

# Using Paradata to Model Total Survey Error in the Current Population Survey

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John Dixon

*U.S. Bureau of Labor Statistics*

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The opinions expressed are those of the author, not the BLS



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# Nonresponse Bias and Measurement Error

- **Nonresponse bias and measurement error both refer to difficult to measure errors in surveys. Nonresponse bias refers to unmeasured persons, and measurement error refers to an unmeasured construct (which is mis-measured by the survey). This will be examined with propensity models based on contact history variables.**
- **Contact history has the potential to describe the concerns of potential respondents as well as contactability. Those concerns have been found to relate to nonresponse, but little relationship to measurement error . Measurement error will be assessed in the relationship between unemployment and education level (as a surrogate for covariates of measurement error).**
- **There may also be a relationship between movers and unemployment.**

# Current Population Survey (CPS)

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- **Sponsored by Bureau of Labor Statistics**
- **Data collection by Bureau of the Census**
- **Primary household labor force survey for the U. S.**
- **Multi-stage clustered sample of 50,000 households per month**
- **4 - 8 - 4 rotation pattern**
- **5.5% refusal, 3.5% noncontact for 1<sup>st</sup> month in sample**

# Contact History Instrument (CHI) Data

bs Contact History Instrument v5.8.5 Created 08/25/2004

Forms Answer Navigate Options Help

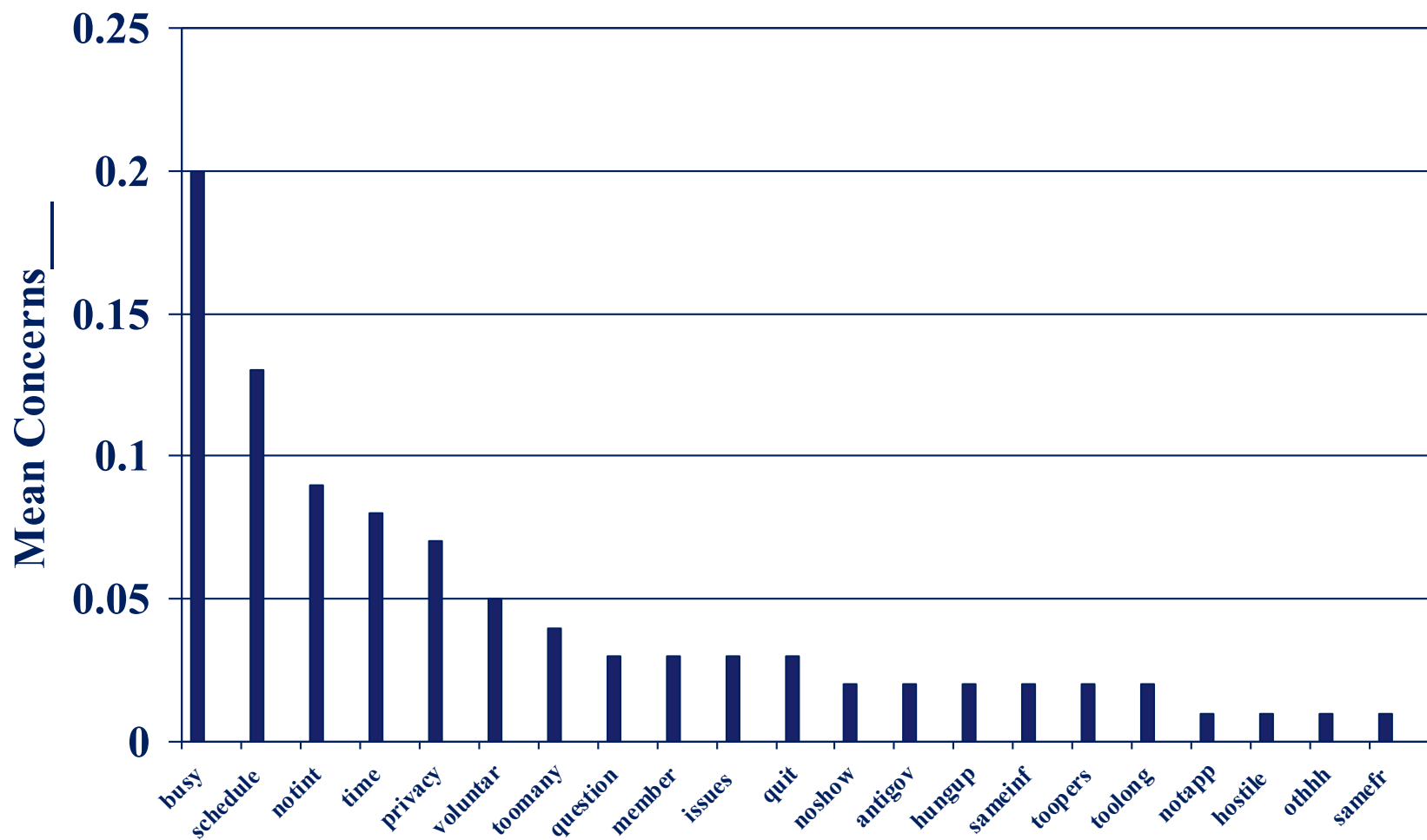
CHI

## ◆ CONCERN / BEHAVIOR / RELUCTANCE

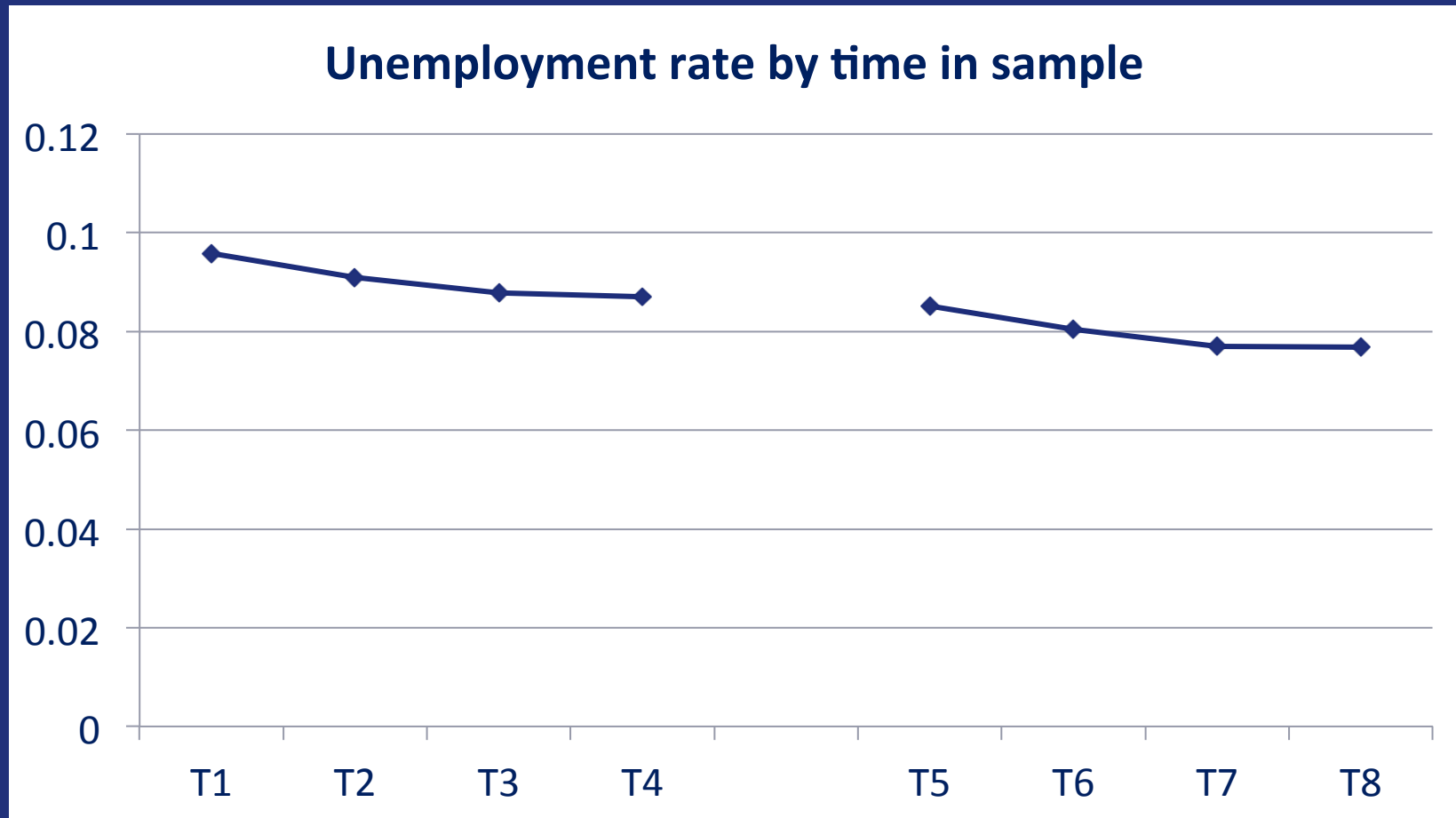
- ◆ Select the categories that describe respondent concerns, behaviors, or reluctance during this contact attempt.
- ◆ Enter all that apply, separate with commas.

- |   |   |
|---|---|
| <input type="checkbox"/> 1. Not interested / Does not want to be bothered                             | <input type="checkbox"/> 12. Hostile or threatens FR                                    |
| <input type="checkbox"/> 2. Too busy  | <input type="checkbox"/> 13. Other household members tell respondent not to participate |
| <input type="checkbox"/> 3. Interview takes too much time   | <input type="checkbox"/> 14. Talk only to specific household member                     |
| <input type="checkbox"/> 4. Breaks appointments (puts off FR indefinitely)                            | <input type="checkbox"/> 15. Family issues  |
| <input type="checkbox"/> 5. Scheduling difficulties   | <input type="checkbox"/> 16. Respondent requests same FR as last time                   |
| <input type="checkbox"/> 6. Survey is voluntary   | <input type="checkbox"/> 17. Gave that information last time                            |
| <input type="checkbox"/> 7. Privacy concerns  | <input type="checkbox"/> 18. Asked too many personal questions last time                |
| <input type="checkbox"/> 8. Anti-government concerns  | <input type="checkbox"/> 19. Too many interviews  |
| <input type="checkbox"/> 9. Does not understand survey /<br>Asks questions about the survey           | <input type="checkbox"/> 20. Last interview took too long                               |
| <input type="checkbox"/> 10. Survey content does not apply<br>(retired, healthy, no crimes to report) | <input type="checkbox"/> 21. Intends to quit survey                                     |
| <input type="checkbox"/> 11. Hang-up / slams door on FR   | <input type="checkbox"/> 22. No concerns  |
|   | <input type="checkbox"/> 23. Other - specify  |

# Mean Rates of CHI concerns

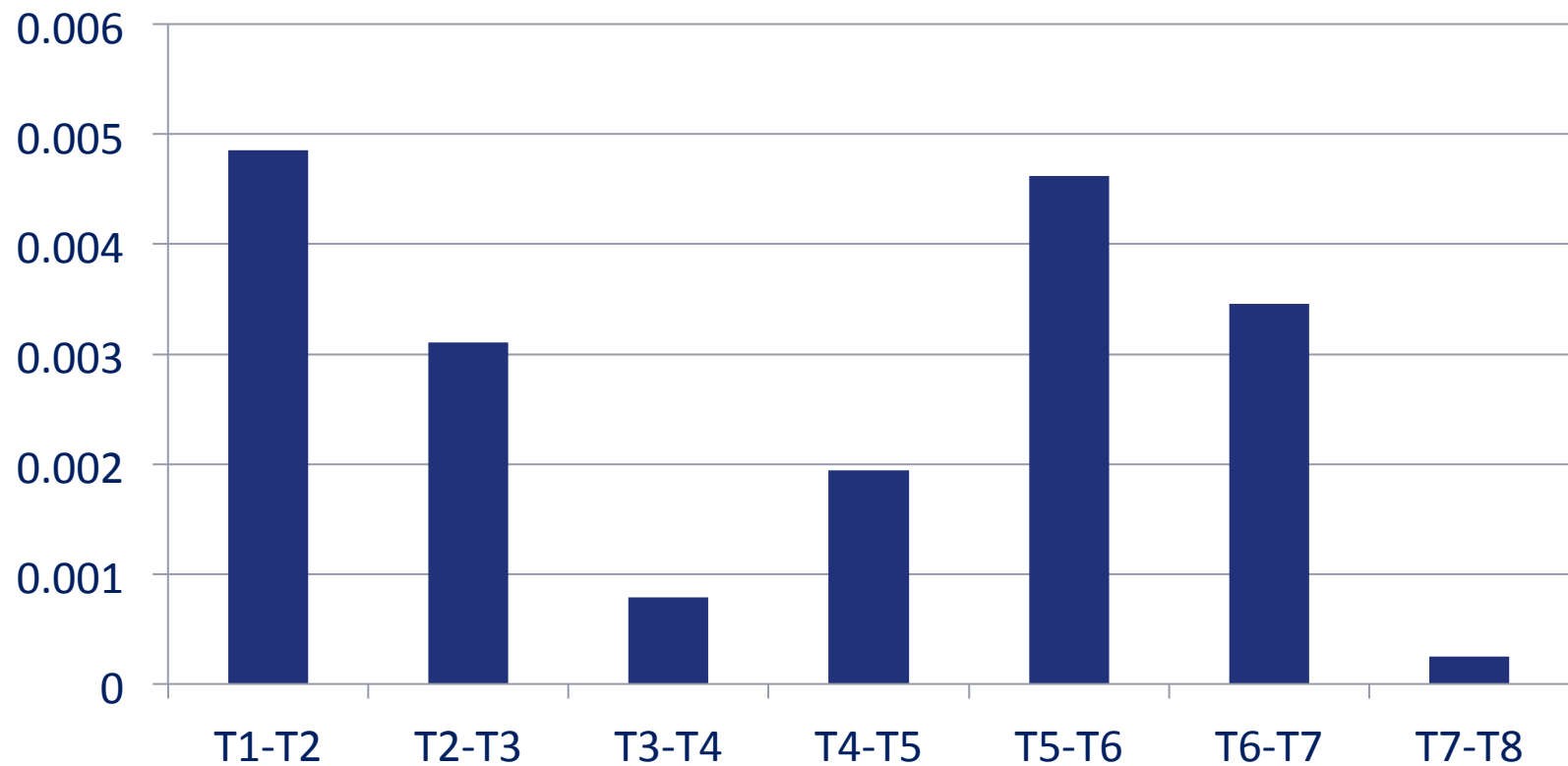


# Employment by Time in Sample

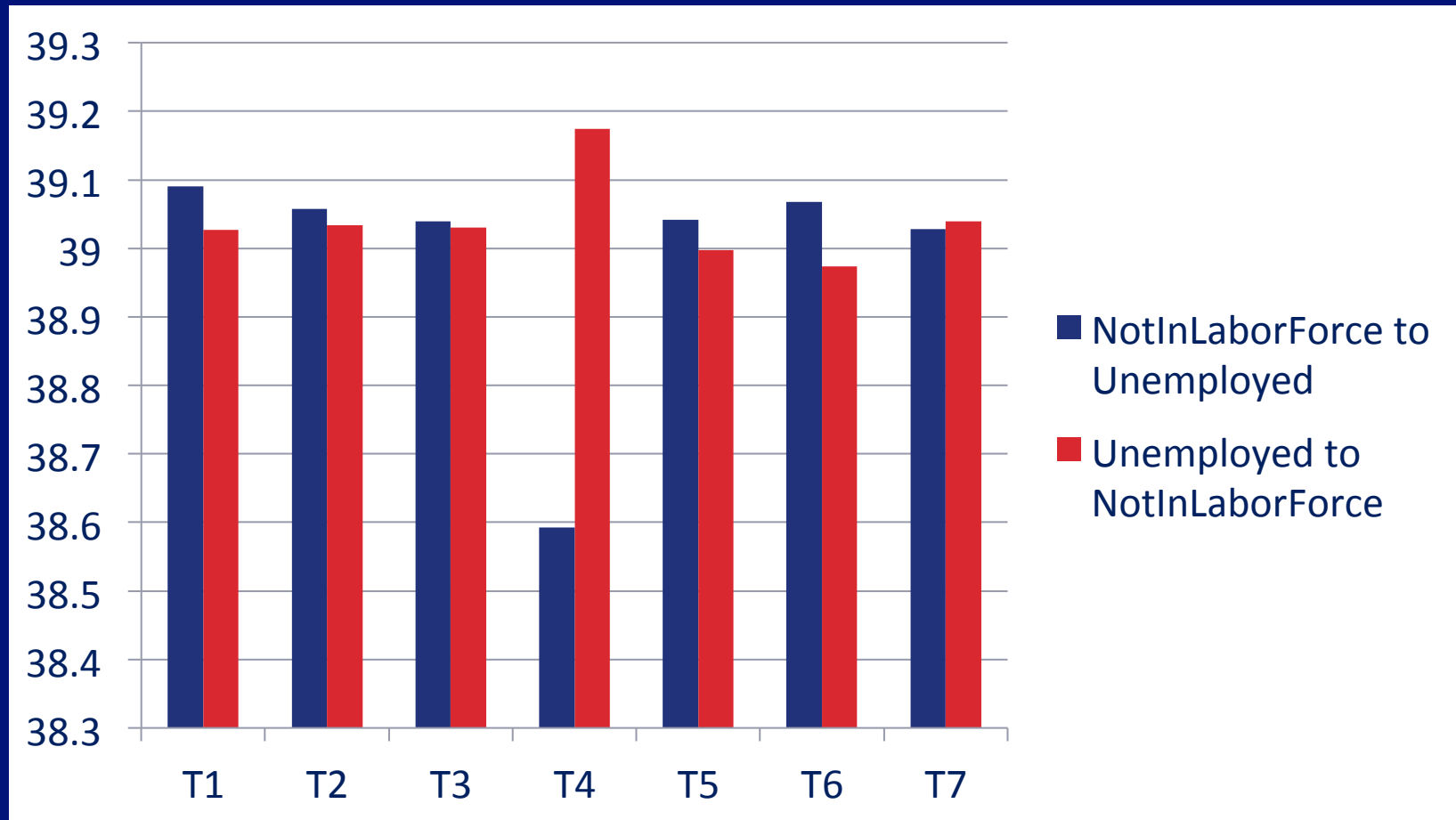


# Employment by Time in Sample

## Differences in Unemployment rate by time in sample



# Unemployment change and education





# Moving by time in sample

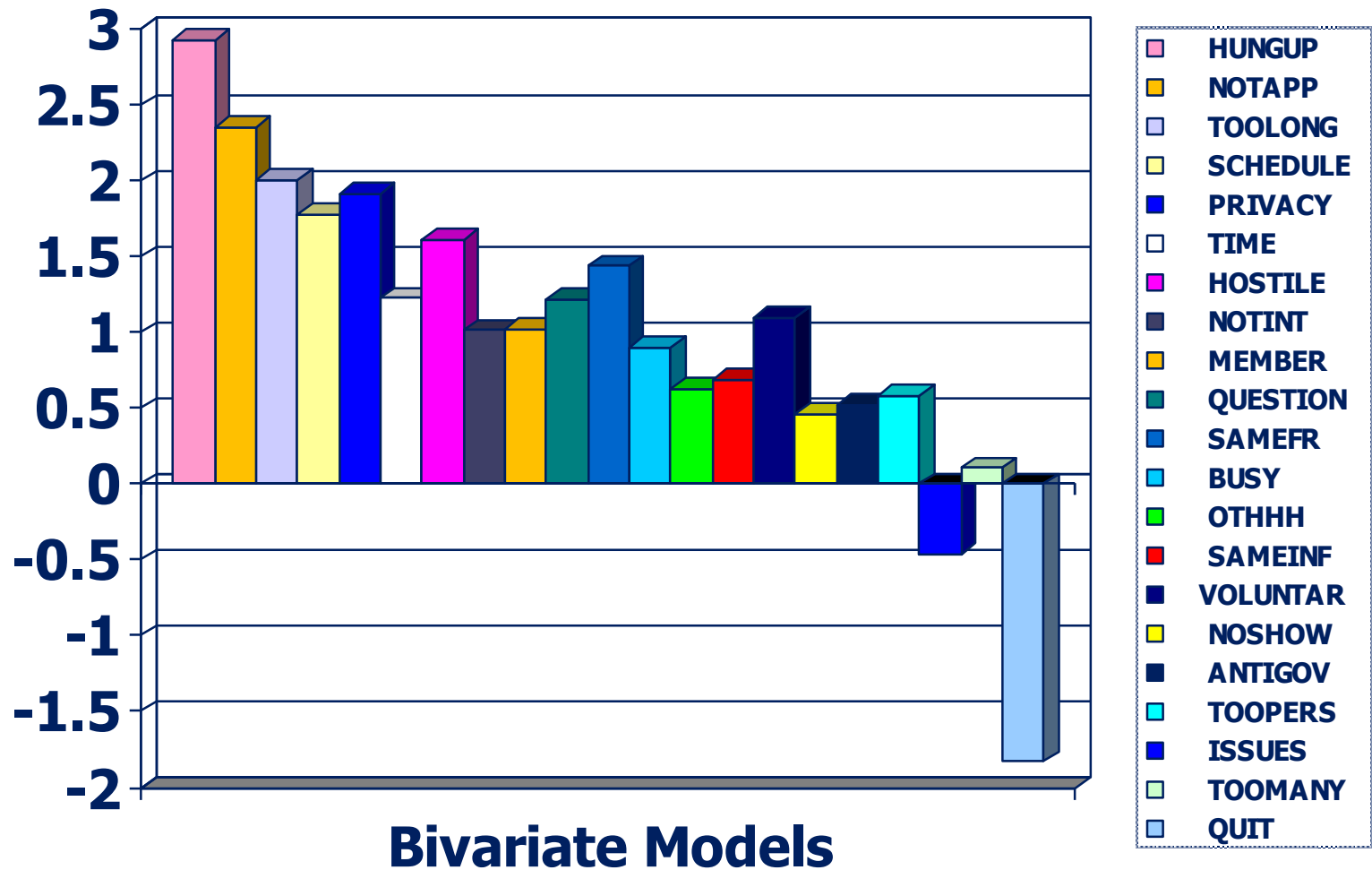


# Movers and unemployment

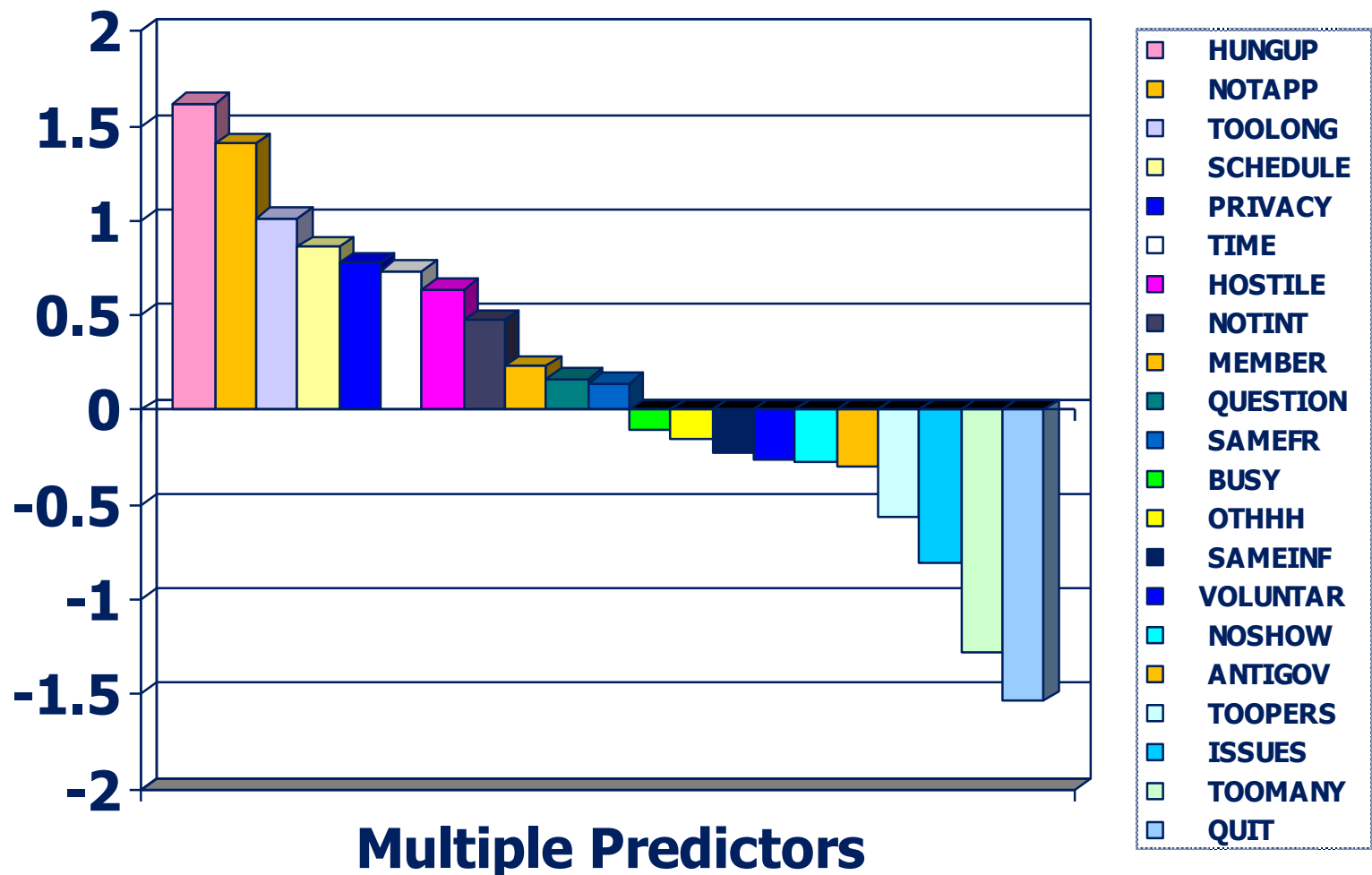


# Predicting Nonresponse

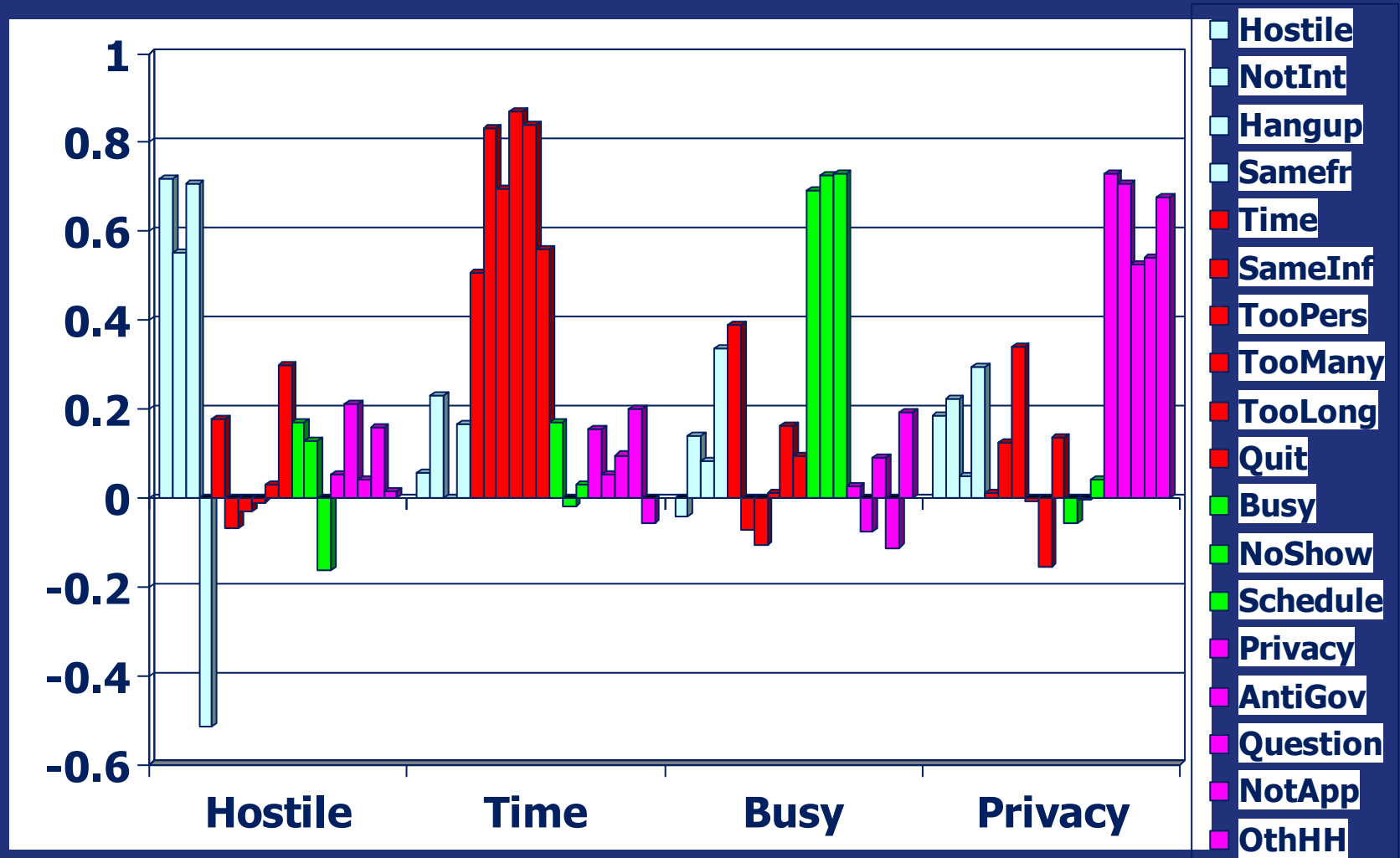
## Logistic model Coefficients



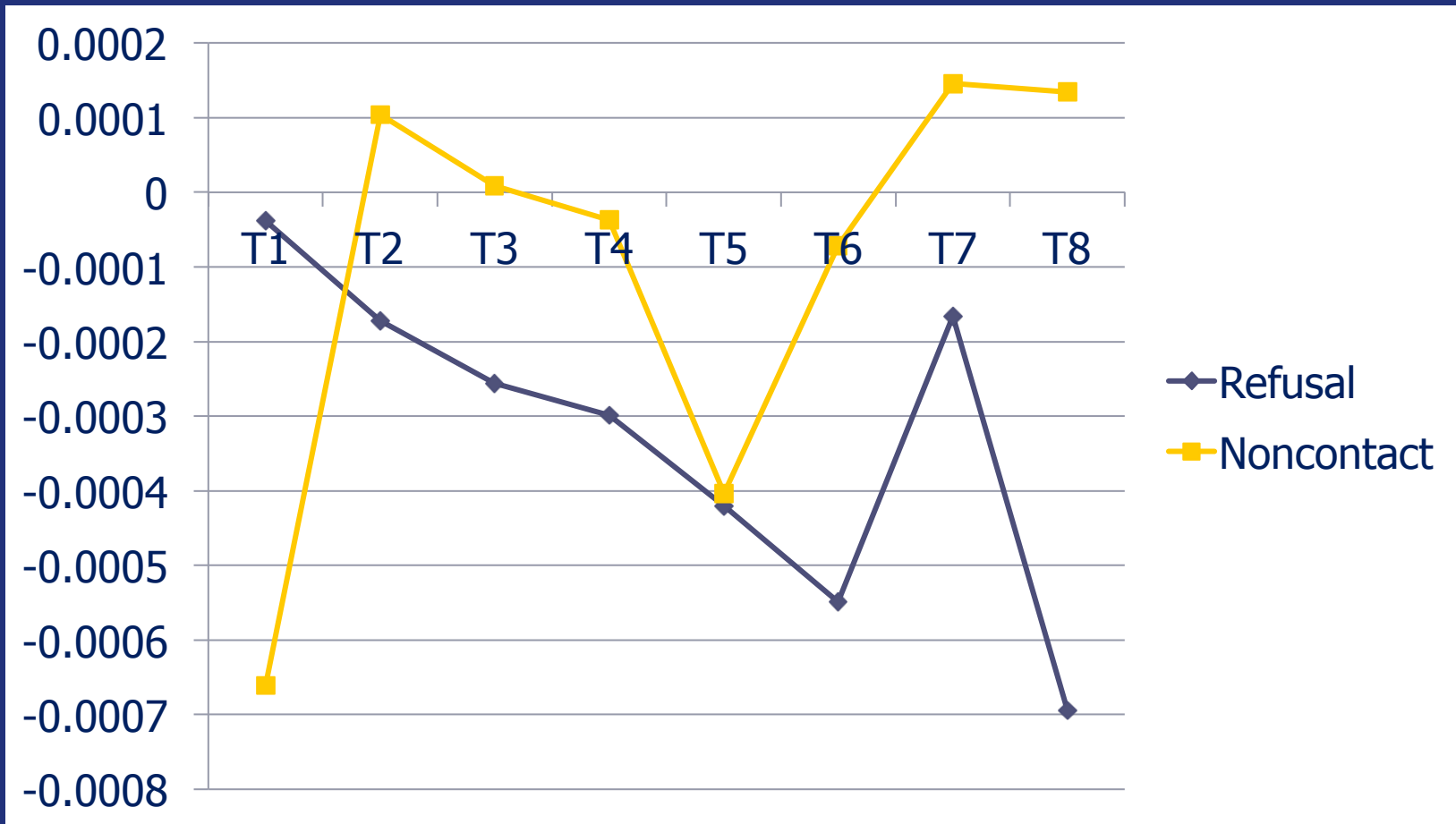
# Predicting Nonresponse Logistic Model Coefficients



# Factor Pattern for Contact History Concerns



# Nonresponse bias



# Summary

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- Nonresponse:
  - ▶ The CHI data was useful in modeling the relationship between concerns expressed by respondents and refusal/noncontact.
  - ▶ The CHI data showed factor patterns which could describe broad areas of concern. They related well in predicting nonresponse.
  - ▶ The propensity models indicated very slight nonresponse bias.
- Moving had a very small effect on bias.
- Measurement error had an even smaller effect on bias, and wasn't supported by the patterns of change in unemployment.

# Limitations and Future Research

- The CHI data is limited in that it only reflects the concerns expressed by respondents. Some of the most common concerns may mask the real reasons, for example, “busy” may hide concerns about privacy, which weren’t expressed to the interviewer.
- Other models for measurement error may be needed, such as “stayer/mover” Markov Chain Monte Carlo latent class models.
- Replicating the models with another survey may help make the model more general, and give different insights which would help with the CPS.
- Put all the pieces into a structural equation model to better estimate the relative and combined effects on rotation group bias.



# Contact Information

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John Dixon

202-691-7516

[dixon.john@bls.gov](mailto:dixon.john@bls.gov)



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