

How is the data collected and translated into some meaningful format to be useful as data or an ergonomic aid?

The way that data is collected is through surveys which are then put into graphs and tables. This is easy to look at and to see trends within the data. You can find these graphs and tables in 'anthropometric source books' published by the national aeronautics and space administration. The way the data is collected is from human body dimensions. They measure different age, shape size gendered people and the way they get their measurements is with special measuring tools eg anthropometric tape, sliding compass and anthropometry. When the data is displayed on the graphs it helps show the most common measurements, least common and average, which makes it easy to interpret.

Why is it important to know the decision making behind the sampling, measuring and the basis on which the guiding ratio has been established?

Meaning of guiding ratio - are rules of thumb, these ratios are established by statically comparing anthropometric data of the human body.

It is important to know the decision making behind the data that you are given so that when you are making new products we make the right decisions for the population. We need to know the measurements so that we are able to select the right data for the product we are designing. We need to know the decision making behind measurements and sampling as very serious error in the data is to think that the 50thile dimensions represents the measurements of the average size man. Showing how important it is to know the decision making behind the sampling so that mistakes like this are not made.

Why are certain measurements collected to establish particular guiding ratios and where does this information come from?

Certain measurements are collected depending on the need of the design/designer. Anthropometric data was originally produced by the armed forces this helped them produce specialized gear for the men. Also the measurements are then used and are needed when you designers are designing a product. The data comes from the population you are designing for. Eg if you are designing a children's chair you would collect the measurements from that population therefore. It's comfortable for the user. Human sizes impact on the product that you are designing and design of interior spaces. There are two different basic types of dimension structural; measurements include head, torso and limbs. Functional dimensions are measurements taken in working positions or when moving/when doing a certain task of movement.

How are guiding ratios established for one product that is to be used by diverse groups?

Guiding ratios are established by using specialist tools such as spreading calipers, sliding compass which are then used to measure each person. The data is recorded in the recording forms then recorded in tables. Because they measure a whole range of different people and get different types of measurements. The measurements can then be guide lines to use for your product. Eg if I design a kitchen utensil I need measurements to do with hands, but if designing a chair you need measurements

on height of people. Therefore the information gathered can be used in a variety of ways but for different products. Like if you used measurements from the 50thile this would be because you were designing a kitchen utensil which is for the smallest and weakest user. If you were taking measurements from the 95thile it would be for the strongest and biggest person it would be because you were designing a door or chair for someone.

Why is it important for manufacturing companies to know how the anthropometric data was established and translated into the guiding ratios?

It's important that manufacturing companies know where the measurements and information they get, when designing something comes from. Also the manufacturing business needs to know where their information is coming from so they know who is being measured to make sure it then matches the consumers' needs. As different races may have smaller or larger features than who you are making it for. As they want their product to be able to function so that it fits the consumer. The manufacturing companies also need to know where the information comes from so they know where that the source is reliable and genuine. Eg they need to know what the age, sex and nationality of the measurements that they get so that they know it is relevant to what they need.

How is the data used by people in the field? Eg. designers

People like architects, ergonomists and designers use the data that has been collected to help provide insight on things they need to consider when designing a new product. It is important that when designers are designing a new product it's important to use anthropometric data and common sense to help create a new suitable and functional product that suits the person that it is intended to. Depending on what the designer is designing there are different measurements they can use. They have to make sure that the measurements are for the appropriate population they are designing for and that they are accurate.

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1 - POWER GRIP is used to hold a potato masher or for example and you have to use strong muscles in your forearm. The way you hold power grip is by putting your whole hand around the handle.

- PRECISION GRIP / OR PINCH GRIP used to hold a pencil or pen. It uses smaller weaker finger muscles in your hand. You hold it (eg pen) between your thumb and index finger. You don't use this grip for anything that requires a lot of force. The difference between the two grips is the way you hold it and how much power you put into the act. The precision grip gives you more control. Precision grip will be used for my kitchen utensil cutlery.

2 - The measurements that I will need to consider are the length for my cutlery. maximum grip diameter = I will need to make sure that when you grip my cutlery it will be comfortable and suitable for everyone to use.

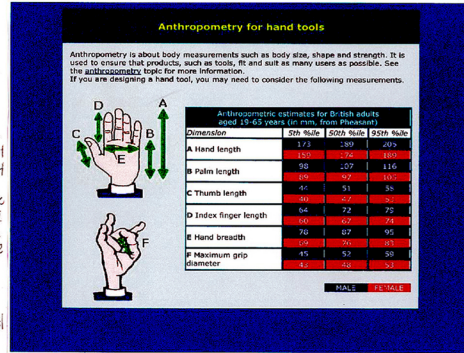
Hand length = I will need to consider hand length so that the proportions are right when you hold my cutlery. Palm length = I will need to think about palm length as my cutlery needs to fit the average hand.

Thumb length = You use your thumb to help grip cutlery when you use it. So I will need to take in to consideration thumb length when thinking about the handle length of my cutlery.

Index finger length = will be a measurement that will need to be considered in the design of my cutlery. As you also use your index finger to help grip and hold the cutlery handle.

2 - The third factor is how much force is being put into the grip this can cause discomfort and may lead to injury. grip needs to be good and suitable as they will be holding my cutlery for quite a while. I don't want them to be uncomfortable while holding my cutlery. Also I need to think about the materials I will use as it can't be slippery, that it will fall out of their hands when picking up food and eating it.

3 - Things that I will need to consider are the weight of my cutlery as I want them to be easy to control. I also if I make them to heavy people may get tired quickly then using them. The recommended diameter for a precision grip is 8-16mm. The diameter is something I need to consider in the making of my cutlery. I don't want it to be difficult to grip and hold my cutlery if the diameter is too small and I don't want the diameter to be too big. As if it is too big you will find it hard to hold. The length of my cutlery needs to be considered as I will need to think about the most comfortable length is for everyone to use. Shape is something that I need to consider as the cutlery needs to be easy and comfortable to hold when being used. The material that I use to make my cutlery needs to be considered that I need to be strong enough for someone to hold it so that it doesn't crack or break in their hands. Texture need to be considered. I don't want it to be too rough that it hurts your hand when you hold them but it can't be too smooth as then it may slip through their hands.



KITCHEN UTENSILS!

PICTURE	MEASUREMENTS	MATERIALS	OPINIONS
	All handles have a 2mm diameter. Thickness of knife, fork spoon is 1mm. 120mm 25mm 120mm	60% stainless steel	Really like that nice minimalist design however I have to hold the handle quite tight to hold on to it.
	200mm 50mm 120mm	STAINLESS STEEL SILVER	Jena - she said she liked the cutlery it wasn't too heavy and had a good grip in her hand. She liked the style of the cutlery as it was simple and easy to use and it was a suitable length. Minna - she liked the design of the spoon and good size because it fits into her mouth well. Didn't like how long the knife was. It was too long and the blade/cutting edge wasn't long enough.
	150mm 120mm 115mm 100mm 150mm	STAINLESS STEEL	
	120mm 115mm 115mm	STAINLESS STEEL	because the fork has a really thin handle it's nice and big this means you can get a lot on it. The length of the knife handle is good it fits peoples hand well.

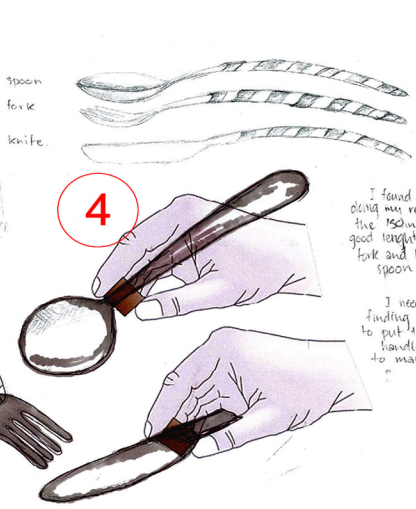
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SIMILARITY'S

Handle length is around 115mm - 130mm
The average width of a spoon from the info the head is around 45mm
The head of a fork from the info I have got is 65mm or less.
The cutting edge for a knife is 90mm - 100mm as shown in the measurements I have.
The width of the fork head is around 20mm - 25mm. The materials that all the cutlery was made out of was stainless. This then tells me it is the best material to make my cutlery out of because all those different knives, forks, spoons are made from it.
Learning from the opinions of what people said about using these different cutlery there were some similarity's. In different people said along the lines that the handle wasn't wide enough and then to hard to grip. Two people said that they liked their cutlery because it was a minimalist design and simple. So this tells me that I should think about designing cutlery that is simple but also style. Two different people also commented on how they both liked how their spoon was nice and wide but also still easy to fit in their mouths.

WHAT CHANGES DO I NEED TO MAKE

I found out from my research that precision grip is used when you use cutlery. So I need to make sure that my cutlery measurements suits precision grip.
My cutlery needs to fit the 5th percentile
→ 159 - 173 mm hand length
→ 89 - 98 mm palm length.
→ 40 - 44 mm thumb length.
→ 60 - 64 mm index finger length
→ 69 - 78 mm hand breadth.
→ 43 - 45 mm max grip diameter.
This is because it needs to fit the smallest and weakest hand.

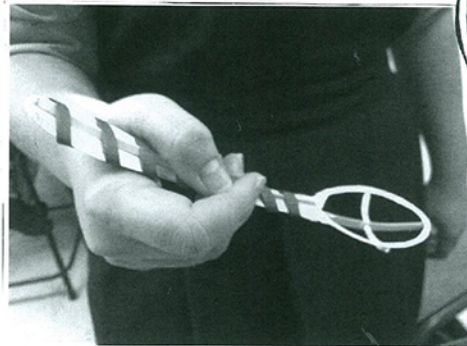


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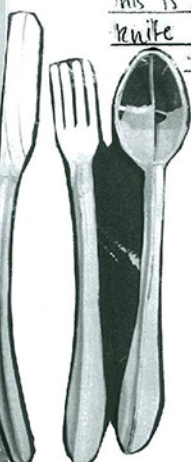
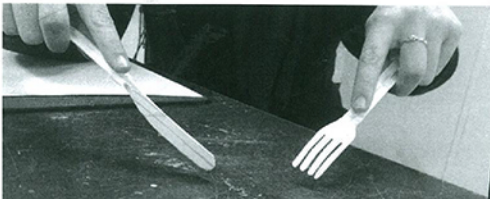
I found from doing my research the 150mm was a good length for the fork and knife and spoon handle.
I need to look at finding a different way to put the swivels on the handles of my cutlery to make it look better.
wide spoon so it will fit lots on it.
thick handle so that it easy to hold on to.

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COMPARING ANTHROPOMETRIC DATA WITH DATA GATHERED FROM KITCHEN UTENSIL ANALYSIS!



measurements for this model were taken from anthropometric data research says that the data should be taken as it is for the smallest & weakest users



CHANGE I STILL NEED TO MAKE:

I need to change the length of the fork head its to short this is also the length of the knife head needs to be longer this is what was suggested by people that held them.



measurements for these models were taken from my kitchen utensil analysis page.

ERGONOMIC

USED:

I made cardboard volume models because they were quick to make and I wanted to test a compare two different lots of measurements. I got different people to hold my different cutlery and see what measurements / dimensions they preferred and tell me what one was more comfortable to hold.

FROM MY TESTING I FOUND OUT THAT:

- Even though I took my measurements from the 5th percentile it so still a little bit to short.
- But the measurements taken from my kitchen utensil analysis page helped me get the right measurements. As I just got the measure that were most common. From these measurements people said that it was more comfortable to hold because they had longer handles.
- Also I found that I have to make the head of the knife longer as it is to short.