American Time Use Survey Data (ATUS, 2003)

Theoretical Model of US Walking Duration and Validation

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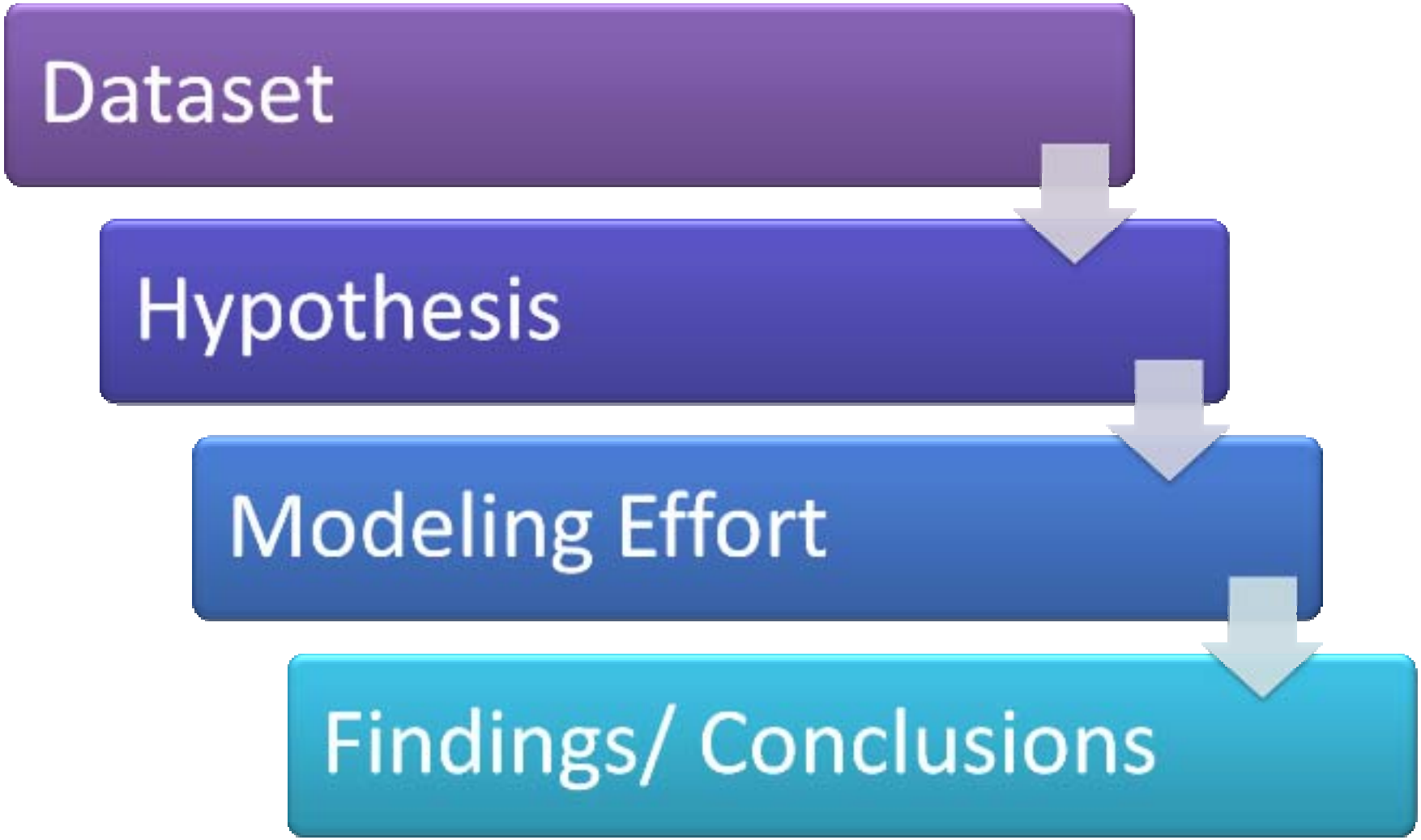
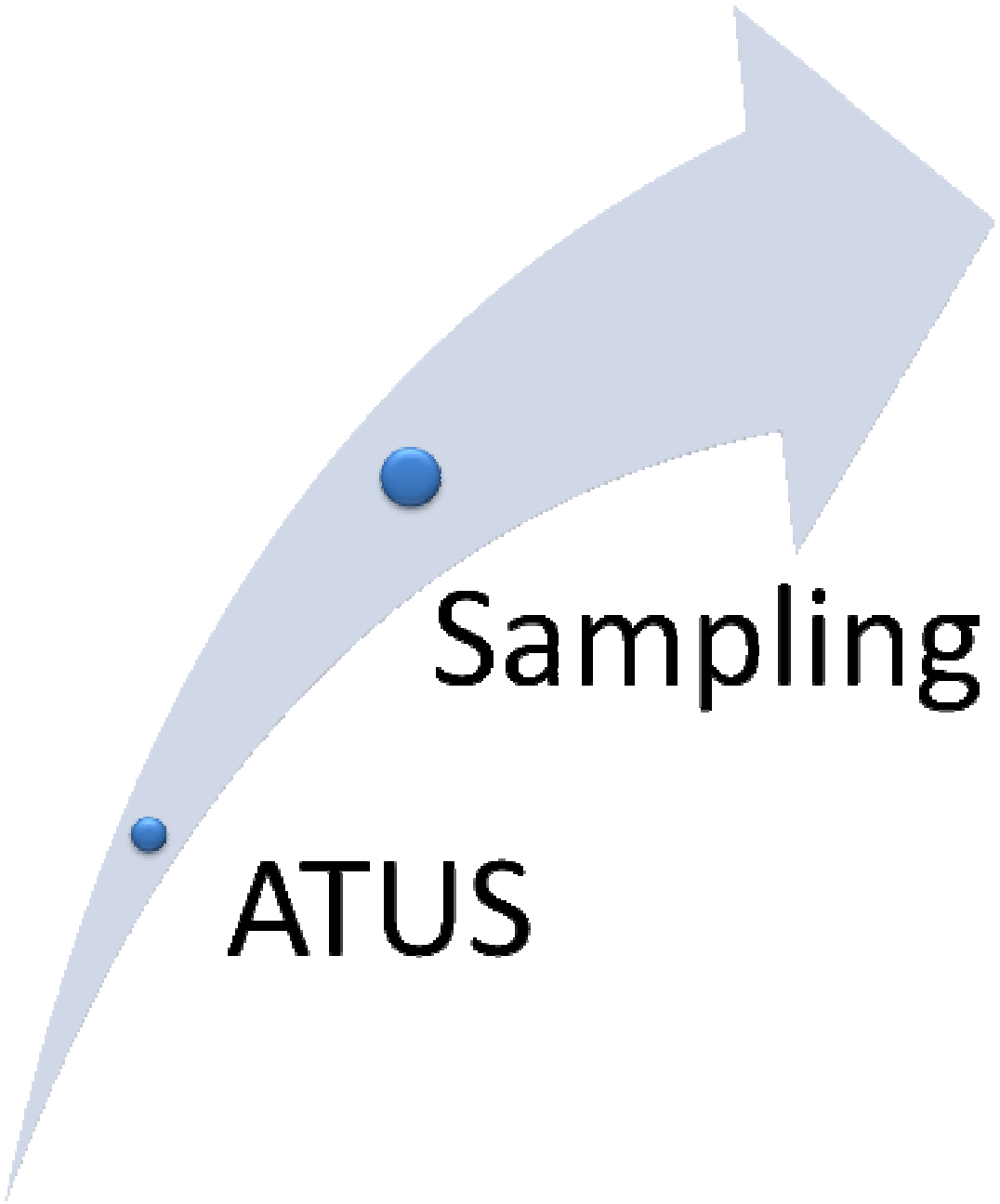
Overview



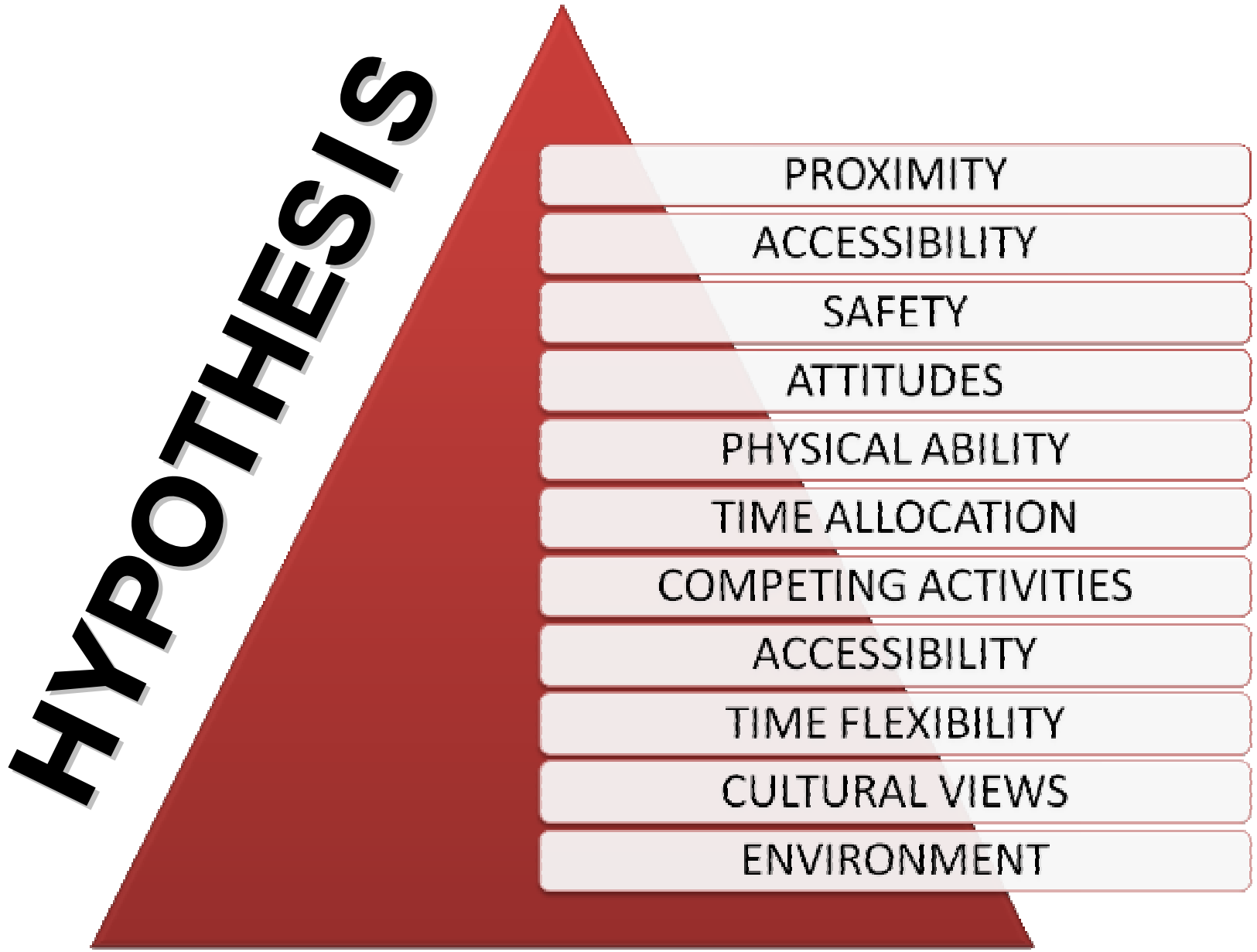
Purpose of Research

To test the theories of walking duration for Americans captured in the American Time Use Survey (2003)



DATASET: 2003

- 1700 Interviews
- 2,440 observations (walking)
- 14 variables



Observed Data


Proximity


Accessibility


Safety/Security


Attitudes towards walking *


Physical ability*


Time allocation


Competing health activities


Environment

Modeling Walking Choice

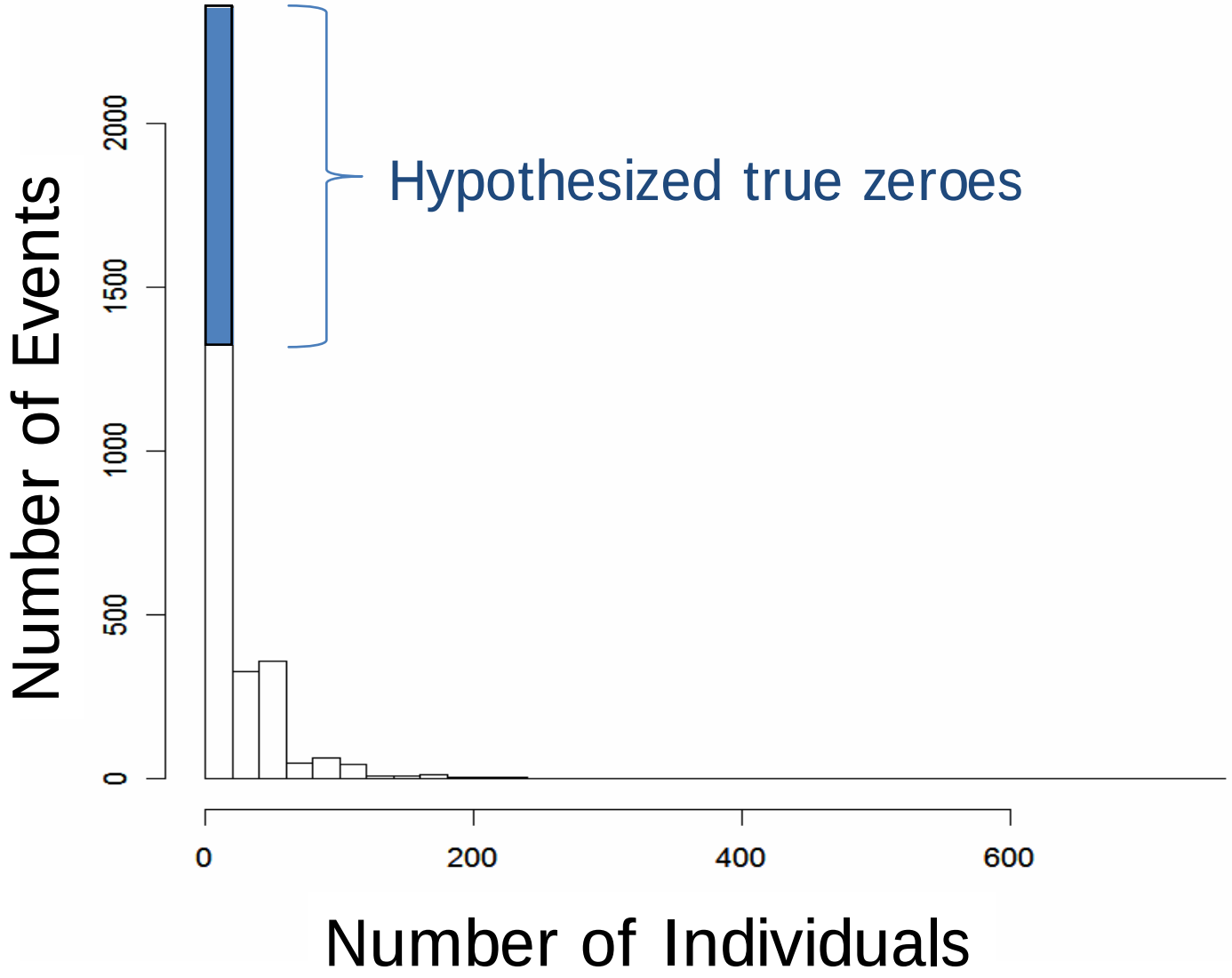
Nature of the Data

- Omitted variables
- Measurement errors
- Excess zeros
- Walking time always positive values
- Heavily skewed data
- Count data

Modeling Approach

- Negative Binomial
  - Predict positive counts
  - Account for over dispersion
- Zero Inflated Poisson
  - Dealing with excess zeros:
    - underlying dual-state process (theoretical and statistical) ..individuals not walking…

Walking for Exercise



Conclusions……

- Overdispersion

- True zero individuals

  Given by:

  P (true zero) = e(BX) / ((1 + e(BX))

Walking for Exercise

Negative Binomial

NE Region	NW Region	South Region	Race: Black	Walk: Travel	Children: 10-14	Winter* NE region
+	-	-	-	+	-	-

Logistic Zero-Inflated Model

Age	Household Income	Marital Status (Married)
-	-	-

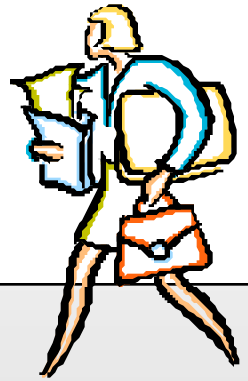
Predicted Walking for Exercise

60.6 min

Region: NW
Race: not black
Walk for travel: 30 min
Children 10-15 yrs: none

50.1 min

Region: SW
Race: Black
Walk for travel: 15 minutes
Children 10-15 yrs: Yes



44.3 min

Region: South
Race: not black
Walk for travel: none
Children 10-15 yrs: Yes

Conclusions: (Walking duration for exercise)

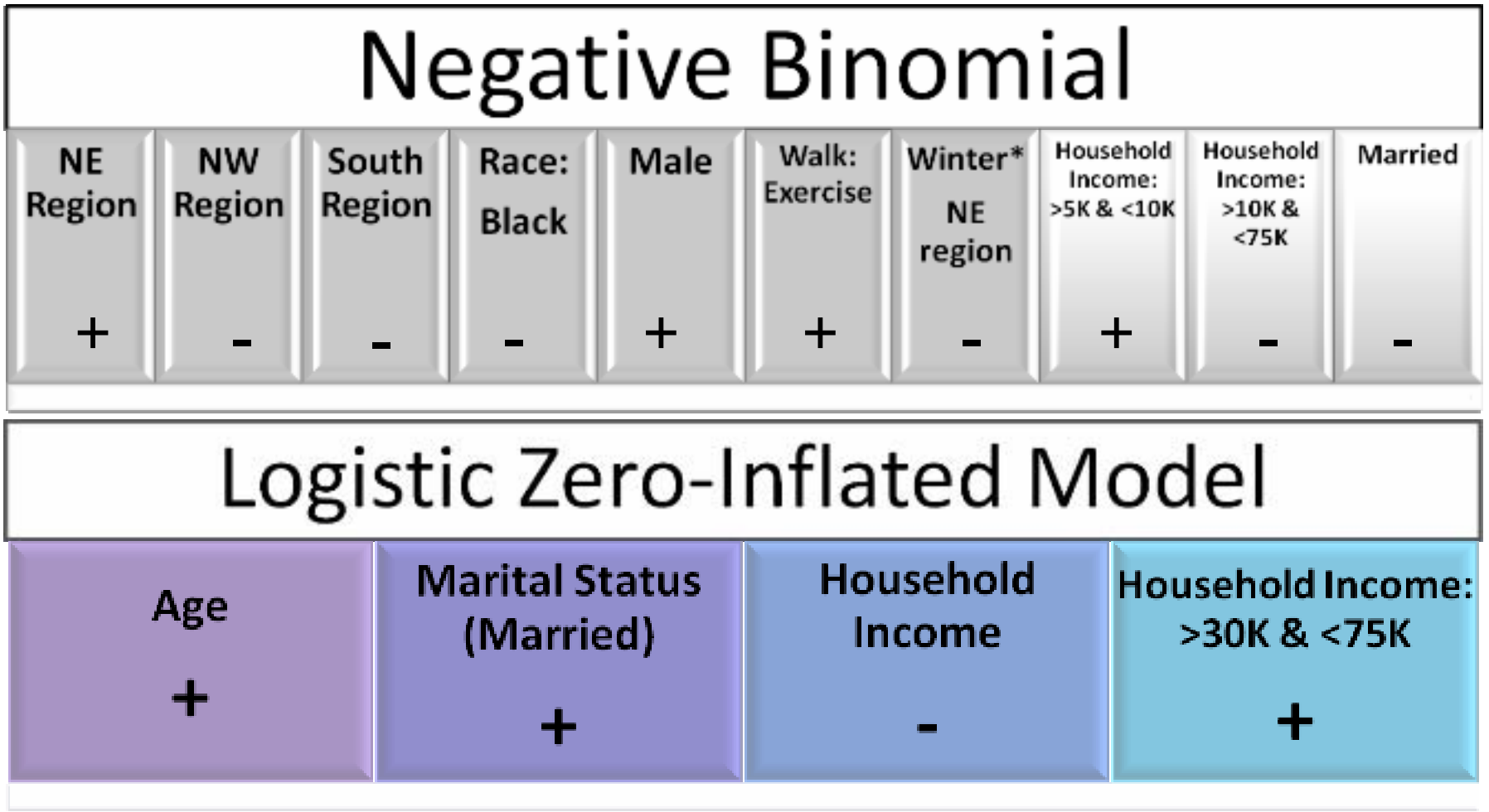
- Walk for exercise, duration differs
- Blacks walk less for exercise
- Individuals who walk for exercise are also more likely to walk for travel
- Exercise walking duration reduces when you have children between the ages of 10-14 years old
- Walking for exercise in the Winters in the NE are associated with slightly less walking (over and above NE region)

Conclusions: (True zeros walking duration for exercise)

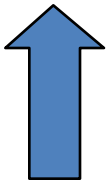
Variables negatively Associated with the ZERO-state are:

- Increase in Age
- Income between 30k and 50k
- Being married

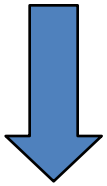
Walking for Travel



Conclusions: (Walking duration for travel)

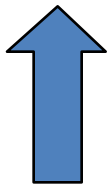


Walk for travel /NE region



Walk for travel S/NW region

Walk for travel HH incomes ≥$50K



Walk for travel HH incomes $5K-19.9K

Logistic Zero Inflated Model:

True zeros walking duration for travel/ transportation positively associated with the zero-state are:

- Age
- Income between 30k and 74.9k
- Being married

Limitations

- Attitudes
- Ability
- Proximity
- Density

Conclusions

Questions