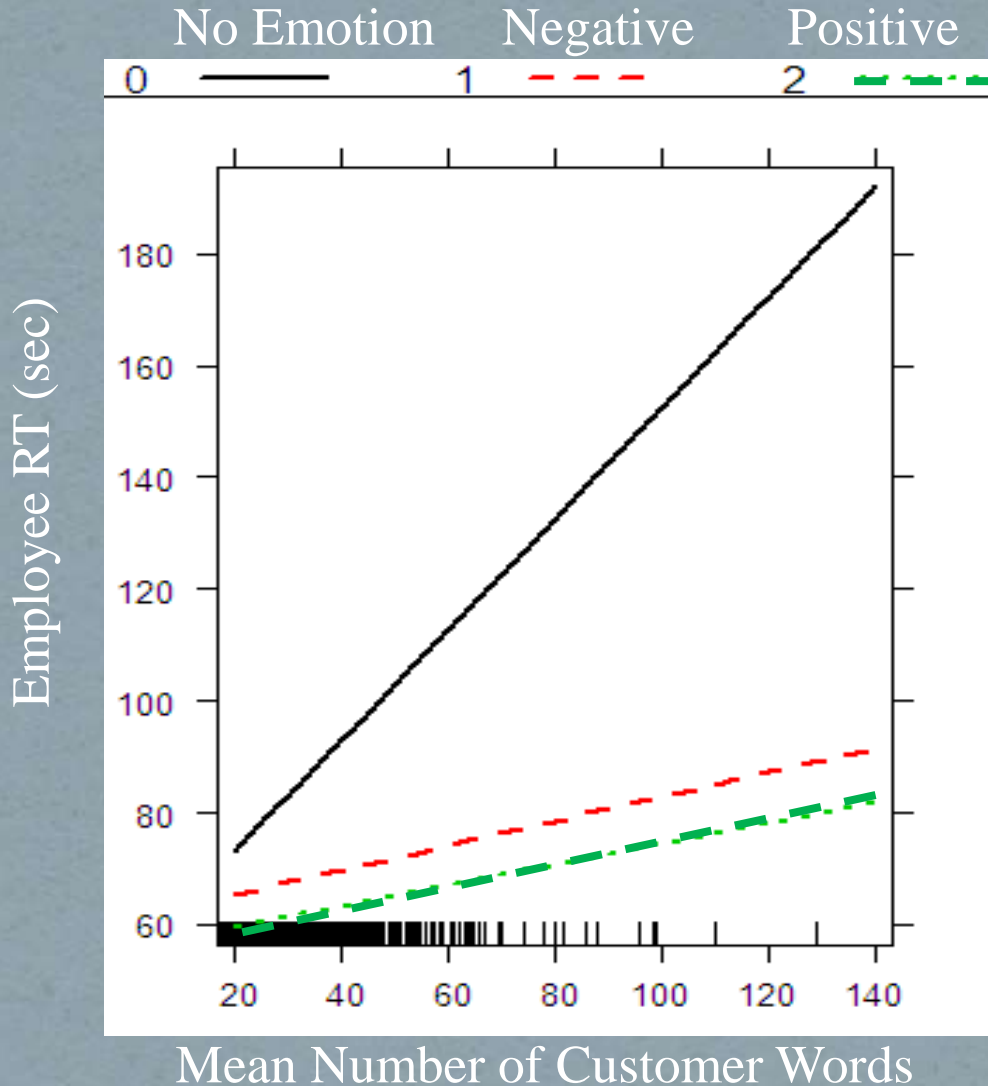
Data: 3 Months of Retail Data

# Results 1.0: Interaction Level Analysis

- Presence of customer POSITIVE emotion CREATES FASTER employee response time **30 seconds less for each employee message!**  
( $b = -29.57, SE = 6.77, p < 0.001$ ).
- NO INFLUENCE of presence customer NEGATIVE emotion on employee response time  
( $b = -8.89, SE = 7.83, p > 0.05$ ).

Customer Positive Emotion Attracts Employee Attention!

# Emotion also Moderates Effects of Workload (#cust words) on Employee Response:!



HLM

(chats within employee):  
n=7,147

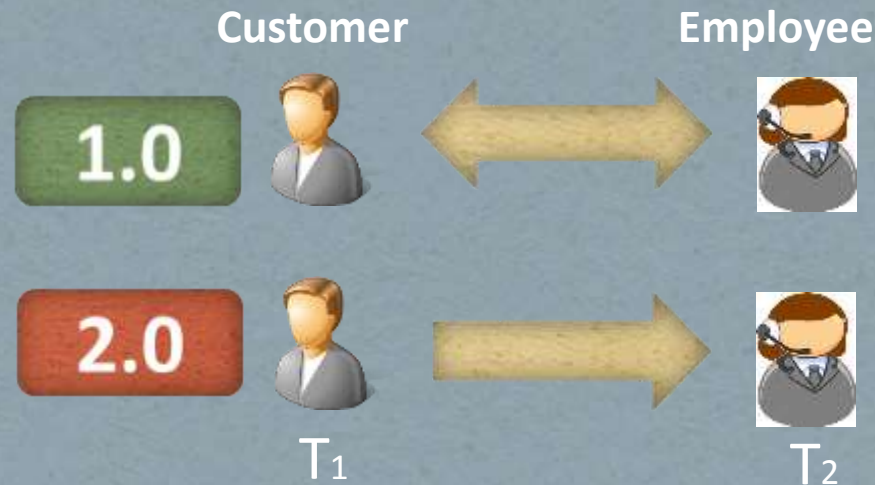
b= 0.12 ( $SE=0.04$ ,  
 $p<0.001$ )

$R^2 = 40.08\%$

Analyses control number of words per message (customer and employee), time waiting for service and service/sales

# Results 2.0: A Look at Causal Effects!

- Transportation data  
(20,355 interactions from January 2016):  
Time based analysis -  
Using  $T_1$  customer emotion to predict  $T_2$  employee behavior.



# Customer Emotion and ....

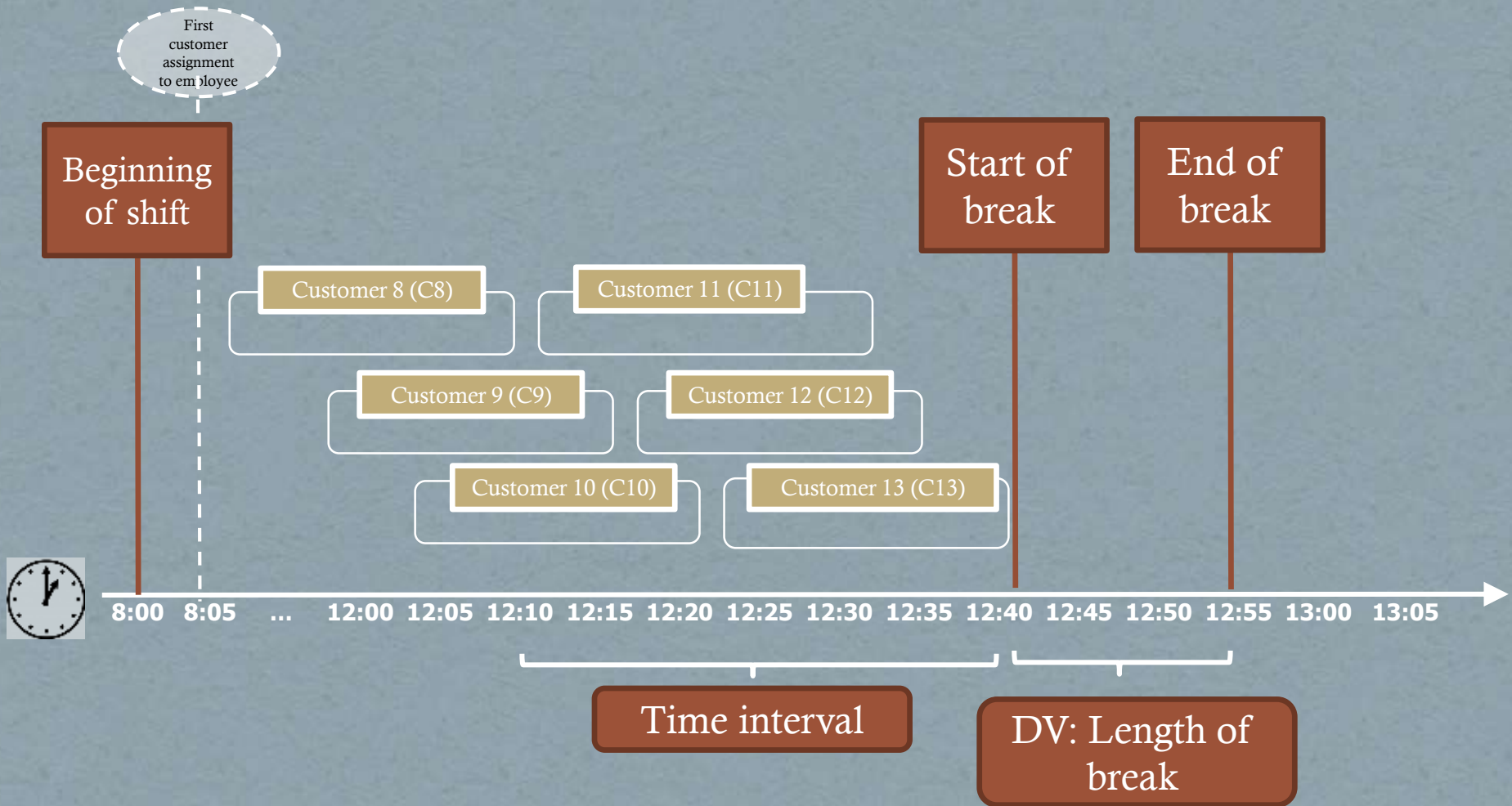
Employee  
UNSCHEDULED Breaks  
(up to 15 minutes)



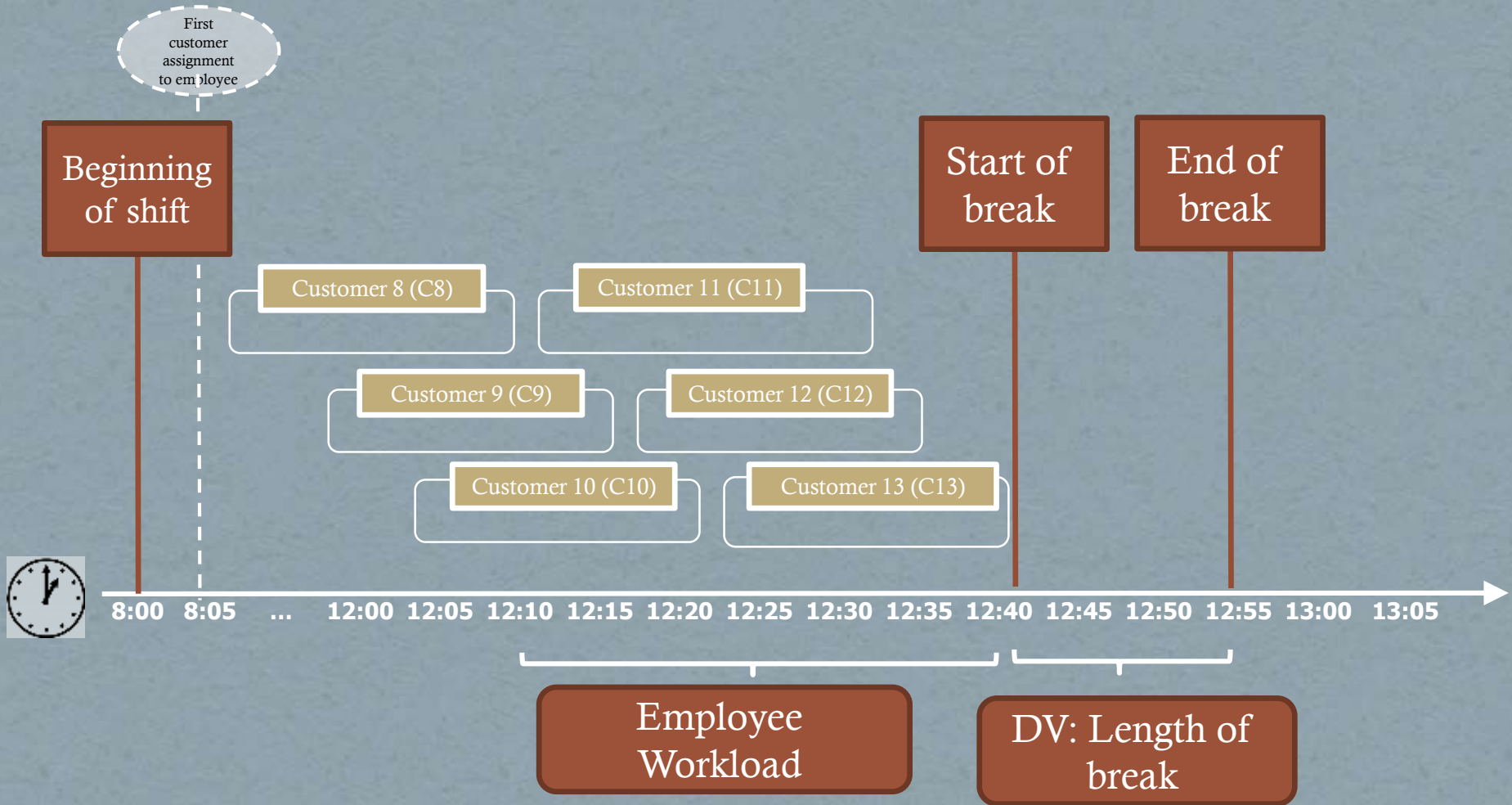
**Length**



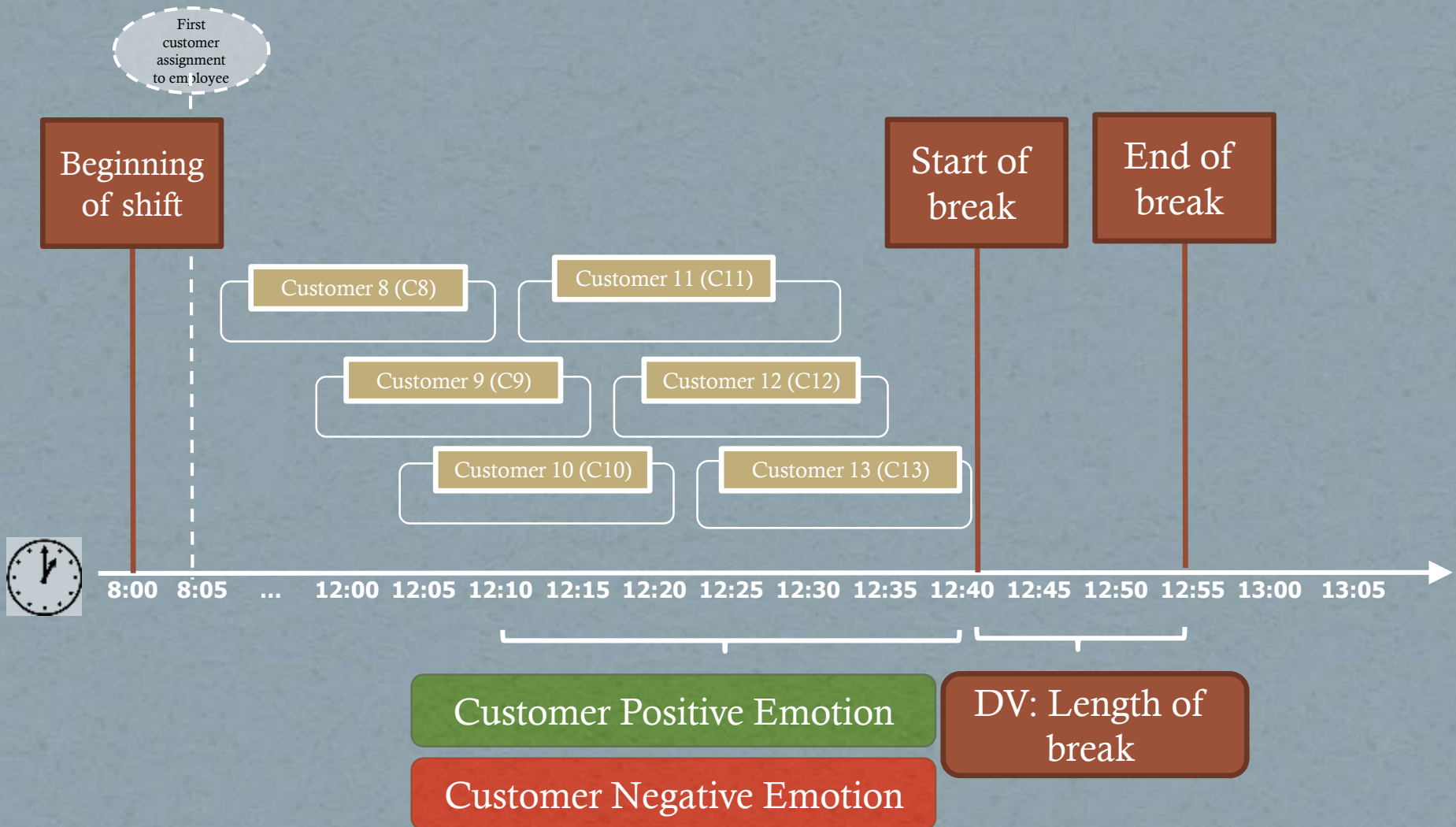
# Customer Emotion and Employee UNSCHEDULED Breaks



# Customer Emotion and Employee UNSCHEDULED Breaks

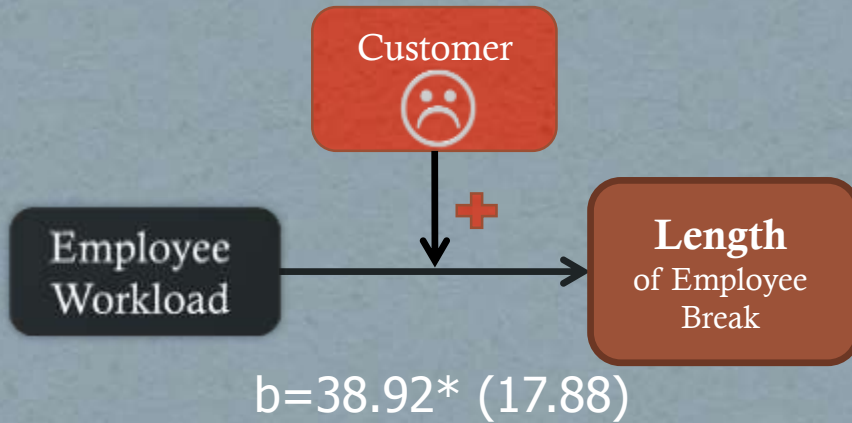


# Customer Emotion and Employee UNSCHEDULED Breaks

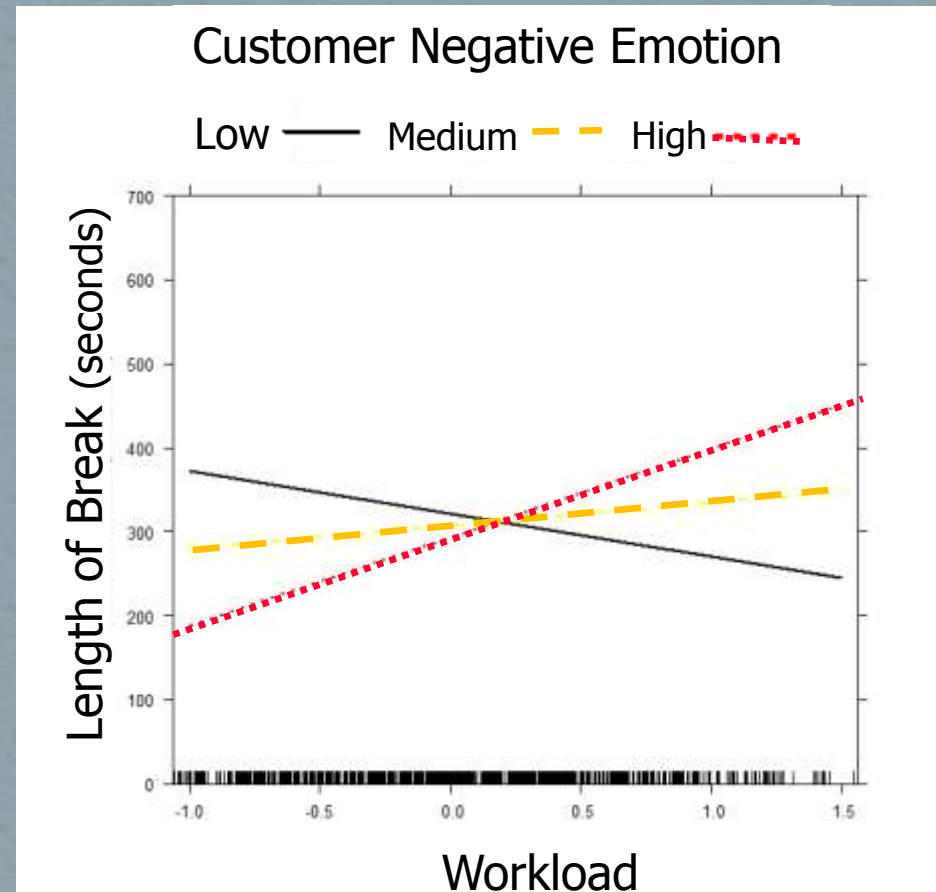




# Customer Negative Emotion INCREASES Length of Breaks



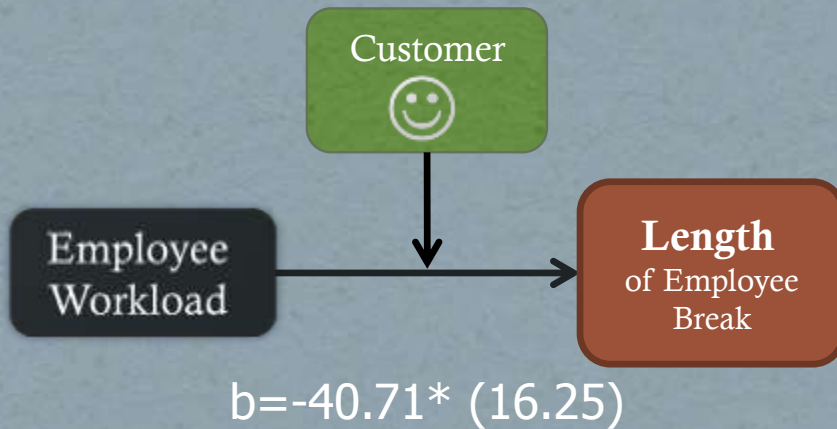
With higher customer negative emotions, high workload leads to longer breaks



N= 835 breaks

\* $p < 0.05$

# Customer Positive Emotion REDUCES Length of Breaks



With higher customer positive emotions, high workload leads to shorter breaks



N= 835 breaks

\* $p < 0.05$

Ashtar, Rafaeli, Yom-Tov (2017) In Progress

# Summary

## Automated analyses useful for studying customer emotions

- Less negative customer emotions than commonly assumed
- Emotions in service interactions change over time:  
Start negative and become positive  
Evolution relates to service evaluations
- Customer emotion influences employee behaviors ...
  - Positive Customer emotion
    - REDUCES employee Response Time;
    - REDUCES length of employee breaks;
  - Customer Negative Emotion
    - INCREASES effects of workload on unscheduled breaks



Anat Rafaeli



Galit Yom-Tov



Daniel Altman



**Thank  
You**

*Mahalo*

**Kiitos**

*Tack*

**Toda**

**Grazie**

*Obrigado*

**Thanks**

**Takk**

**Merci**

**Gracias**