Battle of the Prints

Boys vs Girls

Investigative Question

Is there a difference in rarity between girls and boys' types of fingerprints?

Hypothesis

If i take both girls and boys fingerprints, girls will have more uncommon types of fingerprints because the project I completed last year showed that that was the case.

Background Research

Everyone has unique fingerprints. No two people have the same fingerprints, even identical twins. The main part of a fingerprint is the core. This is where you find what type of fingerprint it is. Other parts of the fingerprint are the delta and ridges.

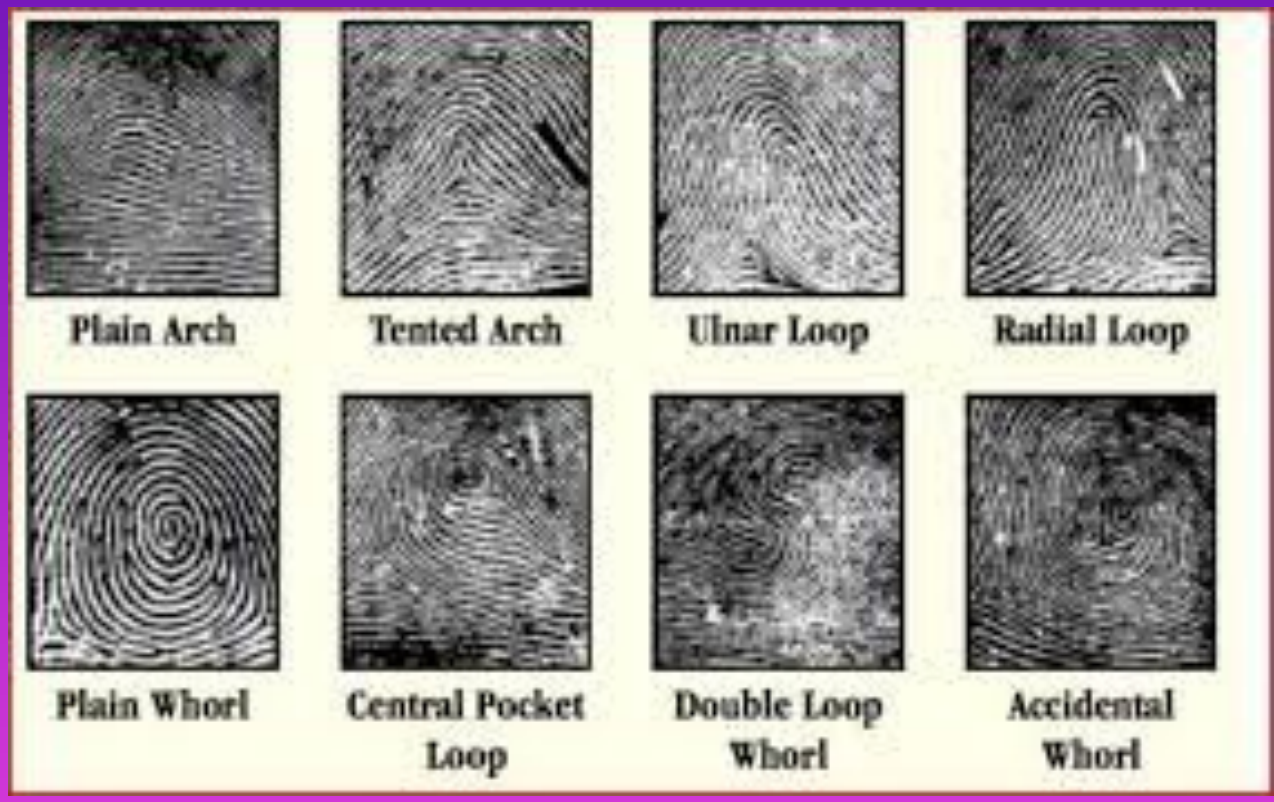
Fingerprints have been very useful for officers and federal agents to identify criminal suspects or someone's identity. There have been past experiments that show there are differences between female and male ridge density. Ridge density is the amount of ridges in a small area. In the experiment it proved that men typically have 11 or less ridges while females have 12 or more.

With types of fingerprints there are eight types. The Ulnar loop is the most common and the accidental whorl and tented arch are the rarest.

Types of Fingerprints

The types of fingerprints include:

- Ulnar loops
- Radial loops
- Whorl
- Double loop Whorl
- Central Pocket Whorl
- Accidental Whorl
- Arch
- Tented Arch



Materials

- Fingerprint Ink

(there are other ways to take fingerprints but this is the easiest)

- Fingerprint cards
- Girl and Boy volunteers

(Permission for kids under 18)

Procedures

1. Make sure the person's hands are clean
2. Put their finger in the ink (let them roll their finger from side to side to get the whole fingerprint.)
3. Next, place the edge of the finger on the paper and roll from side to side, to get the whole fingerprint.
4. If a fingerprint isn't clear, have the participant redo it
5. Repeat with all fingers
6. Observe and examine each print to identify the types.
7. Repeat steps for each participant

Data Table - Girls

	Finger 1	Finger 2	Finger 3	Finger 4	Finger 5	Finger 6	Finger 7	Finger 8	Finger 9	Finger 10
Girl 1	A	A	UL	UL	UL	UL	W	UL	UL	A
Girl 2	DLW	CPW	UL	UL	UL	UL	UL	UL	UL	UL
Girl 3	UL	UL	UL	UL	UL	W	TA	UL	CPW	UL
Girl 4	DLW	UL	UL	CPW	UL	DLW	UL	UL	UL	UL
Girl 5	A	A	A	UL	UL	UL	A	A	A	UL
Girl 6	W	UL	UL	UL	UL	DLW	RL	UL	UL	UL
Girl 7	UL	TA	UL	UL	UL	UL	RL	UL	UL	UL
Girl 8	W	UL	UL	UL	UL	UL	UL	UL	UL	UL
Girl 9	UL	DLW	UL	W	UL	UL	UL	UL	CPW	UL
Girl 10	W	DLW	UL	W	UL	DLW	DLW	UL	CPW	CPW
Girl 11	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Girl 12	UL	A	UL	UL	UL	UL	RL	UL	UL	UL
Girl 13	UL	A	TA	UL	UL	UL	A	UL	UL	UL
Girl 14	DLW	CPW	A	UL	UL	DLW	UL	A	UL	UL
Girl 15	UL	A	UL	UL	UL	UL	A	A	UL	UL
Girl 16	UL	UL	UL	UL	UL	UL	A	UL	UL	UL

UL- Ulnar loop
TA - Tented Arch
RL- Radial loop
CPW- central pocket whorl
DLW- Double loop whorl
A- Arch
AW- Accidental Whorl
W- Whorl

Data Table - Boys

	Finger 1	Finger 2	Finger 3	Finger 4	Finger 5	Finger 6	Finger 7	Finger 8	Finger 9	Finger 10
Boy 1	W	UL	UL	UL	UL	W	AW	UL	UL	UL
Boy 2	DLW	CPW	UL	CPW	UL	DLW	RL	UL	CPW	UL
Boy 3	W	W	W	CPW	UL	W	CPW	UL	W	UL
Boy 4	W	UL	UL	UL	UL	UL	RL	UL	UL	UL
Boy 5	W	UL	UL	W	W	W	CPW	UL	W	W
Boy 6	UL	CPW	RL	UL	UL	UL	UL	UL	CPW	UL
Boy 7	W	UL	UL	UL	UL	UL	UL	UL	UL	UL
Boy 8	UL	W	UL	W	W	UL	RL	W	W	W
Boy 9	W	RL	RL	UL	UL	DLW	AW	UL	UL	UL
Boy 10	W	UL	UL	UL	UL	DLW	CPW	UL	UL	UL
Boy 11	UL	RL	UL	UL	UL	UL	CPW	UL	UL	UL
Boy 12	UL	UL	UL	CPW	CPW	UL	UL	UL	UL	UL
Boy 13	UL	UL	UL	UL	UL	UL	UL	UL	UL	UL
Boy 14	W	RL	UL	CPW	UL	W	W	UL	CPW	UL
Boy 15	W	DLW	W	CPW	UL	W	DLW	DLW	DLW	UL
Boy 16	W	A	UL	CPW	UL	CPW	DLW	UL	CPW	UL

UL- Ulnar loop
AW- Accidental Whorl
TA - Tented Arch
W- Whorl
RL- Radial loop
CPW- central pocket whorl
DLW- Double loop whorl
A- Arch

Girls Pie Chart

UL- Ulnar loop
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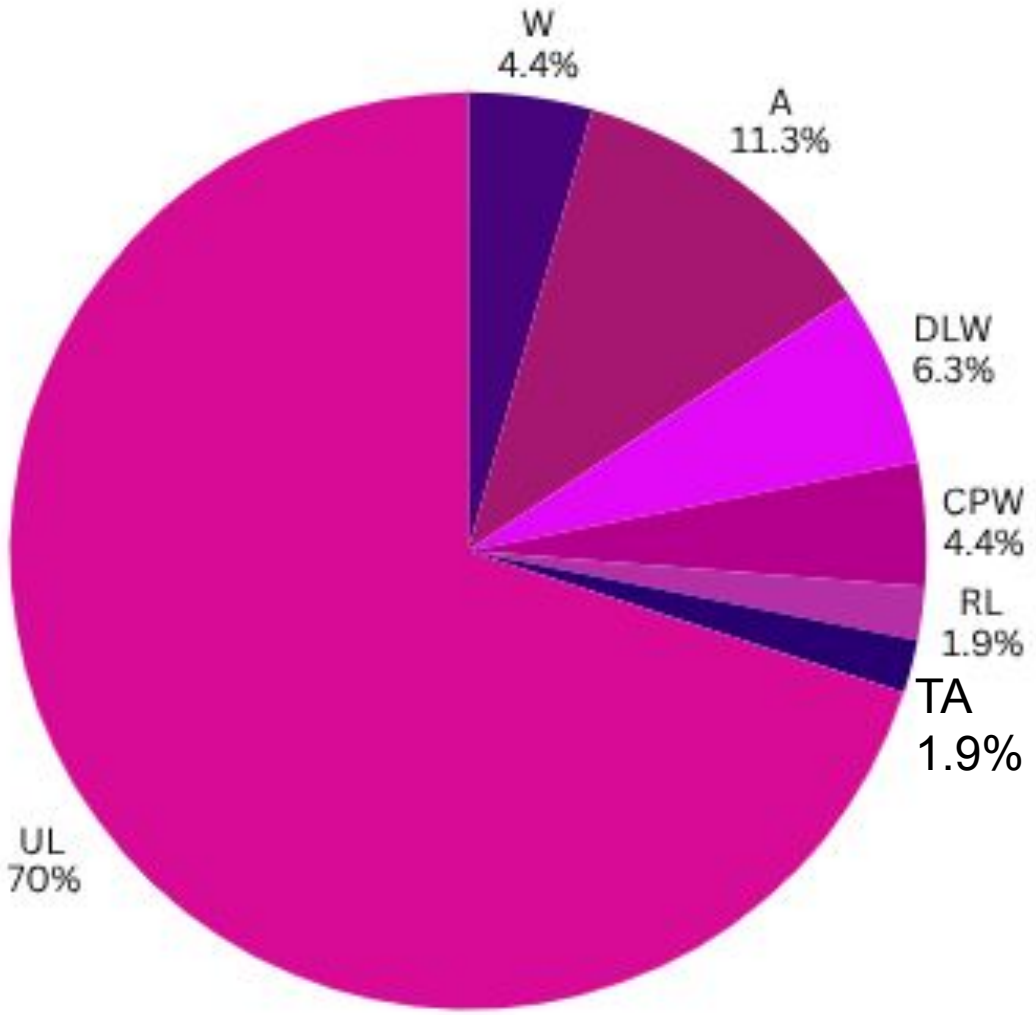
AW- Accidental Whorl



Boys pie chart

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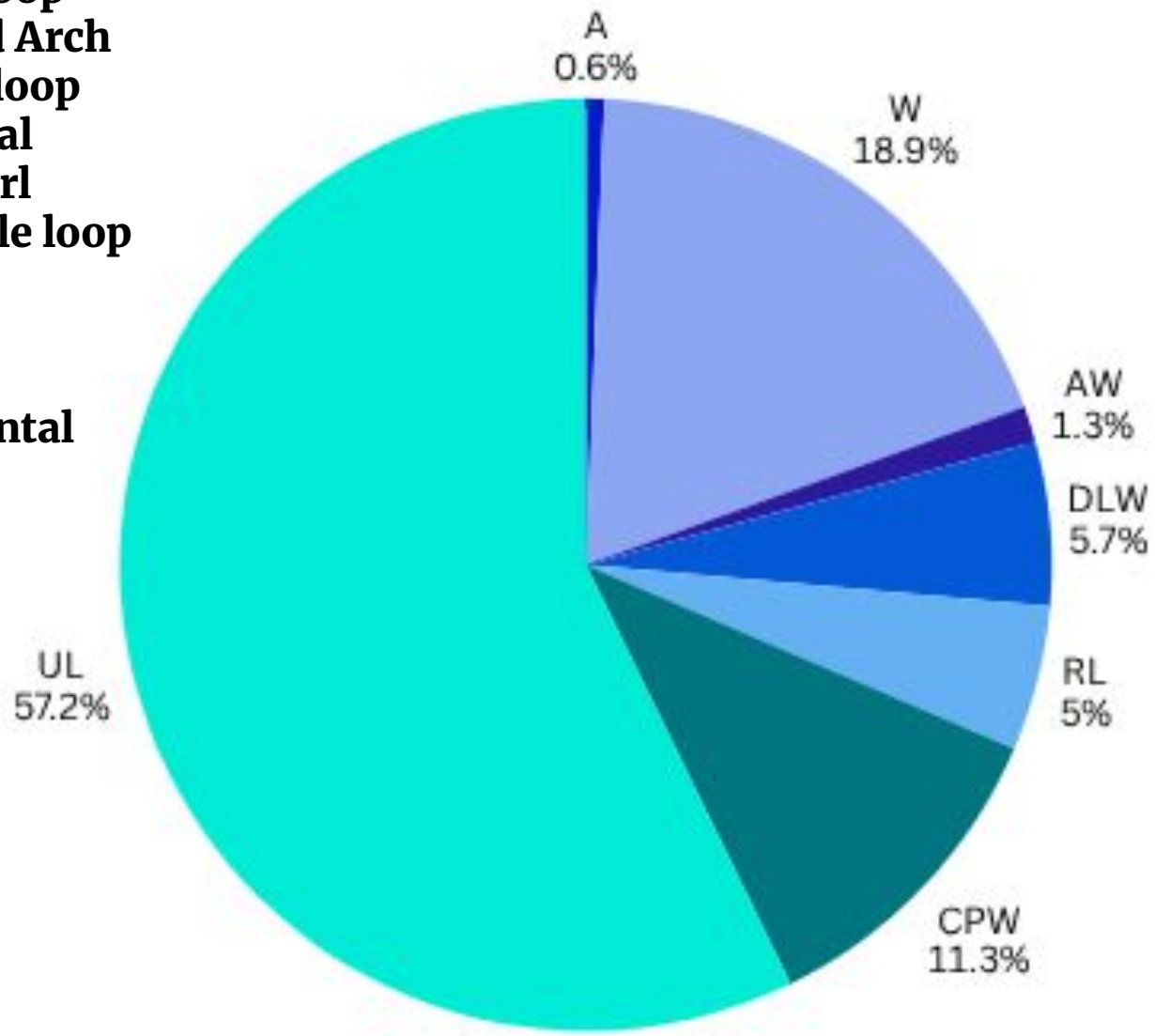

Abstract

Everyone has fingerprints but, some are more rare than others. Do girls or boys have of the rarer types? My project is taking both male and female fingerprints and finding who has the more uncommon types of fingerprints. My initial hypothesis was that girls would have more uncommon fingerprints. I Thought of this because of a past project also relating to fingerprints. In the end my hypothesis was wrong. I found out boys have the more rare fingerprints. For finding this I had 16 boys and 16 girls and took all ten of their fingerprints. After I had all of them I counted the amount of each type of fingerprint and put it all in a pie chart. The Boys showed they had less Ulnar loops, the most common fingerprint, which proved they had less common fingerprints. When testing I found I had more girls participating than boys, this required me to use only 16. If I were to do this project again I would try to find a way to get more boy participants for more results. This project is helpful because it is showing the differences between girls and boys fingerprints which could help law enforcement determine the probability if the fingerprint of someone is a boy or a girl.

Bibliography

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