

**Supplementary Table S1:** Cross-sectional model results – total calories for rural and urban households for the 68<sup>th</sup> (2011–2012) round with and without state contextual variables

	2011–2012 (with contextual variables)		2011–2012 (without contextual variables)	
	Rural	Urban	Rural	Urban
	Coefficients (SE)		Coefficients (SE)	
<b>MPCE</b>	0.99** (0.02)	0.82** (0.02)	0.99** (0.02)	0.82** (0.02)
<b>MPCE<sup>2</sup></b>	-0.05** (0.01 <sup>-1</sup> )	-0.04** (0.02 <sup>-1</sup> )	-0.05** (0.01 <sup>-1</sup> )	-0.04** (0.02 <sup>-1</sup> )
<b>Household size</b>	-0.02** (0.05 <sup>-2</sup> )	-0.03** (0.06 <sup>-2</sup> )	-0.02** (0.05 <sup>-2</sup> )	-0.03** (0.06 <sup>-2</sup> )
<b>Public Distribution System</b>	0.05** (0.02 <sup>-1</sup> )	0.05** (0.03 <sup>-1</sup> )	0.05** (0.02 <sup>-1</sup> )	0.05** (0.03 <sup>-1</sup> )
<b>Landholding size (ha)</b>	0.09 <sup>-1</sup> ** (0.04 <sup>-2</sup> )	n.a.	0.09 <sup>-1</sup> ** (0.04 <sup>-2</sup> )	n.a.
<b>Employment-physical</b> (Non-physical – ref)	0.02** (0.02 <sup>-1</sup> )	0.02** (0.03 <sup>-1</sup> )	0.02** (0.05 <sup>-2</sup> )	0.02** (0.03 <sup>-1</sup> )
<b>Household education</b>	-0.06 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.05 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.06** (0.03 <sup>-2</sup> )	-0.05 <sup>-1</sup> ** (0.03 <sup>-2</sup> )
<b>Household head gender</b> Male (ref.)	0.01** (0.03 <sup>-1</sup> )	0.01** (0.04 <sup>-1</sup> )	0.01** (0.03 <sup>-1</sup> )	0.01** (0.04 <sup>-1</sup> )
<b>Household – age</b>	0.01 <sup>-1</sup> ** (0.07 <sup>-3</sup> )	0.02 <sup>-1</sup> ** (0.01 <sup>-2</sup> )	0.01** (0.07 <sup>-3</sup> )	0.02 <sup>-1</sup> ** (0.01 <sup>-2</sup> )
Muslim	-0.02** (0.04 <sup>-1</sup> )	0.02 <sup>-1</sup> (0.04 <sup>-1</sup> )	-0.02** (0.04 <sup>-1</sup> )	0.02 <sup>-1</sup> (0.04 <sup>-1</sup> )
Christian	-0.06 <sup>-1</sup> (0.07 <sup>-1</sup> )	-0.02 <sup>-2</sup> (0.08 <sup>-1</sup> )	-0.06 <sup>-1</sup> (0.07 <sup>-1</sup> )	-0.02 <sup>-2</sup> (0.08 <sup>-1</sup> )
Sikh	0.04** (0.01)	0.01 (0.01)	0.03** (0.01)	0.01 (0.01)
Hindu – SC	-0.03 <sup>-1</sup> (0.03 <sup>-1</sup> )	0.08 <sup>-3</sup> (0.04 <sup>-1</sup> )	-0.04 <sup>-1</sup> (0.03 <sup>-1</sup> )	0.01 <sup>-2</sup> (0.04 <sup>-1</sup> )
Hindu – ST	0.07 <sup>-1</sup> * (0.04 <sup>-1</sup> )	0.01* (0.07 <sup>-1</sup> )	0.07 <sup>-1</sup> * (0.04 <sup>-1</sup> )	0.01* (0.07 <sup>-1</sup> )
Others	0.01 (0.01)	-0.01 (0.01)	0.07 <sup>-1</sup> (0.01)	-0.01 (0.01)
<b>Disease environment</b>	0.35** (0.06)	0.30** (0.07)	-	-
<b>State MPCE</b>	-0.02 <sup>-2</sup> ** (0.05 <sup>-3</sup> )	-0.01 <sup>-2</sup> ** (0.03 <sup>-3</sup> )	-	-
<b>State – Inequality</b>	0.06 <sup>-1</sup> (0.01)	0.06 <sup>-1</sup> (0.01)	-	-
<b>Constant</b>	3.44** (0.07)	3.92** (0.09)	3.42** (0.07)	3.94** (0.09)
<b>Random effects</b>	<b>ICC<sup>^</sup></b>	<b>ICC<sup>^</sup></b>	<b>ICC<sup>^</sup></b>	<b>ICC<sup>^</sup></b>
<b>-State</b>	0.02** (0.06 <sup>-1</sup> )	0.02** (0.06 <sup>-1</sup> )	0.16** (0.05)	0.11** (0.03)
<b>-State/FSU</b>	0.23** (0.01)	0.25** (0.07 <sup>-1</sup> )	0.34** (0.04)	0.32** (0.03)
<b>R<sup>2</sup></b>	42.24	47.56	32.65	42.01

Notes

\*\* and \* imply significance at 1% and 5% levels, respectively.

(SE) – standard error value; MPCE – log monthly per capita expenditure; ha – hectare(s); ICC – intra-class correlation; FSU – first stage unit; n.a. – not applicable.

^ – ICC measures the proportion of the total unexplained variance attributable to differences between state/FSUs after considering independent variables.

**Supplementary Table S2:** Cross-sectional model results – total calories for rural and urban households for the 68<sup>th</sup> (2011–2012) round at State level and District Level.

	State level (as per table 1)		District Level	
	Rural	Urban	Rural	Urban
	Coefficients (SE)		Coefficients (SE)	
<b>MPCE</b>	0.99** (0.02)	0.82** (0.02)	0.99** (0.02)	0.81** (0.02)
<b>MPCE<sup>2</sup></b>	-0.05** (0.01 <sup>-1</sup> )	-0.04** (0.02 <sup>-1</sup> )	-0.05** (0.01 <sup>-1</sup> )	-0.04** (0.02 <sup>-1</sup> )
<b>Household size</b>	-0.02** (0.05 <sup>-2</sup> )	-0.03** (0.06 <sup>-2</sup> )	-0.02** (0.05 <sup>-2</sup> )	-0.03** (0.06 <sup>-2</sup> )
<b>Public Distribution System</b>	0.05** (0.02 <sup>-1</sup> )	0.05** (0.03 <sup>-1</sup> )	0.05** (0.02 <sup>-1</sup> )	0.05** (0.03 <sup>-1</sup> )
<b>Landholding size (ha)</b>	0.09 <sup>-1</sup> ** (0.04 <sup>-2</sup> )	n.a.	0.09 <sup>-1</sup> ** (0.04 <sup>-2</sup> )	n.a.
<b>Employment-physical</b> (Non-physical – ref)	0.02** (0.02 <sup>-1</sup> )	0.02** (0.03 <sup>-1</sup> )	0.02** (0.02 <sup>-1</sup> )	0.02** (0.03 <sup>-1</sup> )
<b>Household education</b>	-0.06 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.05 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.06 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.05 <sup>-1</sup> ** (0.03 <sup>-2</sup> )
<b>Household head gender</b> Male (ref.)	0.01** (0.03 <sup>-1</sup> )	0.01** (0.04 <sup>-1</sup> )	0.01** (0.03 <sup>-1</sup> )	0.01** (0.04 <sup>-1</sup> )
<b>Household – age</b>	0.01 <sup>-1</sup> ** (0.07 <sup>-3</sup> )	0.01 <sup>-1</sup> ** (0.09 <sup>-3</sup> )	0.01 <sup>-1</sup> ** (0.07 <sup>-3</sup> )	0.01 <sup>-1</sup> ** (0.01 <sup>-2</sup> )
<b>Religion</b>				
Hindu – general (ref.)				
Muslim	-0.02** (0.04 <sup>-1</sup> )	0.02 <sup>-1</sup> (0.04 <sup>-1</sup> )	-0.02** (0.04 <sup>-1</sup> )	0.02 <sup>-1</sup> (0.04 <sup>-1</sup> )
Christian	-0.06 <sup>-1</sup> (0.07 <sup>-1</sup> )	-0.02 <sup>-2</sup> (0.08 <sup>-1</sup> )	-0.02 <sup>-1</sup> (0.07 <sup>-1</sup> )	-0.03 <sup>-2</sup> (0.08 <sup>-1</sup> )
Sikh	0.04** (0.01)	0.01 (0.01)	0.03** (0.01)	0.01 (0.01)
Hindu – SC	-0.03 <sup>-1</sup> (0.03 <sup>-1</sup> )	0.08 <sup>-3</sup> (0.04 <sup>-1</sup> )	-0.03 <sup>-1</sup> (0.03 <sup>-1</sup> )	0.01 <sup>-1</sup> (0.04 <sup>-1</sup> )
Hindu – ST	0.07 <sup>-1</sup> * (0.04 <sup>-1</sup> )	0.01** (0.06 <sup>-1</sup> )	0.01* (0.04 <sup>-1</sup> )	0.02** (0.06 <sup>-1</sup> )
Others	0.01 (0.01)	-0.01 (0.01)	0.01 (0.01)	-0.01 (0.09 <sup>-1</sup> )
<b>Disease environment:</b> <b>state level/district level</b>	0.35** (0.06)	0.30** (0.07)	0.08** (0.02)	0.09** (0.02)
<b>State MPCE/district -</b> <b>MPCE</b>	-0.02 <sup>-2</sup> ** (0.05 <sup>-3</sup> )	-0.01 <sup>-2</sup> ** (0.03 <sup>-3</sup> )	-0.02 <sup>-2</sup> ** (0.02 <sup>-3</sup> )	0.09 <sup>-3</sup> ** (0.09 <sup>-4</sup> )
<b>State inequality/district –</b> <b>Inequality</b>	0.06 <sup>-1</sup> (0.01)	0.06 <sup>-1</sup> (0.01)	0.04 <sup>-1</sup> (0.01)	0.06 <sup>-1</sup> (0.05 <sup>-1</sup> )
<b>Constant</b>	3.44** (0.07)	3.92** (0.09)	3.56** (0.07)	4.03** (0.09)
<b>Random effects</b>	<b>ICC<sup>^</sup></b>	<b>ICC<sup>^</sup></b>	<b>ICC<sup>^</sup></b>	<b>ICC<sup>^</sup></b>
<b>-State</b>	0.02** (0.06 <sup>-1</sup> )	0.02** (0.06 <sup>-1</sup> )	0.16** (0.01)	0.05** (0.02)
<b>-State/FSU</b>	0.23** (0.01)	0.25** (0.07 <sup>-1</sup> )	0.29 (0.01)	0.26** (0.01)
<b>R<sup>2</sup></b>	42.24	47.56	37.84	45.88

**Notes**

\*\* and \* imply significance at 1% and 5% levels, respectively.

(SE) – standard error value; MPCE – log monthly per capita expenditure; ha – hectare(s); ICC – intra-class correlation; FSU – first stage unit; n.a. – not applicable.

<sup>^</sup> – ICC measures the proportion of the total unexplained variance attributable to differences between state/FSUs after considering independent variables.

**Supplementary Table S3:** Cross-sectional model results – total calories for rural and urban households for the 68<sup>th</sup> (2011–2012) round using State Net Domestic Product/capita and Government Health Expenditure/capita.

	State Net Domestic Product		Govt. Health Expenditure	
	Rural	Urban	Rural	Urban
	Coefficients (SE)		Coefficients (SE)	
<b>MPCE</b>	0.99** (0.02)	0.82** (0.02)	0.99** (0.02)	0.82** (0.02)
<b>MPCE<sup>2</sup></b>	-0.05** (0.01 <sup>-1</sup> )	-0.04** (0.02 <sup>-1</sup> )	-0.05** (0.01 <sup>-1</sup> )	-0.04** (0.02 <sup>-1</sup> )
<b>Household size</b>	-0.02** (0.05 <sup>-2</sup> )	-0.03** (0.06 <sup>-2</sup> )	-0.02** (0.05 <sup>-2</sup> )	-0.03** (0.06 <sup>-2</sup> )
<b>Public Distribution System</b>	0.05** (0.02 <sup>-1</sup> )	0.05** (0.03 <sup>-1</sup> )	0.05** (0.02 <sup>-1</sup> )	0.05** (0.03 <sup>-1</sup> )
<b>Landholding size (ha)</b>	0.09 <sup>-1</sup> ** (0.04 <sup>-2</sup> )	n.a.	0.09 <sup>-1</sup> ** (0.04 <sup>-2</sup> )	n.a.
<b>Employment-physical</b> (Non-physical – ref)	0.01** (0.02 <sup>-1</sup> )	0.02** (0.03 <sup>-1</sup> )	0.01** (0.02 <sup>-1</sup> )	0.02** (0.03 <sup>-1</sup> )
<b>Household education</b>	-0.06 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.05 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.06 <sup>-1</sup> ** (0.03 <sup>-2</sup> )	-0.05 <sup>-1</sup> ** (0.03 <sup>-2</sup> )
<b>Household head gender</b> Male (ref.)	0.01** (0.03 <sup>-1</sup> )	0.01** (0.04 <sup>-1</sup> )	0.01** (0.03 <sup>-1</sup> )	0.01** (0.04 <sup>-1</sup> )
<b>Household – age</b>	0.01 <sup>-1</sup> ** (0.07 <sup>-3</sup> )	0.01 <sup>-1</sup> ** (0.09 <sup>-3</sup> )	0.01 <sup>-1</sup> ** (0.07 <sup>-3</sup> )	0.02 <sup>-1</sup> ** (0.01 <sup>-2</sup> )
<b>Religion</b>				
Hindu – general (ref.)				
Muslim	-0.02** (0.04 <sup>-1</sup> )	0.02 <sup>-1</sup> (0.04 <sup>-1</sup> )	-0.02** (0.04 <sup>-1</sup> )	0.02 <sup>-1</sup> (0.04 <sup>-1</sup> )
Christian	-0.06 <sup>-1</sup> (0.07 <sup>-1</sup> )	-0.02 <sup>-2</sup> (0.08 <sup>-1</sup> )	-0.06 <sup>-1</sup> (0.07 <sup>-1</sup> )	-0.02 <sup>-2</sup> (0.08 <sup>-1</sup> )
Sikh	0.03** (0.01)	0.01 (0.01)	0.03** (0.01)	0.01 (0.01)
Hindu – SC	-0.04 <sup>-1</sup> (0.03 <sup>-1</sup> )	0.04 <sup>-3</sup> (0.04 <sup>-1</sup> )	-0.03 <sup>-1</sup> (0.03 <sup>-1</sup> )	0.04 <sup>-3</sup> (0.04 <sup>-1</sup> )
Hindu – ST	0.07 <sup>-1</sup> * (0.04 <sup>-1</sup> )	0.01** (0.06 <sup>-1</sup> )	0.07 <sup>-1</sup> * (0.04 <sup>-1</sup> )	0.01* (0.07 <sup>-1</sup> )
Others	0.07 <sup>-1</sup> (0.01)	-0.01 (0.01)	0.07 <sup>-1</sup> (0.01)	-0.01 (0.01)
<b>Disease environment</b>	0.30** (0.07)	0.28** (0.08)	0.44** (0.07)	0.45** (0.06)
<b>State domestic product/govt. health expenditure<sup>+</sup></b>	-0.02 <sup>-4*</sup> (0.01 <sup>-6</sup> )	-0.02 <sup>-4**</sup> (0.03 <sup>-3</sup> )	-0.02 <sup>-2**</sup> (0.05 <sup>-3</sup> )	-0.01 <sup>-2**</sup> (0.04 <sup>-3</sup> )
<b>Constant</b>	3.43** (0.08)	4.01** (0.09)	3.51** (0.07)	3.99** (0.09)
<b>Random effects</b>	ICC <sup>^</sup>	ICC <sup>^</sup>		
<b>-State</b>	0.05** (0.01)	0.02** (0.08 <sup>-1</sup> )	0.04** (0.01)	0.02** (0.08 <sup>-1</sup> )
<b>-State/FSU</b>	0.26** (0.01)	0.25** (0.09 <sup>-1</sup> )	0.25** (0.01)	0.25** (0.09 <sup>-1</sup> )
<b>R<sup>2</sup></b>	40.61	47.23	41.18	47.21

Notes

\*\* and \* imply significance at 1% and 5% levels, respectively.

(SE) – standard error value; MPCE – log monthly per capita expenditure; ha – hectare(s); ICC – intra-class correlation; FSU – first stage unit; n.a. – not applicable.

^ – ICC measures the proportion of the total unexplained variance attributable to differences between state/FSUs after considering independent variables.

<sup>+</sup> - In contrast to the state-level MPCE, no separate rural and urban specific data is available for State domestic product and per capita government health expenditure and thus the same state level measure is used here for both rural and urban sectors.