UNIT 3 SESSION 3: CALCULATING MEAN TIME USE

Age range: 8 - 12 years

Outline Learners will consider the importance of using a large sample size when collecting data and will investigate how time use data varies among Young Lives children in Ethiopia and India. Learners will then calculate mean time use. Finally, learners will collect class data for time use and use this to calculate mean time use for different categories of daily activities. They will use this information to make comparisons with the Young Lives children.

Learning objectives	**Learning outcomes**
• To know why we need to use a large sample size when collecting data. • To understand and interpret the mean as an average. • To calculate the mean as an average.	• Learners will explain why Young Lives researchers used a large sample size when collecting time use data. • Learners will compare individual time use data for Young Lives featured children in Ethiopia and India with mean time use in each country. • Learners will use class time use data to calculate mean time use for different categories of daily activities.
Key questions • Why do we need a large sample size? • Why might time use vary among different children? • What is the mean and how do we calculate it?	**Resources** • Unit 3 Slideshow (Sessions 1 – 3): Slides 34 – 39 • Resource sheets: *1. Meet Ravi; 2. Meet Harika; 3. Meet Hung; 4. Meet Lien; 5. Time use data – Ravi; 6. Time use data – Harika; 7. Time use data – Hung; 8. Time use data - Lien* • Activity sheet 1: *My time use data* • Calculators may be required for Activity 3.3

Curriculum links		

England	**Wales**	**Scotland**
Pupils should be taught to: **Mathematics** **Statistics** • Interpret and construct bar charts, pictograms, tables, pie charts and line graphs and use these to solve problems. • Calculate and interpret the mean as an average.	**Mathematics** **Handling Data** • Use and present data in a variety of ways including tables, pictograms, charts, bar charts, line graphs, diagrams, text and ICT. • Collect, represent, analyse and interpret data. • Calculate and use the mean.	**Numeracy and Mathematics: Data and analysis** • Having discussed the variety of ways and range of media used to present data, I can interpret and draw conclusions from the information displayed, recognising that the presentation may be misleading. MNU 2-20a

Important teaching note These are suggested activities and resources to **support** your teaching rather than guide it. Additional teaching input may be required to develop learners' knowledge, skills and understanding of some of these concepts.

Note that you may find it useful to refer to the background information about inequality and the four Young Lives countries for this session. This can be found in the Background notes for teachers *document.*

Activity 3.1 *(20 min)*

- Show slide 35 of the *Unit 3 Slideshow (Sessions 1 – 3)*. Explain that this table shows the daily time use data for Ravi in India. Ask learners whether or not they think every child in India will have similar time use data. *Why or why not? Which daily activities might have similar time use data and why? Which daily activities might have different time use data and why?* Ask learners to re-read *Meet Ravi* (Resource sheet 1). This profile is also provided in *Unit 1 Session 1*. Highlight the fact that Ravi doesn't go to school and works full-time as a farm help each day. Point out that although not alone as a working child, Ravi is unusual because many children of Ravi's age in India do go to school rather than work.

- Explain that the Young Lives researchers interviewed thousands of children in each country. Ask learners why they think the researchers interviewed so many children. Emphasise and discuss the importance of using a large sample size when collecting data.

- Organise learners into pairs. Distribute copies of *Time Use Data – Ravi, Harika, Hung and Lien* (Resource sheets 5-8). Each pair should have a resource sheet for one of the four children: Ravi, Harika, Hung or Lien. Explain that each bar chart shows the time use data for one of these children and the mean time use data from a sample of approximately 1000 children in the same country. Colour copies of these bar charts are provided on slides 36 to 39. Explain that the Young Lives researchers calculated the mean by taking an average from all the young people they interviewed in Viet Nam.

- Ask pairs to look at their child's bar chart and compare individual and mean time use for each activity type.

  Possible questions include:

  o *Which activities have similar individual and mean time use?*

  o *Which activities have different individual and mean time use?*

  o *Can the individual time use data for a child be the same as the mean time use data for that country or will it always be different?*

  o *Will all the other children in the country have the same individual time use data as this child?*

- Invite a pair to share their observations for each child. You may wish to ask learners to reread the profiles of these young people (*Meet Ravi, Meet Harika, Meet Hung* and *Meet Lien* – Resource sheets 1-4) and discuss how their personal circumstances influence their daily time use.

Activity 3.2 *(30 min)*

- Ask learners whether or not they think everyone in the class would spend similar amounts of time on different activities. Ask learners how they think they could they find out. For example, they could record the class data in a tally chart. Alternatively, different groups of learners could collect information about different activities and the data could then be collated.

- Distribute copies of *My time use data* (Activity sheet 1). Ask learners to complete the table to show the rounded and approximate number of hours they spend on the different categories of activities in a typical school day. Some learners may need further guidance on how to round and approximate their time use. This could be completed for homework. In *Unit 2 Session 1*, learners are asked to complete a daily timetable which might be useful for calculating time use in this activity.

If Unit 3 Session 2 has been completed, learners will have already calculated how much time they spend each day doing these different activities.

- Ask learners to get into groups of four and to share their time use data. *Sensitivity is needed with this activity as some learners may not wish to discuss their time use and family situation with others. For example, those who care for other family members or have other responsibilities at home. You may wish to do this as a whole class discussion and make all individual data anonymous.*

- Discuss which types of activities varied the most and which varied the least. For example, the number of hours in school should be the same for every learner in the class. Other activities such as care for others and domestic tasks might vary a lot more.

- Ask learners whether they think the way in which children spend time in Viet Nam and India would vary more or less than the data for children in the UK. Discuss the reasons for this, such as in certain countries some children may not be able to go to school and others may be working.

Differentiation

- *Make it harder: Learners could present their individual time use data as a bar chart as well as a table.*

Activity 3.3 *(20 min)*

- Now ask learners to use the data from their group to calculate the mean time use for each activity. Alternatively, you might like to work together as a class, using everyone's data anonymously, to calculate the mean time use for each activity.

- Discuss reasons for the differences between the individual time use data and the mean data for each activity. Ask learners whether they think the mean time use data might be different in other classes in the school, for example in a class of younger children. *How might mean time use vary in different parts of the UK, for example in urban and rural areas? For which activities do you think time use would vary the most? For which activities do you think time use would vary the least?*

Differentiation

- *Make it harder: Learners could represent the figures for mean daily time use on their bar charts.*

Further ideas

- Learners could collect time use data and calculate mean time use for learners in other classes or across the school.

- You might like to extend more able learners by considering the range of the class time use data for each activity by asking them to calculate the difference between the maximum and minimum time use for an activity. Ask learners why they think there is a narrow or wide range for different activities.

Terms of use

Young Lives

Meet Ravi

Here I am eating my lunch.
I normally have rice and dahl.

Photo Credit: © Young Lives/Farhatullah Beig

My name is Ravi (*Rav-y*) and I am a 13 year old boy. I live in a village in the state of Andhra Pradesh in India with my parents and brothers. My nephew also lives with us; he is the son of my older sister. My family and I come from a group of people called the Scheduled Castes. We are also known as *Dalits*.

I had to drop out of school three years ago to earn money to help my family pay off a debt of 20,000 rupees (about £195). I am now working full-time as a farm help. I pick groundnuts, clear stones from the fields and do other seasonal work like cutting grass.

I studied up to fifth standard and I remember going to school when I was ten years old. I used to play with the other children and draw pictures on the wall. Others used to say that I could draw very well. Once I won a prize for my drawing. It was a big box with pens and other things in it. I still have it kept safe. Neither of my parents went to school but my brother goes. He studies well.

I have to get up at 5.00am to clean out the cattle shed, sweep the floor and fetch water. I leave to work in the fields at 9.00am and come back around 3.00pm when I have rice and *dahl* for lunch. In the evenings I often help with chores such as collecting firewood or going to the shop to buy food for dinner. Sometimes I watch TV or play marbles with my friends.

On Sundays I spend the day relaxing at home. We eat chicken or mutton and sometimes we go to the movies.

My older brother and I also have to help look after my nephew and my sister's other children. We help my nephew in the mornings and evenings, giving him a bath, dressing him and taking him to school while my parents are at work.

When our family's debt is paid off I hope to be able to go to school again. I think children of my age should go to school.

> **Key words**
> - India's caste system dates back thousands of years and is still extremely important in everyday life today. Scheduled Castes (otherwise known as *Dalits*) and Scheduled Tribes (also known as *adivasis*, India's indigenous people) are the most disadvantaged communities, often living in poor areas and with the poorest access to health services and education.
> - *Dahl* or lentils are often used to make a thick stew which is a common dish.

Meet Harika

I have to work hard to help my mother at home.

Photo Credit: © Young Lives/Farhatullah Beig

My name is Harika (*Har-i-ka*) and I am a 12 year old girl. I live in a village in the state of Telangana in India. I am the only girl in my family. I have two brothers, one older and one younger. My older brother stays with an aunt who lives nearby. I have to work hard to help my mother at home. I sweep the floor, wash the dishes, cook and spin cotton. I also have to fetch water in pots from a street tap at the back of our house. My younger brother doesn't have to do any of the housework.

I have had to do more and more work in the past few months. My father injured his leg in a road accident and can't work so my mother has to spend a large part of her time working in the family fields.

Like most of the children in my village, my brother and I have to work in the fields during the cotton season. Sometimes children from neighbouring villages also come to help. The cotton has to be *pollinated.* Everyone in the village needs the money we make by selling the cotton. The work is hard, hot and sometimes dangerous. Some children get sick from the pesticides that the adults spray on the crops. There is also a danger from snakes. Once I was bitten on my foot.

I enjoy school and think that education is important. If we are not educated, we don't know anything. So, if we go to school, we can learn about all things.

At school, I play games with my friends like skipping and *kho kho*. I sometimes watch TV at a neighbour's house in the evening.

I worry about missing school when I have to work in the fields. During this time, I often get up at 4.00am so that I can study before going to work. My friend Salma is lucky because she doesn't have to work in the fields or at home and she wears nice dresses.

Even though I sometimes have to work in the fields, I was the only student in my class to be selected for a national scholarship. I had to do an exam for this. I am proud that I was chosen and I am grateful to my teacher who coached me after school.

When I'm older I would like to be a teacher like my uncle. However, I can only study up to tenth grade in the school in my village. My parents would like me to continue after tenth grade but I would have to go to school in another village.

Key words

- *Pollinated* means the pollen has been transferred to the stigma, ovule or flower or plant, so allowing fertilisation.

- *Kho kho* is a popular playground game in India, a bit like tag.

Meet Hung

I want to go to school to have more knowledge. I know that if I can study well, I will have a better life later.

Photo Credit: © Young Lives/Pham Viet Anh

My name is Hung (*Hungh*) and I am a 13 year old boy. I live in a village in the Red River Delta region in Viet Nam. I live with my parents and older brother. We have a small house in the centre of our village. Our house has a big front yard and in the backyard there is a pigsty and a shed for our cows. I have my own room which has a quiet space where I can study.

I go to school in the morning and I work on our family farm most afternoons. I have been helping my parents on the farm since I was ten years old.

My school is three kilometres away so I have to get up very early in the morning to get there in time. Sometimes I walk there and sometimes I go by bicycle. On Monday and Friday I have extra classes in the afternoon for literature, maths and English. I like maths.

In my spare time, I mostly study or spend time with my family. Sometimes I visit my friends and play marbles. I also like cooking.

There aren't many places to play here. At school, there are two table tennis tables to share between all the students. We have a badminton set at home which we sometimes play with in the front yard. I am good at making things. I make tractors by cutting up plastic bottles. The other children here like them a lot.

My brother dropped out of school in Grade 9 because he failed the exams. My family aren't wealthy but as my brother dropped out of school, my parents are very keen for me to continue. My parents used to pay 70,000 *dong* (about US$4) a month for me to go to school but now it costs more. There are many extra fees to pay, like a 'Parents' Fund', an 'Encouragement Fund', a 'Water Fee' and a 'Class Fund'. The water fund is supposed to pay for drinking water but I don't drink it because sometimes they don't boil it well enough. There is only one water tank and all the students have to share the same cup.

On our farm we grow plants and trees, including orange trees. The oranges are sold in the city of Hanoi, which is the capital of Viet Nam. Sometimes we struggle to make enough money. Recently we had to sell some of our land to get some more money.

Sometimes I worry about having to get up so early in the morning and how I must work hard if I want to do well. I think that I have a normal life which is neither poor nor rich.

Meet Lien

My name is Lien (*Lee-en*) and I am a 13 year old girl. I live with my family on the edge of Hanoi, the capital city of Viet Nam. We have a small house with a vegetable garden. There are two rooms as well as a kitchen and toilet.

The living room has a television, a sewing machine and two beds. As there isn't much space in our house, I sleep next door at my uncle's house. My parents sleep in the back room. People are always dropping into our house for a chat. They all sit down on the floor together to talk about things.

My favourite subjects are drawing and English. I often get good marks in these subjects.

Photo Credit: © Young Lives/Pham Viet Anh

Our family struggle to make enough money. Both of my parents have to work long hours and a long way away from home. My father is a brick layer and my mother works in a pottery factory in the local town. They have to leave home very early in the morning so I do all the cooking, washing and gardening. I also take my younger brother and sister to school every morning. I have an older sister but she has gone away to the city to study.

I wake up in the morning, wash my face, brush my teeth and go to school. I come home at noon, have lunch, wash the dishes and go back to school in the afternoon.

Studying is important for my future because it brings me knowledge. At school, I like meeting my teachers, being with friends and learning new things. I also like doing high jump, long jump and running but I haven't won any prizes for these yet. One of my happiest memories is when I was in Grade 8. We stood in the pouring rain with my classmates and it was like taking a shower! Another time when I was 10, there was a party and my classmates and I went to our teacher's house.

At home, I like looking after the vegetable garden. I like this time because my younger brother and sister go with me and we can talk to one another while picking vegetables.
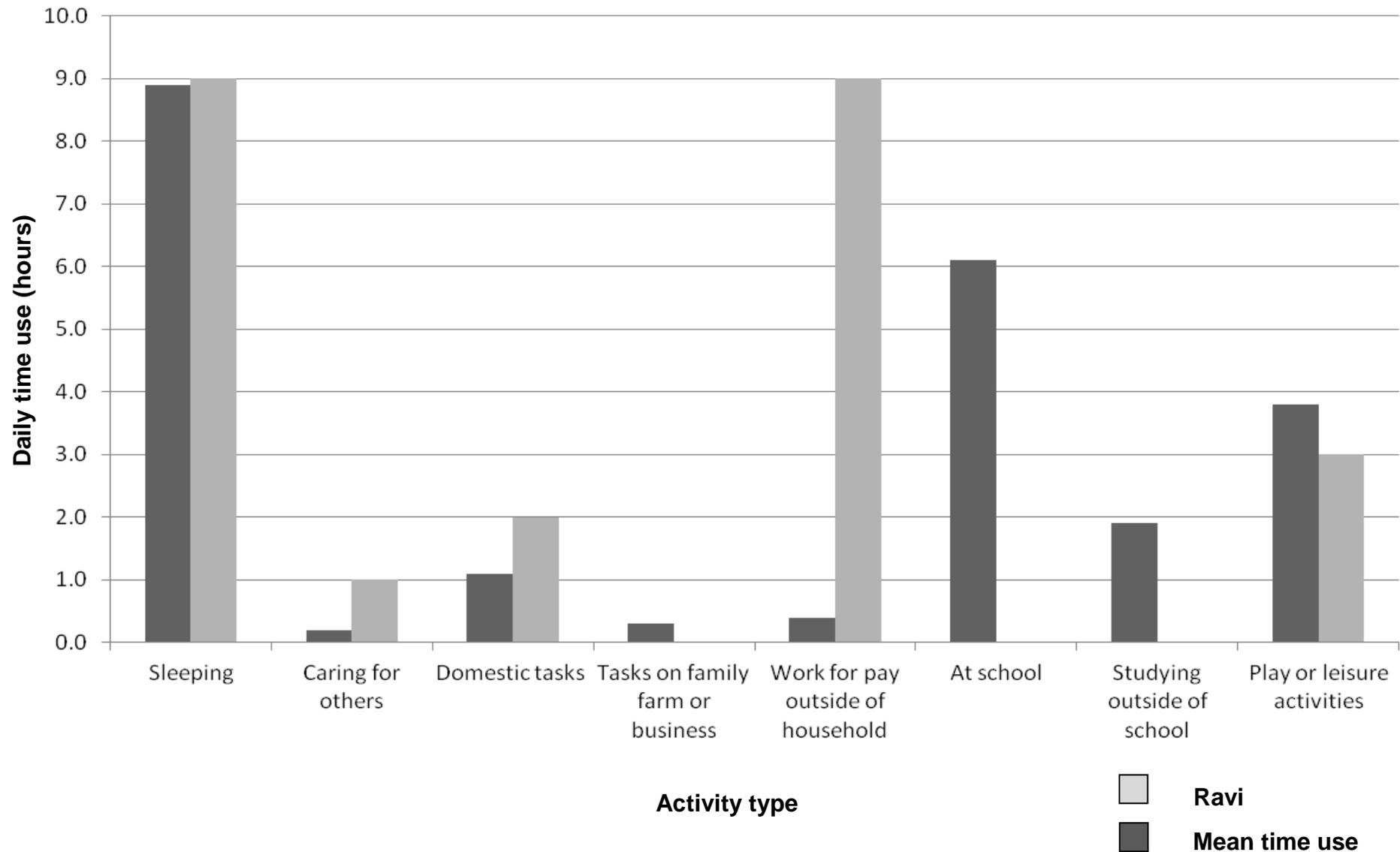
I also like to cook rice because this is easy. I just have to plug in the rice cooker!

I spend a lot of time with my grandparents. I love my grandfather very much. He often takes care of me because my grandmother is paralysed. They sometimes give me sweets when I go to their house. Whenever I feel sad, I talk to my uncle or aunt.

When I was 12, my grandparents lent my parents some money to buy a sewing machine. In the summer, I use the sewing machine to earn money. I work from 8.00am to 5.00pm, with a break for lunch. I have a rest when I need to. I earn around 20,000 – 30,000 *dong* a day (about £0.56 – £0.84). I give this money to my mother.
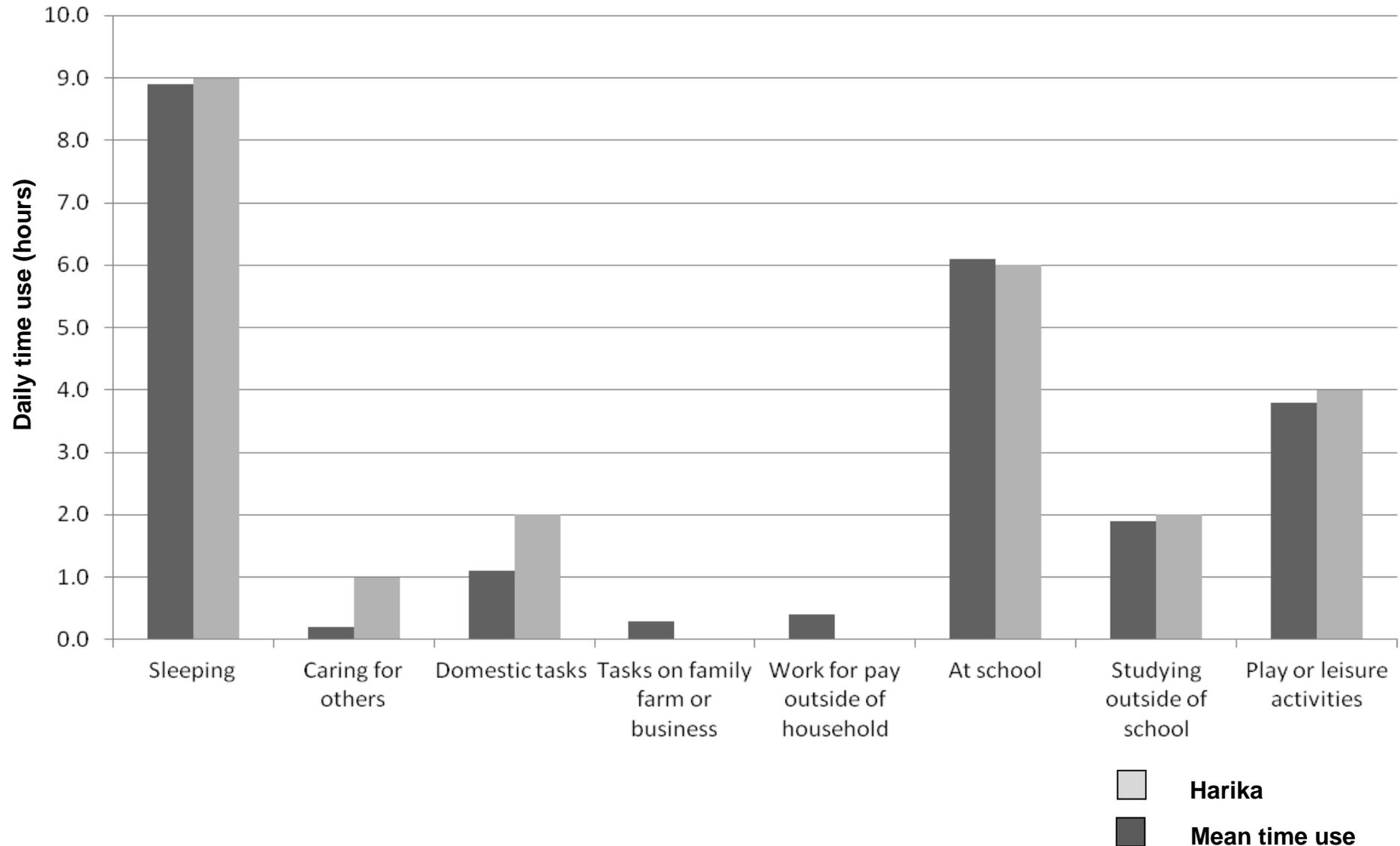
OXFAM

Young Lives

Time use data - Ravi, India
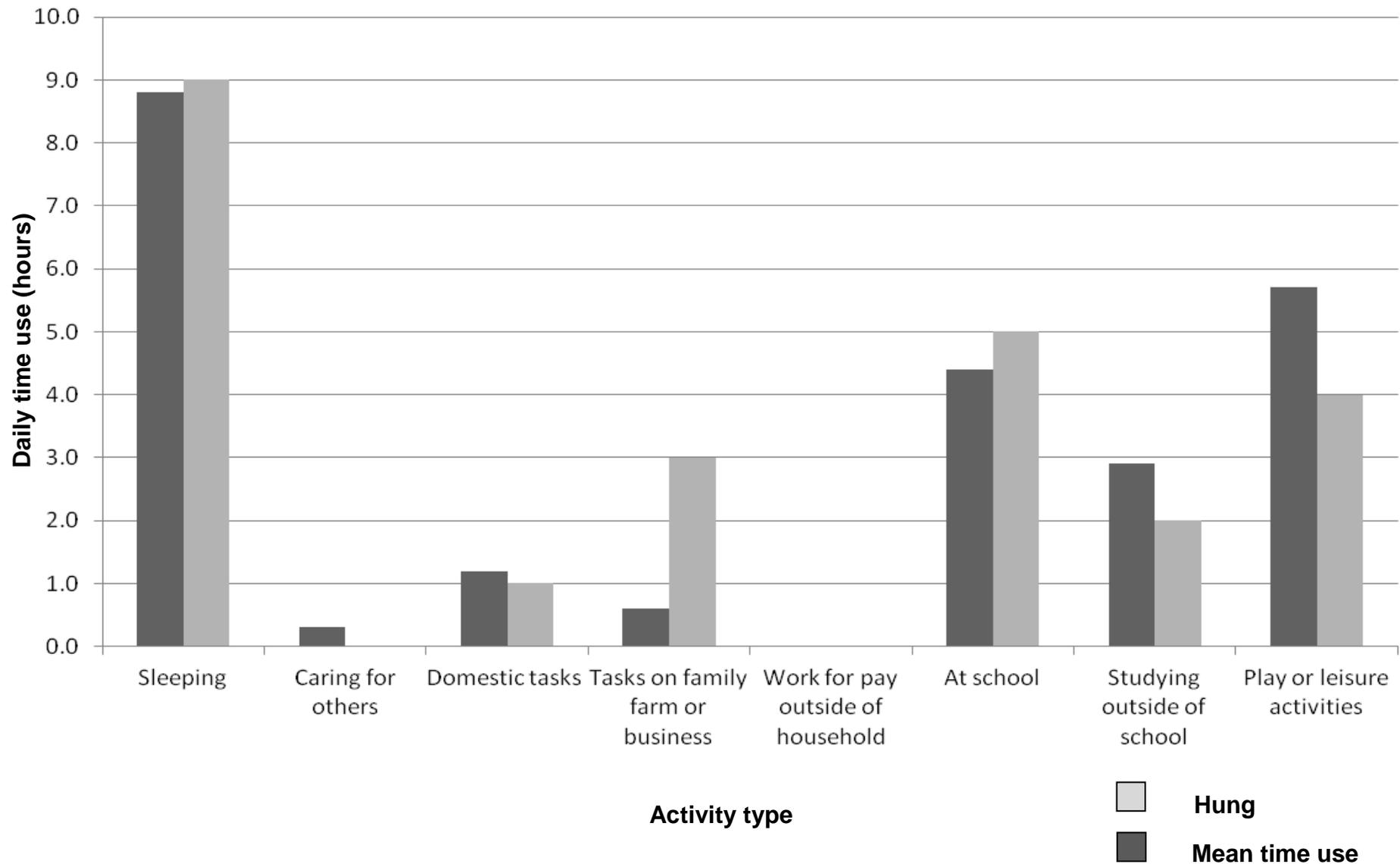
Legend:
- Ravi (light grey)
- Mean time use (dark grey)

Y-axis: Daily time use (hours)
X-axis: Activity type

OXFAM

Young Lives

Time use data - Harika, India

Legend:
- Harika (light grey)
- Mean time use (dark grey)

OXFAM

Young Lives

Time use data - Hung, Viet Nam

Legend:
- Hung (light grey)
- Mean time use (dark grey)

Axis: Daily time use (hours) vs Activity type

Activity types: Sleeping, Caring for others, Domestic tasks, Tasks on family farm or business, Work for pay outside of household, At school, Studying outside of school, Play or leisure activities

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Time use data - Lien, Viet Nam

Young Lives
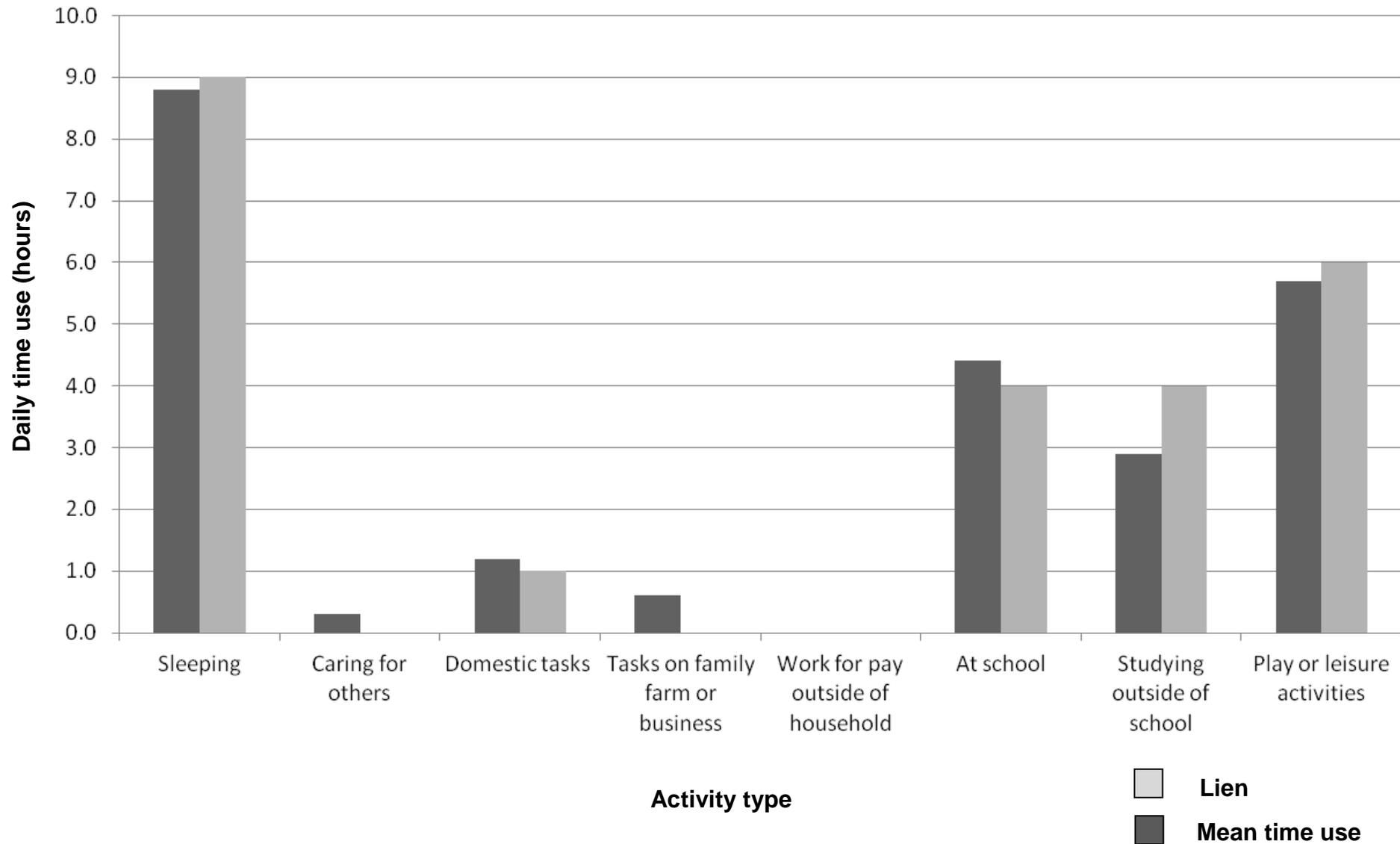
My time use data

Activity sheet 1

Activity	Daily time use (hours)	Mean time use (hours)
Sleeping		
Caring for others		
Domestic tasks		
Tasks on family farm or business		
Work for pay outside of household		
At school		
Studying outside of school		
Play or leisure activities		

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