Time Poverty, Unpaid Work and Household Living Standards in the U.S.

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All empirical results are preliminary.

Question 1

Question 1:
Do households at the income poverty line have enough time for the unpaid work necessary to convert their money expenditures into an acceptable living standard? (Vickery, 1977; Albelda, 2011; Zacharias, 2011)

Answer:
Using data from the 2019 PSID we estimate a "socially necessary" threshold of unpaid time based on the modal values of unpaid work for households of similar composition. We provide one example here.

Question 2

Question 2:
Should estimates of "extended income" (money income plus the imputed value of unpaid work) be based on a linear estimate (hours of unpaid work multiplied by an hourly replacement cost wage)? Or are hours of unpaid work subject to diminishing marginal productivity?

Answer:
We estimate the effect of hours of unpaid work on money expenditures for one type of household at different points in the expenditure distribution. The results show a distinctly non-linear substitutability between expenditures and time.

Socially Necessary Thresholds Limit Substitutability

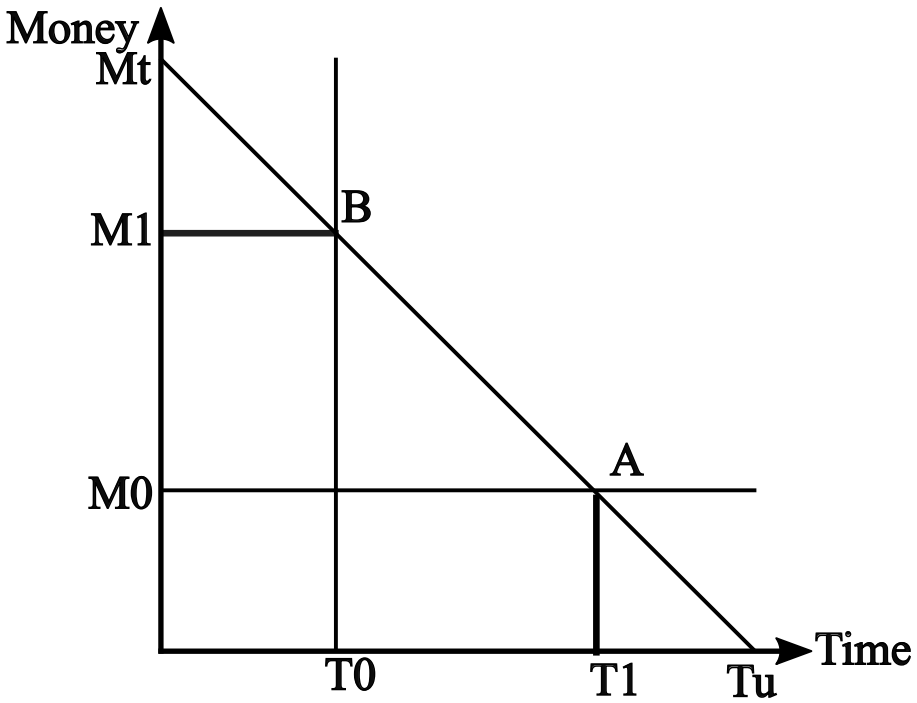

Figure 1: Tradeoffs between Money and Unpaid Work Time

- T_0 Non-substitutable household activities:
- T_1 Maximum substitutable unpaid work time
- T_u Maximum unpaid work time
- M_0 Non-substitutable money for expenditures
- M_1 Maximum money for substitutable expenditures
- M_t Maximum available expenditures

The Shape of Substitutability Between A and B

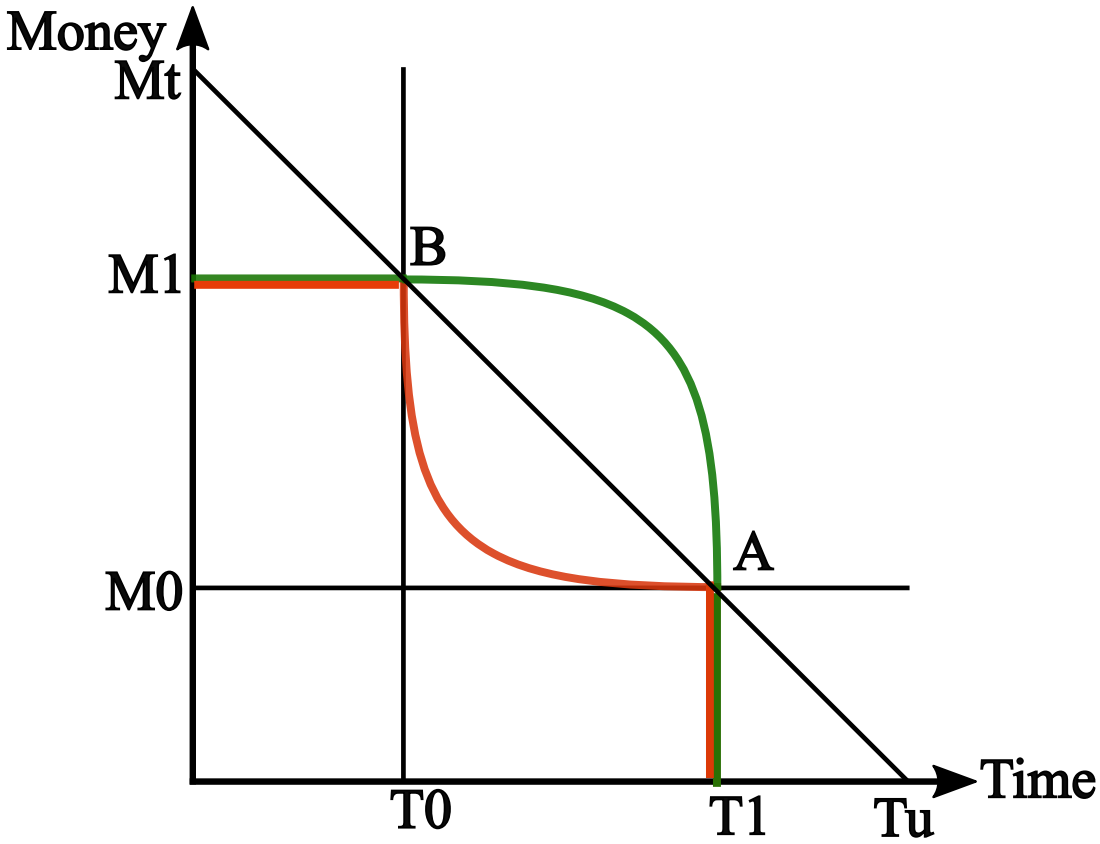

Figure 2: Tradeoffs between Money and Unpaid Work Time
Utility of Money and Unpaid Work Time
Consumption based on Money and Expenditures vs. Consumption enabled by unpaid work time

Data: The 2019 Panel Study of Income Dynamics

- Only survey in the U.S. in which up to two adult respondents report on typical weekly expenditures and typical weekly hours of unpaid work (since 2017).
- Time reported in unpaid work consistent with the American Time Use Survey; includes supervisory childcare.
- Results for single-person and adult couple-only households yield household totals
- Number of observations $= 9,569$

Sharp Modal Values of Unpaid Work for All Single Adult Households Without Children

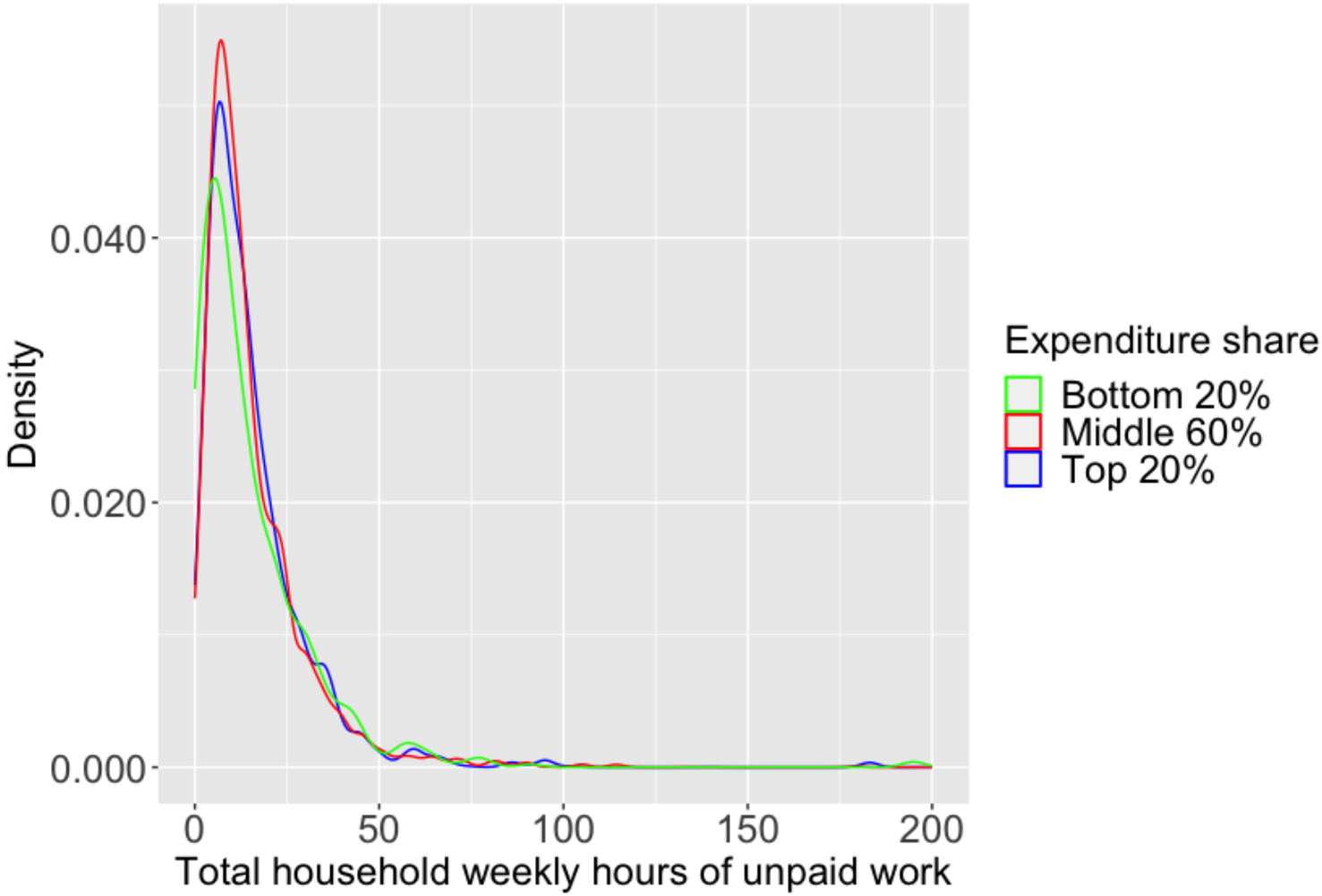

Figure 3: Distribution of household unpaid work for single adult households without children

More Complex Patterns for Single Adults with at least one child under 6

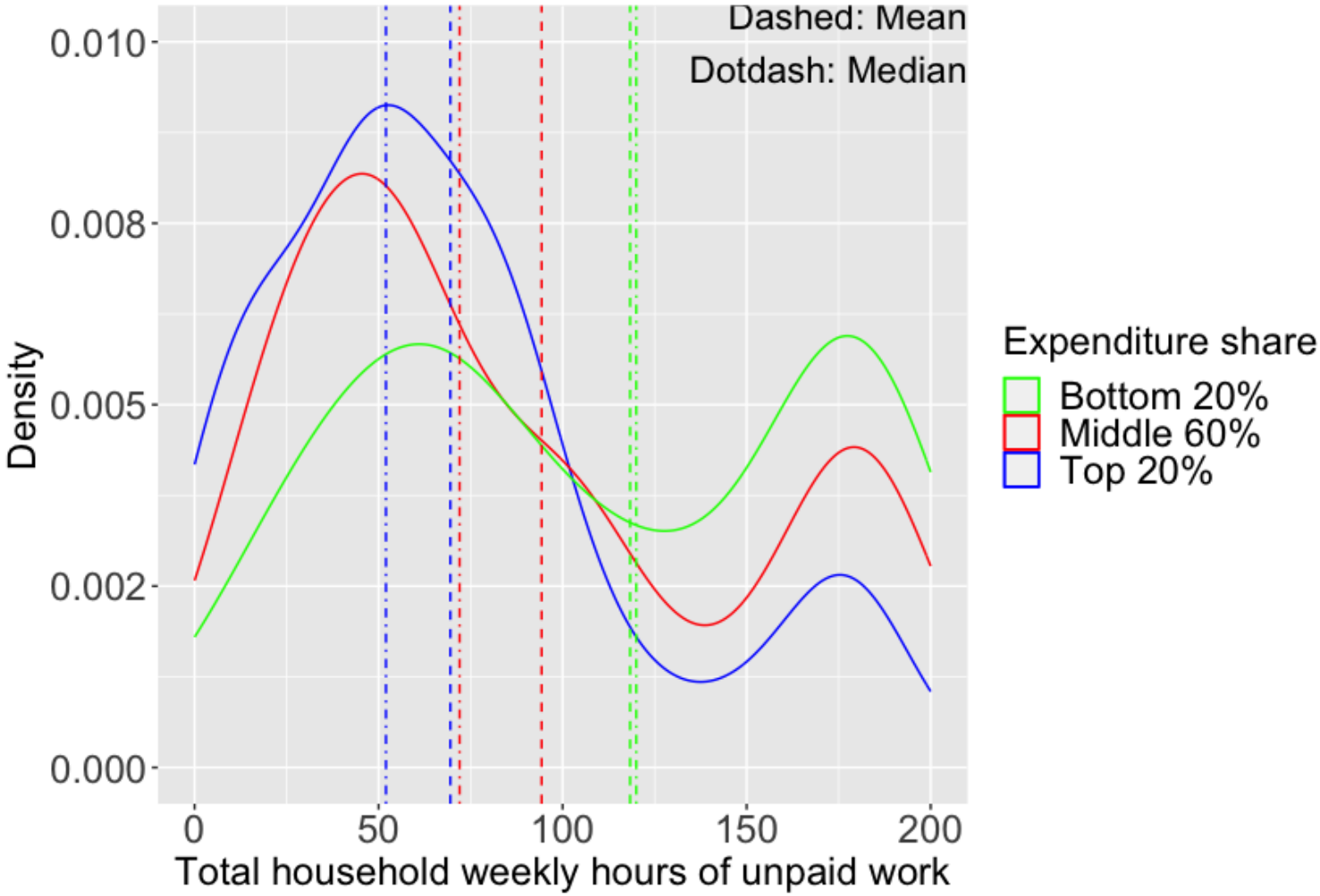

Figure 4: Mode, median, mean for household unpaid work of single adults with at least one child under 6

Implications for Minimum Thresholds for Unpaid Household Work Time

- Vickery (1977) assumed 14 hours a week per household

Table 1: Mode for single adult households

Expenditure share	No child	At least one child under 6
Top 20	7	53
Middle 60	7	45
Bottom 20	6	61

- Averages provide useful information but modes correspond more closely to concepts of threshold and merit more attention.

Linear Spline Regression

The model is calculated separately for couple and single households $h = s, c$ and expenditure share $e = t, m, b$ referring to the top 20%, middle 60% and bottom 20% of the expenditure distribution.

$$household\ expenditure_{he} = \beta_{0he} + bs(unpaid\ work, df = 5)_{he} + \beta_{2he} urban + \beta_{3he} number\ of\ children + \beta_{4h} youngest\ child\ under\ 6$$

- bs: B-spline to model non-linear effects of unpaid work
- The estimated cases refer to urban single adult households with one child under 6.

Table 2: Spline estimates for unpaid work on household expenditures for urban single-adult households with one child under 6

Among households in this percentile of the unpaid work distribution	0-20%	20-40%	40-60%	60-80%	80-100%
Top 20%	61.3	-34.5	-15.9	-2.7	4.8
Middle 60%	16.1	-2.0	-1.3	-0.2	-13.1
Bottom 20%	18.2	4.8	0.6	-1.1	0.1

Conclusion

- Our approach could estimate varying thresholds for diverse households and show how substitutability changes across the income/expenditure distribution.

- To move forward from Vickery (1977)
  - Mode is more telling than median and mean.

- Extended income measures are misleading:
  - Non-linear substitutability

- Future research will examine difference in tradeoffs for unpaid work in general and for childcare.

Literature I

Albelda, R. (2011). Time binds: Us antipoverty policies, poverty, and the well-being of single mothers. *Feminist Economics*, 17(4):189–214.

Vickery, C. (1977). The time-poor: a new look at poverty. *Journal of Human Resources*, 12(1):27–48.

Zacharias, A. (2011). The measurement of time and income poverty. *Levy economics institute of Bard college*, working paper 690.