

A Comparison of Value of Statistical Life Estimates Derived from Revealed and Stated Preferences: Pilot Results

Background

Value of Statistical Life (VSL)

- Trade-offs to reduce the probability of death¹
- VSL estimates vary widely by methodology^{2,3,4}
- Revealed (RP) > Stated (SP) preference estimates
- From RP *hedonic wage models*:

$$\ln(wages_i^*) = \phi risk_i + X_{2i}\beta_2 + D_i\gamma + e_{21}$$

$$\approx \frac{\hat{\phi}(\overline{wage}/hr)(hrs/wk)(wks\ worked/yr)}{unit\ of\ probability\ of\ death}$$

- From SP *contingent valuation/ DCE modeling*:

$$\approx \beta_{mort} / \beta_{wage}$$

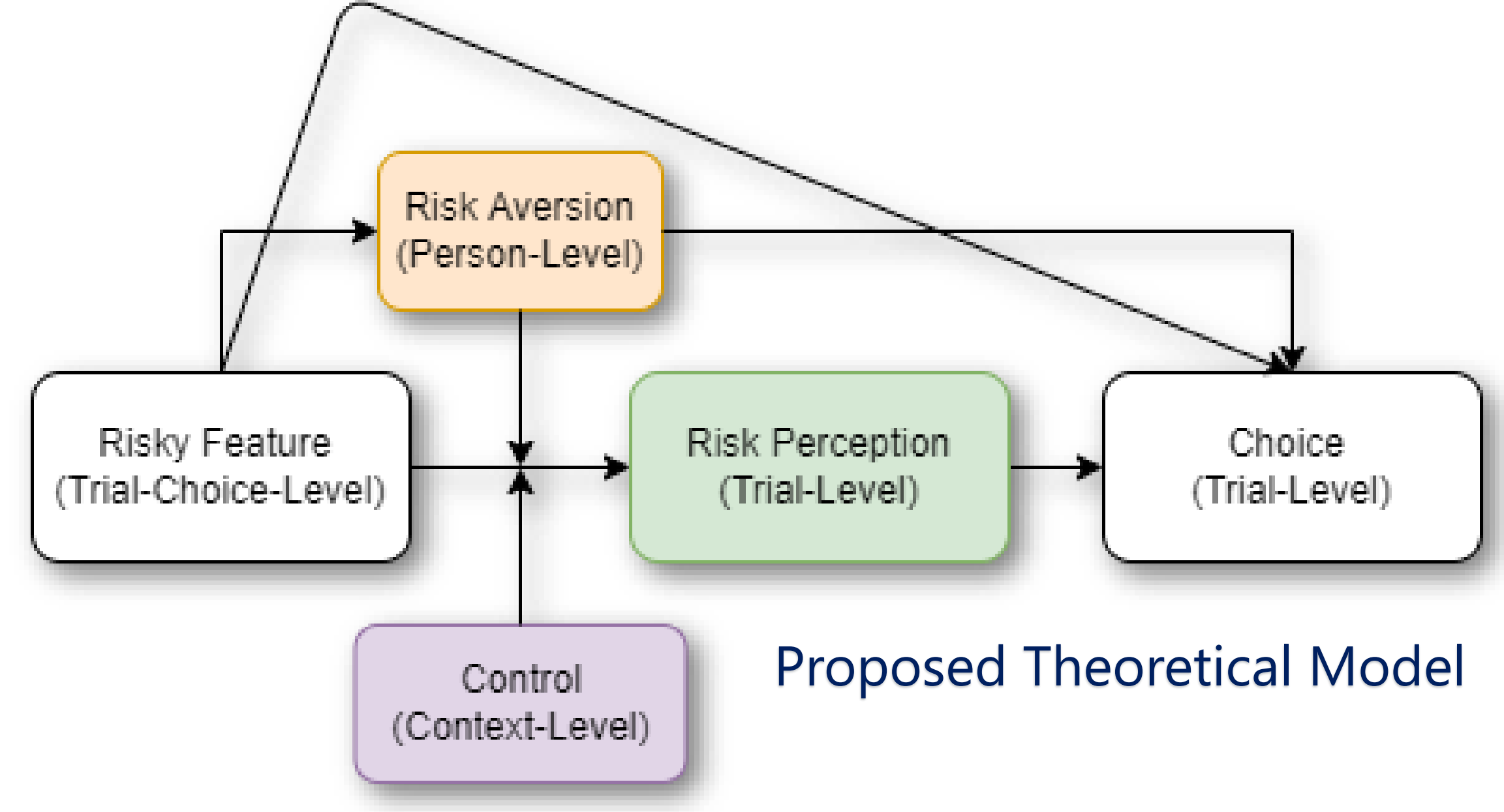
- VSL estimates from labor contexts used to evaluate the benefits of non-labor policies^{5,6,7}
- Assumes proper perceptions of risk probabilities, ignoring subjective phenomenological experiences^{8,9,10}
 - Sense of control may impact willingness-to-pay¹¹

Research Questions

RQ1: To what extent are people's **stated risk preferences** affected by **choice context**?

RQ2: To what extent do people's **revealed and stated risk preferences** converge in the **labor market**?

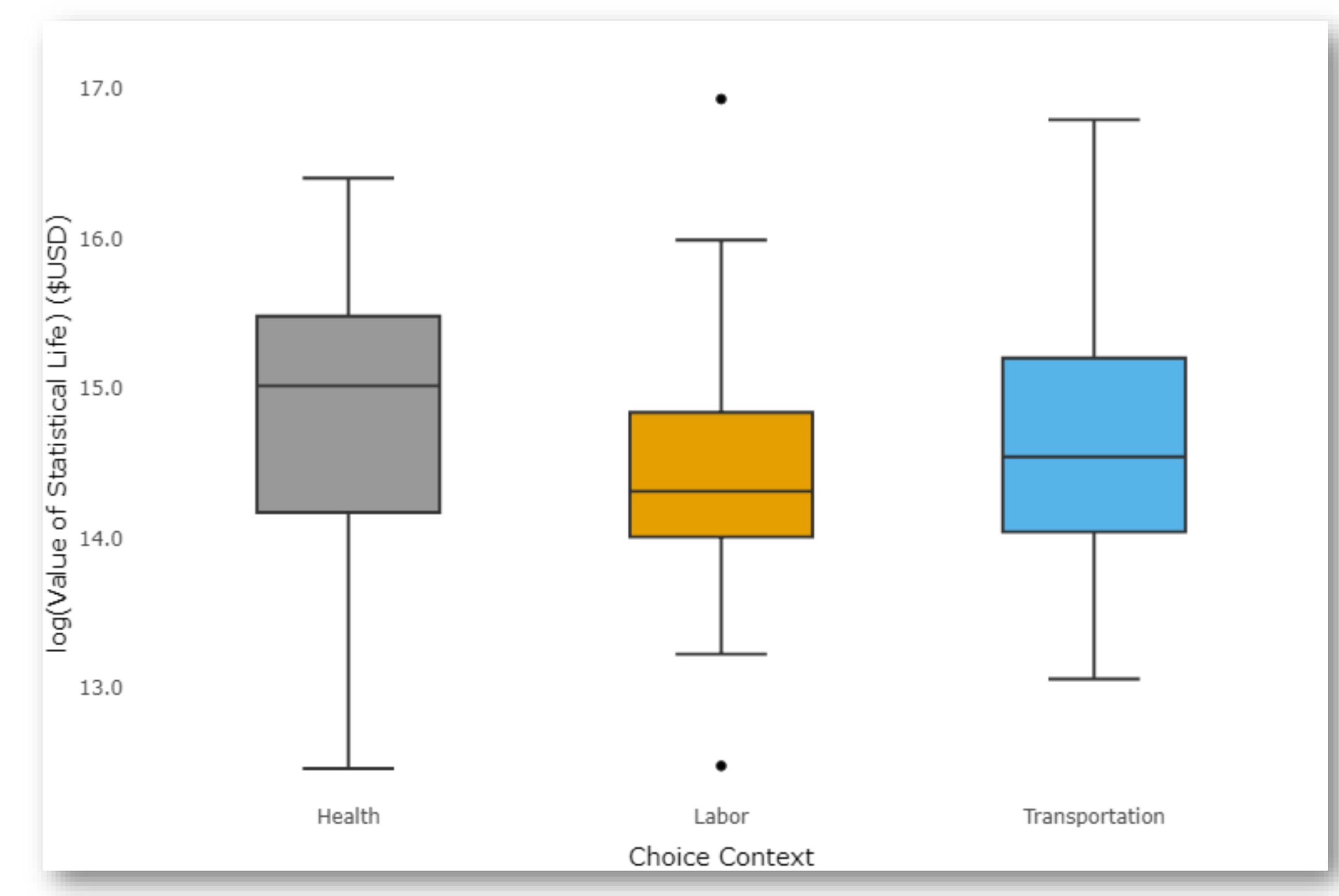
RQ3: What is the effect of risk perception on choice?



Method

- N=71, 29 F; sample matched to age and gender of US
- DOSPRT¹² and SVO¹³ scales, labor history
- Within-subjects design: counterbalanced labor, health, and transportation choice context conditions

RQ1: Stated Preference VSL Estimates by Choice Context

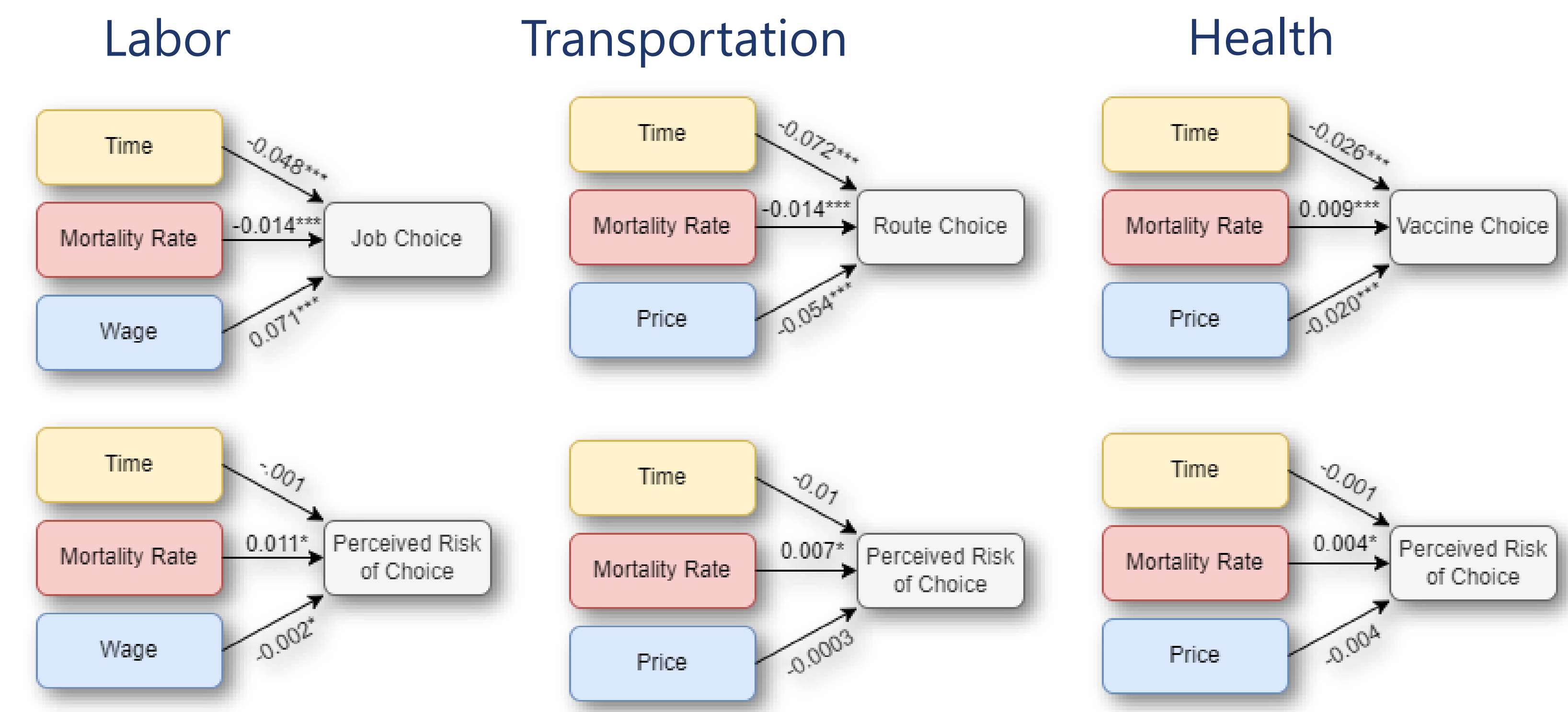


RQ2: Revealed vs. Stated Preference VSL in Labor Market

	Dependent variable:	
	Wages OLS (1)	Job Choice multinomial logistic (2)
Commute Time	-0.132 (0.969)	
Ind Fatality Risk	0.304 (0.694)	
Occ Fatality Risk	0.211** (0.101)	
Union Member	23.169*** (6.232)	
Wage		0.043*** (0.004)
Mortality Risk		-973.010*** (110.828)
Commute Time		-0.035*** (0.005)
Mean VSL (\$USD)	60,885,181	22,384
Observations	29	340
R ²	0.417	0.397

*p<0.1; **p<0.05; ***p<0.01

RQ3: Estimating Paths Within Theoretical Model



References

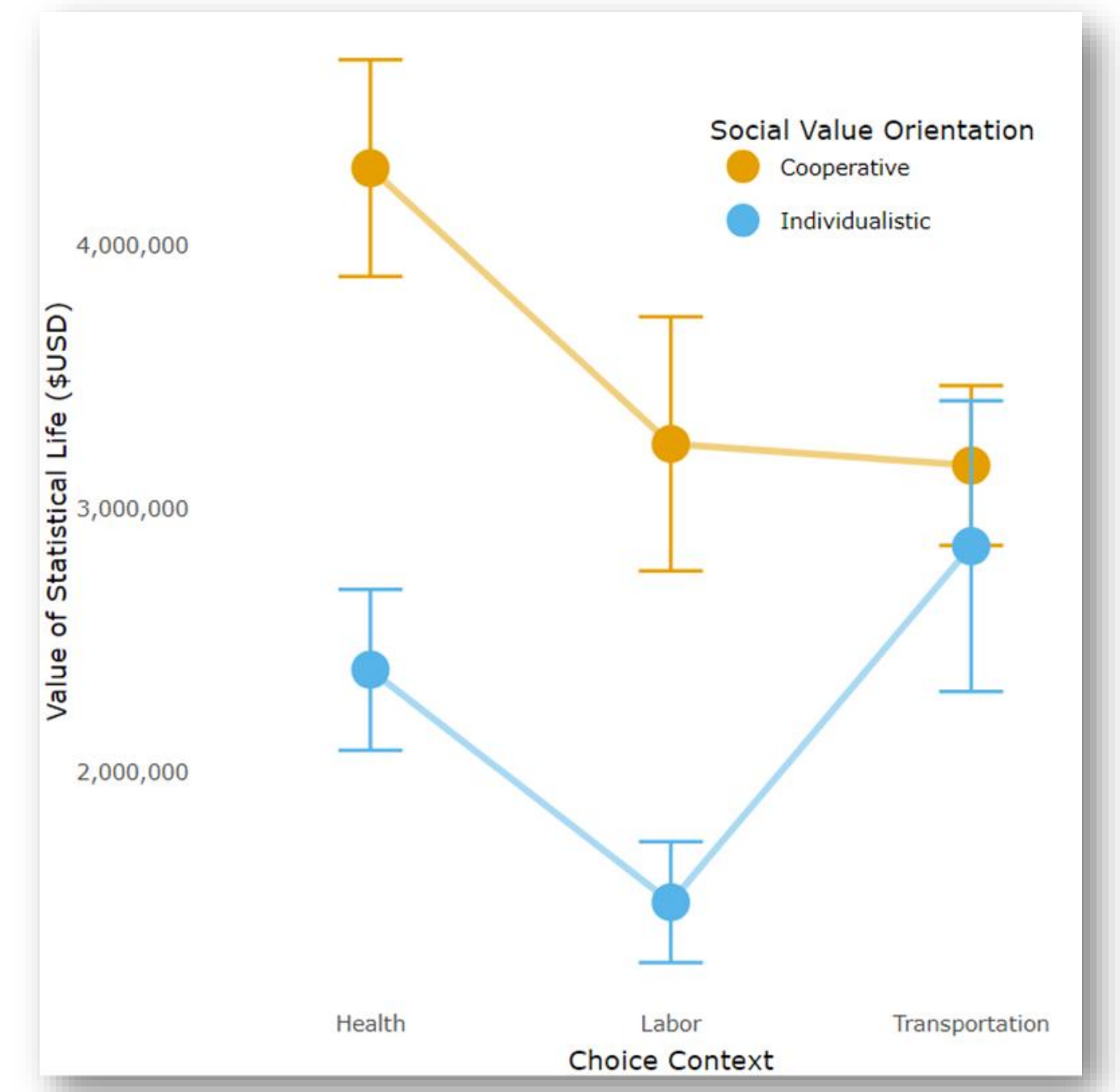
1. Schelling, 1968; 2. Hanemann, 1991; 3. Doucouliagos, Stanley, and Viscusi, 2014; 4. Kochi, Hubbell, and Kramer, 2006; 5. Kluge and Schaffner, 2008; 6. Lindhjem et al., 2011; 7. Viscusi and Aldy, 2003; 8. Fischhoff, Slovic, and Lichtenstein, 1978; 9. Slovic, Lichtenstein, and Fischhoff, 1984; 10. Aven, 2009; 11. Tsuge, Kishimoto, and Takeuchi, 2005; 12. Blais and Weber, 2006; 13. Kramer, McClintock, and Messick, 1986; 14. Azevedo, Herriges, and Kling, 2003; 15. Viscusi, 2004

Results

RQ1

- Person-level VSL estimates for SP derived from Mixed Effects Multinomial Logit Models
- Within-Subjects ANOVA of person-level VSLs (N = 71, 2130 trials) revealed a main effect of choice context (F(2,140) = 4.17, p < .001)
- Pairwise tests: significant differences in VSL across health-labor and health-transportation comparisons

Supplemental Analyses – Individual Differences



RQ2

- Labor RP VSL estimate (model 1) significantly larger (2700x) than SP VSL estimate (model 2)
 - *From sub-sample of industries with higher risk

RQ3

- All risky features significantly predicted choice; mortality risk significantly predicted perceived risk

Discussion

- Critical role of context in self-reported risk preferences
 - Cautions use of estimates across contexts in policymaking
- RP and SP estimates did not converge in the labor context (larger samples should further clarify)
 - Suggests methods not substitutable but may warrant joint consideration in policymaking¹⁴
 - Need for sub-sample consistent with prior studies limited to "blue collar" industries - loss of external validity¹⁵
- Estimating full path model may require measurement changes to capture variability at relevant levels