Appendix 1: Descriptions of study variables for factors associated with neonatal mortality in Ethiopia, EDHS 2016

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| **Variable**  | **Value levels** | **Descriptions**  |
| Neonatal survival status  | 1. Survived
2. Dead
 | Outcome variable defined either death within 28 days of birth or survived beyond  |
| **Community-level factors** |
| Cluster  |  | A cluster is a geographic area covering on average 181 households. Cluster is also known as census enumeration area, is used as a sampling frame  |
| Region  | 1. Tigray
2. Afar
3. Amhara
4. Oromia
5. Somali
6. Benishangul
7. SNNPR
8. Gambela
9. Harari
10. Addis Adaba
11. Dire Dawa
 | Administrative states  |
| Place of residence | 1. Urban
2. Rural
 |  |
| Mean antenatal care visits per cluster |  | Mean antenatal care visits pre cluster |
| Proportion of deliveries in health facility per cluster |  | Deliveries in hospitals, health centres, health posts, private clinics and non-governmental health facilities |
| Proportion of postnatal care use |  | Postnatal care use with two days of birth |
| **Geospatial/ecological variables**  |
| Aridity | 1. Humid
2. Very humid
3. Dry
4. Very dry
 | The average yearly precipitation divided by average yearly potential evapotranspiration, an aridity index defined by the United Nations Environmental Programme (UNEP)([Barrow, 1992](#_ENREF_1)) |
| Episodes of drought | 1. Five or fewer episodes
2. More than five episodes
 | The average number of drought episodes (categorised between 1 (low) and 10 (high)) for theareas within the 2 km (urban) or 10 km (rural) buffer surrounding the DHS survey clusterlocation-based on, utilising data from 1980 through 2000 for 21 years |
| Travel time to towns with 50,000 or more people settlement  | 1. Two or fewer hours
2. More than two hours
 | The average time (minutes) required to reach a settlement of 50,000 or more people from thethe area within the 2 km (urban) or 10 km (rural) buffer surrounding the DHS survey cluster location, based on the year 2015 infrastructure data |
| **Socio-economic variables**  |
| Living situation of the mother  | 1. Living with a partner
2. Not living with a partner
 | Women who are divorced/separated/widowed are considered not living with a partner |
| Educational status of the mother  | 1. No education
2. Primary education
3. Secondary and above
 | The interval between the current birth and preceding births |
| Household wealth index | 1. poor
2. middle
3. rich
 | Wealth index: is a composite measure of a household cumulative living standard, calculated using easy-to-collect data on a household’s ownership of selected assets, such as televisions and bicycles; materials used for housing construction etc.  |
| Cooking energy used | 1. Solid fuel
2. Clean fuel
 | Solid fuels include coal/lignite, charcoal, wood, straw/shrub/grass, agricultural crops, and animal dung Clean fuels include electricity, liquefied petroleum gas (LPG), natural gas, and biogas  |
| **Proximate determinants**  |
| **Maternal and neonatal factors** |  |
| Birth order/rank |  |  |
| Birth type | 1. Singleton
2. Twin
 |  |
| Sex of child | 1. Male
2. Female
 |  |
| Umbilical cord care practice | 1. Nothing applied
2. Traditional substances
3. Don’t know
 | Traditional substances applied on a cord: dung, oil, ointment  |
| Duration of pregnancy  | 1. Preterm
2. Term
 | Preterm: 8 months and belowTerm: 9 months and above  |
| Size of the neonate at birth |  | mother’s estimate of the baby’s size at birth |
| Preceding birth interval | 1. Greater than 24 months
2. 24 months or less
3. First birth
 |  |
| **Health service use related factors** |
| Place of delivery  | 1. Health facility
2. Home
3. Other
 | Health facility includes all private and public health facilities, including hospitals, health centres, clinics, health posts.  |
| Number of antenatal care visits  | 1. 4 or more
2. 1-3
3. No antenatal care
 | WHO recommended at least four antenatal care visits  |
| Mother took iron supplements during pregnancy | 1. No
2. Yes
 | Given or bought iron tablet/syrup during pregnancy |
| Health provider counsel on newborn dangers in the first two days | 1. No
2. Yes
3. Do not know
 |  |
| Tetanus protection at birth | 1. Protected
2. Not protected
 | A birth is protected against neonatal tetanus if the mother has received any of the following:- Two tetanus toxoid injections during that pregnancy or,- Two or more injections, the last one within three years of the birth or,- Three or more injections, the last one within five years of the birth or,- Four or more injections, the last one within ten years of the birth or,- Five or more injections at any time prior to the birth |

Barrow, C. J. (1992). "World atlas of desertification (United nations environment programme)." Land Degradation & Development **3**(4): 249-249.