

From One's Cradle to Another's Grave: Death and Children's Nutritional Status

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- Death of a family member has large psychological and economic costs for children of young age.
- In addition to loss of income and productive labor from the deceased, households in Kyrgyzstan face large funeral expenses.
 - The average number of visitors at a "Funeral/Remembrance Day" attended by a household was 227;
 - Funeral expenses reached as high as 185,000 KGS (3,920 USD) (eleven months' worth of the average income of a family).
- Such massive amounts of spending on burial procedures pose a serious threat to households' welfare.
 - The Kyrgyz Parliament made numerous attempts to pass a law with restrictions on funerals.

- At the same time, the problem of excessive spending on funerals is not unique to Kyrgyz society:
 - *South African households spend the equivalent of one year's income to bury deceased household members, while the Economist (2007) reported on "splendid" funerals in Ghana, where the typical burial costs between US\$2,000 and US\$3,500, despite 79 percent of the population living on less than US\$2 per day. (P.H.Brown et al., 2011, pp.1-2).*

to study the effect of death of a family member on child nutritional outcomes, using "Life in Kyrgyzstan" survey over five years (2010 to 2013, 2016).

Contribution to literature

- Contribution to the literature on bereavement effects, which is very limited, especially with regards to children's nutritional outcomes.
 - Death of prime age adults is a rare event within a particular time frame.
 - Most of the work on bereavement effects is concentrated on educational outcomes.
- Methodological advantages:
 - Employing child fixed effects.
- Differentiating between types of death:
 - Major breadwinner or other household member;
 - "Expected" and "unexpected" deaths.
- Moving beyond the analysis at the mean level:
 - Exploiting quantile regressions.

Review of the Literature: Channels

- **Psychological** costs of death for children of young age:
 - Lack of love, support, and guidance.
 - **Economic** costs of death for children of young age:
 - Loss of income from the deceased;
 - Loss of productive labor from the deceased;
 - High funeral expenses.
- ⇒ *Income* and *substitution* effects.
- Implications:
 - Malnourishment and diseases as a result of cut in the key inputs.
 - Indirect consequences:
 - Stress due to grief may lead to unhealthy behavior of caregivers including drinking and smoking;
 - Investments in children's quality may be significantly cut if the remaining family members do not expect returns from them in the future.
 - "*Higher risk of teenage pregnancy, early marriage, dropping out of school, delinquency, adult depression*" (Gimenez et al., 2013, p.1048).

- **Intergenerational altruism** (Becker & Tomes, 1979):
 - Parents invest in their children's human capital motivated by its effects on their future productivity;
 - Perfect capital markets:
 - No liquidity constraints;
 - Parents can freely borrow against children's future earnings.
 - \Rightarrow Optimal investment: Marginal return to human capital = Marginal cost.
 - \Rightarrow Loss of a family member has **no effect** on investment decisions with respect to children.

But does the assumption of perfect capital markets hold in the context of Kyrgyzstan?

- **Imperfect capital markets:**
 - The effect of a household member's death and the fall in family resources depends on the wealth level of the family.
 - Households with enough precautionary savings leave their investment decisions unchanged.
⇒ **No effect** on health investment of children.
 - Poor families are not able to withstand the shock.
⇒ **Decrease** in health investments in children.

But what about insurance markets?

- **Insurance markets:**
 - When formal or informal life insurance is available, liquidity constraints no longer binding.
 - **No effect** on health investment of children.
- **Health production function:**
 - If parental (or other family member's) time is an argument of the health production function of children, investments in their health may **fall**.

*Is death **exogenous** or **endogenous**?*

- Whether death is exogenous is ultimately a philosophical question.
 - *"It is eventually a question of faith"*. (Jean-Louis Arcand).

- Potential sources of endogeneity (according to some researchers):
 - **Selection bias.**
 - Households that experience death of a family member may be disadvantaged even before death occurs (Gertler et al. 2004).
 - Children placed in orphanages or in the streets are excluded from the household surveys (Gertler et al.,2004; Monasch & Boerma, 2004).
 - Households headed by children.
- ⇒ **Negative bias** in the estimated bereavement effects.
- ⇒ Solutions:
- Propensity score matching techniques.

- Potential sources of endogeneity (according to some researchers):
 - **Omitted variables.**
 - Measures of socioeconomic status are correlated with the incidence of death in the family in addition to affecting children's outcomes.
 - ⇒ **Negative bias** in the estimated bereavement effects.
 - ⇒ Solutions:
 - Instrumental variables estimation;
 - Fixed effects models.
 - **Cause of death.**
 - Long-term illness ⇒ **Negative bias** in the estimated bereavement effects.
 - Sudden death ⇒ **Larger** bereavement effects.

- "Life in Kyrgyzstan" dataset over five years (2010 to 2013, 2016).

Table: Summary Statistics for the Sample of Children Less than 60 Months of Age

Variable	Observations	Mean	Standard deviation	Min	Max
Weight-for-age z-score	5,999	-0.315	1.573	-9.638	20.172
Height-for-age z-score	5,959	-1.530	2.490	-17.177	15.434
Weight-for-height z-score	5,287	0.722	2.168	-18.023	19.408
Arm-circumference-for-age z-score	5,799	-0.960	2.127	-11.082	8.532
Female	6,290	0.485	0.500	0	1
Age in months	6,290	31.621	16.709	0	59
Any vaccination	6,087	0.973	0.163	0	1
BCG vaccination	6,087	0.951	0.215	0	1
Polio vaccination	6,086	0.958	0.200	0	1

Table: Summary Statistics of the Household Characteristics for the Sample of Children Less than 60 Months of Age

Variable	Observations	Mean	Standard deviation	Min	Max
Death of a family member	6,290	0.033	0.178	0	1
Unexpected death of a family member	6,290	0.016	0.126	0	1
Death of a major breadwinner	6,284	0.014	0.116	0	1
Unexpected death of a major breadwinner	6,290	0.008	0.088	0	1
Death of other household member	6,286	0.023	0.150	0	1
Unexpected death of other household member	6,290	0.011	0.104	0	1
Total yearly consumption of the household (KGS)	6,272	171,789	303,775	15,380	5,889,172
Change in total yearly consumption of the household (KGS)	3,222	-29,764	376,321	-5,774,812	764,160
Assets index	6,289	11.165	4.067	1	30
Prop of hh members <7 and >65 years of age	6,290	0.324	0.137	0.067	1
Prop of children >7 and <17 years of age	6,288	0.111	0.152	0	0.667
Household size	6,290	6.948	2.489	2	17
Distance to the nearest hospital	6,272	4.046	7.189	0	48

Table: Summary Statistics for the Sample of Children According to Bereavement Status

Variable	Bereaved Children		Control Children		Difference	
	Mean	Standard error	Mean	Standard error	Mean	Pr> t
Weight-for-age z-score	-0.482	0.112	-0.309	0.021	-0.173	0.130
Height-for-age z-score	-1.590	0.179	-1.528	0.033	-0.061	0.737
Weight-for-height z-score	0.525	0.167	0.729	0.030	-0.204	0.229
Arm-circumference-for-age z-score	-0.994	0.156	-0.959	0.028	-0.035	0.825
Female	0.484	0.006	0.512	0.035	0.028	0.435
Age in months	31.615	1.167	31.621	0.214	-0.006	0.996
Any vaccination	0.970	0.012	0.973	0.002	-0.003	0.812
BCG vaccination	0.920	0.015	0.952	0.003	-0.033	0.034
Polio vaccination	0.950	0.014	0.960	0.003	-0.009	0.533
Total yearly consumption of the household (KGS)	215,944	21,315	170,312	3,898	45,632	0.035
Change in total yearly consumption of the household (KGS)	15,086	36,898	-31,260	6,739	46,346	0.217
Assets index	10.883	0.284	11.174	0.052	-0.291	0.313
Prop of hh members <7 and >65 years of age	0.327	0.010	0.324	0.002	0.003	0.786
Prop of children >7 and <17 years of age	0.088	0.011	0.112	0.002	-0.024	0.029
Household size	7.059	0.174	6.944	0.032	0.115	0.517
Distance to the nearest hospital (km)	4.941	0.502	4.016	0.092	0.924	0.070

$$\text{Child outcome}_{i,h,t} = \alpha + \beta \text{Death}_{h,t} + \gamma \Delta \ln(C_{h,t}) + \theta' X_{i,t} + \delta' Z_{h,t} + \lambda_i + \mu_t + \epsilon_{i,h,t} \quad (1)$$

where:

- $\text{Child outcome}_{i,h,t}$ - an anthropometric outcome of child (i) in household (h) at year (t);
- $\text{Death}_{h,t}$ - a dummy variable for the loss of a family member in household (h) at year (t);
- $\Delta \ln(C_{h,t})$ - a change in consumption of household (h) at year (t);
- $X_{i,t}$ - a vector of child-level control variables;
- $Z_{h,t}$ - a vector of household-level control variables;
- λ_i - child specific effects;
- μ_t - year specific effects;
- $\epsilon_{i,h,t}$ - error term.

Child outcome:

- Weight-for-age z-score (WAZ);
 - Composite measure of the nutritional status.
- Height-for-age z-score (HAZ);
 - Cumulative impact of (mal)nutrition, a LR measure.
- Weight-for-height z-score (WHZ);
 - SR consequences of (mal)nutrition, or acute malnutrition.
- Arm-circumference-for-age z-score (ACAZ).

Why anthropometric outcomes?

- (Mal)nutrition has a huge impact on children's physical, emotional, and cognitive development.
- Various measures represent different dimensions of child's health.
- Objective assessment of children's nutritional status as one dimension of poverty at large.

Death :

- Death of a family member;
- Death of a major breadwinner;
- Death of other household member.
- "Unexpected" death:
 - Death when an accident was reported by a household as a shock in the same 12 months when a family member was reported dead;
 - Death when no illness of the family member was reported by a household in the previous 12 months (at year $t - 1$).

$\Delta \ln(\text{Consumption})$:

- **Economic** vs. **emotional** channels of bereavement effect.
 - Food consumption;
 - Health consumption;
 - Consumption of celebrations, funerals, and rituals;
 - Consumer goods consumption;
 - Other goods consumption.

Child level control variables:

- Gender;
- Age in months;
- Vaccination status:
 - Any type of vaccination;
 - BCG vaccination;
 - Polio vaccination.

Household level control variables:

- Ln (total consumption) of the household;
- Assets index;
- Proportion of household members <7 and >65 years of age;
- Proportion of children >7 and <17 years of age;
- Household size;
- Distance to the next hospital (km).

Estimation methods:

- **Fixed effects estimation.**
 - Identification assumptions:
 - ① Death is exogenous;
 - ② No time-varying omitted variables, which are correlated with death and at the same time affect the children's nutritional status.
- **Random effects estimation.**
 - But the Hausman test is always in favor of the FE.
- **Quantile regressions with fixed effects.**
 - The most malnourished children in the first place might be the most vulnerable and be more affected by bereavement.

Empirical Analysis: Results

Table: Regressions with Child Fixed Effects of Children's Anthropometric Outcomes and Death of a Family Member

	Excluding Change in Consumption	Change in Total Consumption	Change in Food Consumption	Change in Health Consumption	Change in Funerals Consumption	Change in Consumer Good Consumption	Change in Other Goods Consumption
WAZ							
Death	-0.129 (0.129)	-0.447*** (0.154)	-0.459*** (0.155)	-0.446** (0.190)	-0.620** (0.300)	-0.442** (0.198)	-0.432*** (0.155)
Change in log consumption		0.068 (0.049)	-0.092* (0.054)	0.008 (0.018)	0.046 (0.029)	0.028 (0.026)	0.025 (0.026)
R ² within	0.016	0.095	0.094	0.097	0.105	0.089	0.096
Observations	5,963	3,086	3,071	2,579	1,798	2,560	3,080
Number of children	2,567	1,644	1,642	1,463	1,121	1,460	1,643
HAZ							
Death	-0.115 (0.174)	-0.240 (0.181)	-0.248 (0.182)	-0.270 (0.213)	-0.346 (0.279)	-0.179 (0.222)	-0.234 (0.181)
Change in log consumption		0.107* (0.057)	-0.063 (0.063)	0.003 (0.021)	-0.038 (0.027)	0.055* (0.029)	-0.009 (0.030)
R ² within	0.030	0.117	0.113	0.108	0.184	0.120	0.121
Observations	5,924	3,064	3,049	2,561	1,785	2,542	3,058
Number of children	2,553	1,627	1,625	1,447	1,110	1,445	1,626
WHZ							
Death	-0.113 (0.167)	-0.305* (0.182)	-0.325* (0.183)	-0.223 (0.221)	0.015 (0.326)	-0.206 (0.225)	-0.275 (0.183)
Change in log consumption		-0.024 (0.057)	-0.159** (0.064)	-0.009 (0.021)	0.082*** (0.031)	-0.001 (0.030)	0.059* (0.031)
R ² within	0.061	0.033	0.038	0.040	0.058	0.055	0.036
Observations	5,255	2,976	2,963	2,490	1,729	2,465	2,970
Number of children	2,454	1,597	1,596	1,422	1,084	1,412	1,595
ACAZ							
Death	-0.146 (0.147)	0.066 (0.142)	0.060 (0.142)	-0.038 (0.158)	0.198 (0.191)	0.079 (0.169)	0.104 (0.142)
Change in log consumption		0.073 (0.045)	-0.044 (0.049)	0.048*** (0.015)	-0.048*** (0.018)	0.018 (0.022)	0.056** (0.024)
R ² within	0.146	0.047	0.046	0.045	0.069	0.052	0.051
Observations	5,768	3,080	3,065	2,573	1,794	2,555	3,074
Number of children	2,536	1,639	1,637	1,458	1,117	1,456	1,638

Empirical Analysis: Results

- Death of a family member reduces WAZ by almost half of a standard deviation (between -0.620 and -0.432), *ceteris paribus*.
 - Effects of bereavement work beyond reducing the economic resources of the family experiencing loss \Rightarrow Psychological costs matter.
 - Economic channel of the bereavement effect mainly works through its effect on food consumption.
- No effect of bereavement in the long-run.
- Some effect of bereavement in the short-run, which works through funeral expenses.
- Some effect of bereavement on mid-upper-arm-circumference-for-age z-score, which works through expenses for health, funeral, and other goods.

Empirical Analysis: Results

Table: Regressions with Child Fixed Effects of Children's Anthropometric Outcomes and Unexpected Death of a Family Member

	Excluding Change in Consumption	Change in Total Consumption	Change in Food Consumption	Change in Health Consumption	Change in Funerals Consumption	Change in Consumer Good Consumption	Change in Other Goods Consumption
WAZ							
Death	-0.114 (0.171)	-0.447*** (0.163)	-0.457*** (0.164)	-0.461** (0.203)	-0.620** (0.315)	-0.459** (0.205)	-0.429*** (0.164)
Change in log consumption		0.069 (0.049)	-0.091* (0.054)	0.008 (0.018)	0.045 (0.029)	0.028 (0.026)	0.026 (0.026)
R ² within	0.015	0.095	0.094	0.096	0.105	0.089	0.095
Observations	5,963	3,086	3,071	2,579	1,798	2,560	3,080
Number of children	2,567	1,644	1,642	1,463	1,121	1,460	1,643
HAZ							
Death	-0.111 (0.233)	-0.227 (0.192)	-0.232 (0.193)	-0.224 (0.228)	-0.266 (0.294)	-0.163 (0.229)	-0.220 (0.192)
Change in log consumption		0.108 (0.057)	-0.062 (0.063)	0.004 (0.021)	-0.039 (0.027)	0.055* (0.030)	-0.008 (0.030)
R ² within	0.030	0.116	0.113	0.108	0.183	0.120	0.121
Observations	5,924	3,064	3,049	2,561	1,785	2,542	3,058
Number of children	2,553	1,627	1,625	1,447	1,110	1,445	1,626
WHZ							
Death	-0.180 (0.213)	-0.264 (0.194)	-0.286 (0.194)	-0.209 (0.236)	0.045 (0.344)	-0.204 (0.232)	-0.234 (0.194)
Change in log consumption		-0.023 (0.057)	-0.158** (0.064)	-0.009 (0.021)	0.082*** (0.031)	-0.001 (0.030)	0.060** (0.031)
R ² within	0.062	0.033	0.037	0.040	0.058	0.055	0.035
Observations	5,255	2,976	2,963	2,490	1,729	2,465	2,970
Number of children	2,454	1,597	1,596	1,422	1,084	1,412	1,595
ACAZ							
Death	-0.013 (0.192)	0.069 (0.150)	0.066 (0.151)	-0.028 (0.169)	0.278 (0.201)	0.082 (0.174)	0.108 (0.150)
Change in log consumption		0.072 (0.045)	-0.044 (0.049)	0.048*** (0.015)	-0.048*** (0.018)	0.018 (0.022)	0.056** (0.024)
R ² within	0.146	0.047	0.046	0.045	0.070	0.052	0.051
Observations	5,768	3,080	3,065	2,573	1,794	2,555	3,074
Number of children	2,536	1,639	1,637	1,458	1,117	1,456	1,638

Empirical Analysis: Results

- Results are very similar, both qualitatively and quantitatively, to those obtained for death of a family member in general.
- Sudden loss has a large negative effect on WAZ (a range between -0.620 and -0.429 of a standard deviation), *ceteris paribus*.
- No effect of bereavement in the long-run.
- Adverse bereavement effects for arm-circumference-for-age z-score working through economic channels.
- Some differences with respect to short-term consequences of sudden death:
 - A rise in food consumption by 1% across periods is reflected in the *ceteris paribus* fall of WHZ by 0.158 of a standard deviation.
 - A rise in funerals and other goods consumption by 1% is associated with an increase in WHZ by 0.082 and 0.060 of a standard deviation, *ceteris paribus*.

Empirical Analysis: Results

Table: Regressions with Child Fixed Effects of Children's Anthropometric Outcomes and Death of a Major Breadwinner

	Excluding Change in Consumption	Change in Total Consumption	Change in Food Consumption	Change in Health Consumption	Change in Funerals Consumption	Change in Consumer Good Consumption	Change in Other Goods Consumption
WAZ							
Death	0.003 (0.194)	-0.549** (0.231)	-0.549** (0.232)	-0.852*** (0.297)	-1.550*** (0.514)	-0.760** (0.304)	-0.538** (0.231)
Change in log consumption		0.071 (0.049)	-0.087 (0.054)	0.007 (0.018)	0.044 (0.028)	0.026 (0.026)	0.032 (0.026)
R ² within	0.015	0.094	0.092	0.099	0.112	0.090	0.094
Observations	5,960	3,086	3,071	2,579	1,798	2,560	3,080
Number of children	2,567	1,644	1,642	1,463	1,121	1,460	1,643
HAZ							
Death	0.085 (0.263)	-0.184 (0.271)	-0.175 (0.273)	-0.186 (0.334)	-0.887* (0.480)	0.089 (0.341)	-0.151 (0.270)
Change in log consumption		0.108* (0.057)	-0.060 (0.063)	0.003 (0.021)	-0.039 (0.027)	0.055* (0.029)	-0.005 (0.030)
R ² within	0.030	0.116	0.112	0.107	0.186	0.120	0.121
Observations	5,921	3,064	3,049	2,561	1,785	2,542	3,058
Number of children	2,553	1,627	1,625	1,447	1,110	1,445	1,626
WHZ							
Death	0.021 (0.252)	-0.282 (0.275)	-0.301 (0.276)	-0.550 (0.351)	0.070 (0.573)	-0.458 (0.350)	-0.292 (0.275)
Change in log consumption		-0.023 (0.057)	-0.156** (0.064)	-0.009 (0.021)	0.082*** (0.031)	-0.002 (0.030)	0.064** (0.030)
R ² within	0.060	0.032	0.037	0.042	0.058	0.056	0.035
Observations	5,252	2,976	2,963	2,490	1,729	2,465	2,970
Number of children	2,454	1,597	1,596	1,422	1,084	1,412	1,595
ACAZ							
Death	0.007 (0.222)	0.172 (0.212)	0.177 (0.213)	0.020 (0.247)	0.516 (0.329)	0.343 (0.259)	0.192 (0.211)
Change in log consumption		0.072 (0.045)	-0.044 (0.049)	0.048*** (0.015)	-0.048*** (0.018)	0.019 (0.022)	0.055** (0.024)
R ² within	0.146	0.047	0.046	0.045	0.071	0.053	0.051
Observations	5,765	3,080	3,065	2,573	1,794	2,555	3,074
Number of children	2,536	1,639	1,637	1,458	1,117	1,456	1,638

Empirical Analysis: Results

- Qualitatively, the findings are extremely similar to those found for death of a family member and unexpected death of a family member.
- The difference is in the magnitudes of the effects.
 - Bereavement is associated with a decline in WAZ by a range from 0.538 to a startling 1.550 of a standard deviation, *ceteris paribus*.
 - The mean WAZ in the full sample is -0.315.
 - Death of a major breadwinner puts young children at risk of being underweight.
 - None of the coefficients for the change in consumption is statistically significant:
 - Families may be able to insure investments in children's health against the purely economic impact of loss.
 - Families are unable to insure these investments against emotional losses.
- Virtually no effect in the long-run.
- Short-term consequences of bereavement are reflected in the statistically significant impact of change in food consumption, funerals consumption, and other goods consumption.

Empirical Analysis: Results

Table: Regressions with Child Fixed Effects of Children's Anthropometric Outcomes and Unexpected Death of a Major Breadwinner

	Excluding Change in Consumption	Change in Total Consumption	Change in Food Consumption	Change in Health Consumption	Change in Funerals Consumption	Change in Consumer Good Consumption	Change in Other Goods Consumption
WAZ							
Death	-0.026 (0.250)	-0.561** (0.235)	-0.560** (0.236)	-0.894*** (0.306)	-1.550*** (0.514)	-0.760** (0.304)	-0.550** (0.236)
Change in log consumption		0.071 (0.049)	-0.087 (0.054)	0.007 (0.018)	0.044 (0.028)	0.026 (0.026)	0.032 (0.026)
R ² within	0.015	0.094	0.092	0.099	0.112	0.090	0.094
Observations	5,963	3,086	3,071	2,579	1,798	2,560	3,080
Number of children	2,567	1,644	1,642	1,463	1,121	1,460	1,643
HAZ							
Death	-0.061 (0.341)	-0.187 (0.277)	-0.178 (0.278)	-0.186 (0.344)	-0.887* (0.480)	0.089 (0.341)	-0.156 (0.275)
Change in log consumption		0.108* (0.057)	-0.060 (0.063)	0.003 (0.021)	-0.039 (0.027)	0.055* (0.029)	-0.005 (0.030)
R ² within	0.030	0.116	0.112	0.107	0.186	0.120	0.121
Observations	5,924	3,064	3,049	2,561	1,785	2,542	3,058
Number of children	2,553	1,627	1,625	1,447	1,110	1,445	1,626
WHZ							
Death	0.010 (0.316)	-0.266 (0.282)	-0.286 (0.282)	-0.553 (0.363)	0.070 (0.573)	-0.458 (0.350)	-0.275 (0.281)
Change in log consumption		-0.023 (0.057)	-0.156** (0.064)	-0.009 (0.021)	0.082*** (0.031)	-0.002 (0.030)	0.064** (0.030)
R ² within	0.061	0.032	0.037	0.042	0.058	0.056	0.035
Observations	5,255	2,976	2,963	2,490	1,729	2,465	2,970
Number of children	2,454	1,597	1,596	1,422	1,084	1,412	1,595
ACAZ							
Death	-0.047 (0.281)	0.205 (0.216)	0.210 (0.217)	0.053 (0.255)	0.516 (0.329)	0.343 (0.259)	0.224 (0.215)
Change in log consumption		0.072 (0.045)	-0.044 (0.049)	0.048*** (0.015)	-0.048*** (0.018)	0.019 (0.022)	0.054** (0.024)
R ² within	0.146	0.047	0.047	0.045	0.071	0.053	0.051
Observations	5,768	3,080	3,065	2,573	1,794	2,555	3,074
Number of children	2,536	1,639	1,637	1,458	1,117	1,456	1,638

Empirical Analysis: Results

- Qualitatively, the results are identical to those for death of a family member, unexpected death of a family member, and death of a major breadwinner.
- The magnitude of the effects is the largest among all four sets of results.
 - Bereavement is associated with a decline in WAZ by 0.561 of a standard deviation.
 - 0.447 of a standard deviation for death of a family member and unexpected death of a family member;
 - 0.549 of a standard deviation for death of a major breadwinner.

Quantile Regressions:

- No support for the hypothesis that bereavement effects would be strongest for the 0.25th quantile and weakest for the 0.75th quantile.

Conclusion

- ① Death of a family member, be it of a major breadwinner or other household member, has a large negative effect on the overall nutritional status of children less than 60 months of age:
 - It is associated with a fall in WAZ by a range from 0.387 to a startling 1.550! of a standard deviation, *ceteris paribus*.
 - The mean WAZ in our sample is -0.315: children at risk of being underweight as a result of loss.
- ② Loss of a household member has only short-term negative consequences on children of young age.
 - In the short-run, bereavement affects families' level of food consumption, funeral expenses, and other goods consumption, which then influence children's WHZ.
- ③ No consequences for children's long-term level of nutrition.
 - With time, families learn to cope with a large negative shock and smooth their consumption and investment levels.

Conclusion

- ④ Loss of a family member has both economic and psychological costs for children left behind.
 - A change in economic resources due to lost income from the deceased and his productive labor is crucial for children's nutrition in the short-run.
 - Families have no means to immediately insure themselves against economic costs of death.
 - Emotional support, care, and guidance of adults are not less important for raising well-nourished and healthy children.
 - It is not really possible to insure from psychological costs of death.
- ⑤ Nature of death does matter for nutrition.
 - Death of a major breadwinner has more pronounced economic costs for children less than 60 months of age.
 - Unexpected deaths have more severe implications.
 - It becomes harder for families to withstand the negative shock of death when it is not prepared for it.
- ⑥ No strong support for the hypothesis that children at the bottom of the health distribution suffer more from bereavement, while the healthiest ones experience smaller effects.

- 7 The fact that death matters for the nutritional status of young children means that due to imperfect capital markets in Kyrgyzstan liquidity constraints may be preventing households from keeping their child investments in place.
- 8 The result that nutritional status of children is negatively affected only in the short-run means that while informal insurance mechanisms that are in place in Kyrgyzstan in the context of funerals, are not sufficient to absorb all the costs immediately, they work well enough to help the families withstand the negative shock of bereavement in the long-run.

Limitations

- The method of identifying unexpected deaths is flawed, as it rests on a strong set of assumptions.
 - Nevertheless, the results are sensible.
- An attempt was made to explore more of the exact channels of bereavement, but these are still very crude estimates.
 - No detailed explanation of the emotional costs could be provided.
 - Was not possible to specifically account for the funeral expenses.
- Five years of data might have been insufficient for the proper account of distributional patterns of bereavement effects.
 - Inconclusive results for the quantile regressions.