



THE UPCYCLES EFFECT

By Alex Patterson

Investigation Aim

Aim:

To educate people about the need to reduce bicycle wastage, and to encourage reusing, repurposing and recycling by investigating environmental and personal savings.

Why did I choose this topic:

I chose this topic because I'm interested in bikes and want to stop waste in my hometown.

How am I going to do this?

I'm going to show people alternative options to throwing away old bikes, and buying cheap and poor quality new ones from an average bike retailer.

Prediction

Prediction- Environmental Impact:

If more people know about Upcycles* and buy bikes from there, not Kmart or Target, and became members or donate bikes it could help to prevent the problem of bike waste.

Prediction- Personal Savings:

I predict that people will save about 60% of the original price if they buy bikes from Upcycles.

* Upcycles at ECOSS, Yarra Valley

<https://ecoss.org.au/portfolio-items/upcycles/>

Upcycles is an organization in the Yarra Valley that's goal is to educate people about bike waste and repair discarded bikes to be sold cheaply.



Me & my bike



Photos from Upcycles



Methodology:

My goal is to provide alternative options for people who are wanting to dispose of or purchase a bike.

To do this I will:

- Give information about the bike I have been building to prove my claims that they can get quality bikes for less money
- Give data about the amount of bikes that end up in the tip each year
- Prove that an Upcycled bike is cheaper than buying a brand new one

Mathematical strategies:

- Calculated percentages of money that can be saved buying an upcycled bike
- Spreadsheets showing costs and cost savings to prove my claims
- Addition to calculate total costs
- Calculate percentage of Australian population made up by the Yarra Valley
- Subtract cost of upcycled bike from retail price to find out how much people can save

Evidence of my learning - Question 1

How can Upcycles have a positive impact the environment?

website/URL/source	facts	thoughts/maths
<p>Cycling's dirty secret: 300,000 bikes a year dumped in landfill https://www.smh.com.au/environment/sustainability/cycling-s-dirty-secret-300-000-bikes-a-year-dumped-in-landfill-20240506-p5fp9p.html</p>	<ul style="list-style-type: none"> • 300,000 bikes in landfill every year • COVID bikes about to make things worse • 60% of bikes sold now are poor quality eg kmart and can't be repaired • \$600-\$700 bikes can be repaired, \$200 bikes not • Cheap bikes might only last 6 months • Rubber, metal, batteries can be recycled • 1.2 million bike are sold in aus each year • ¾ of bikes are "big box" cheaper ones (less than \$200) • 18% households need to dispose a bike in next year • 21% need to dispose a bike in 1-4 years 	<ul style="list-style-type: none"> • find population of yarra valley to calculate how many here • is it cheaper in the long run to buy a good upcycled bike than keep buying cheap new ones - calculate difference • can families get kid bikes from Ecosse for less than \$200 to make it worth it • use Yarra Valley population to figure out how many bikes will be disposed in next 4 years
<p>Bike repair a no-brainer for Australian charity https://www.sustainability.vic.gov.au/news/news-articles/bike-repair-a-no-brainer-for-australian-charity</p>	<ul style="list-style-type: none"> • Up to 500,000 in landfill each year 	<ul style="list-style-type: none"> • Different number to other article - calculate average? • $(3000000 + 5000000) \div 2 = 400,000$ bikes on average are thrown out per year
<p>Australia population https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release</p>	<ul style="list-style-type: none"> • 27 million 	<ul style="list-style-type: none"> • 1% of 27,000,000 is: $27000000 \div 100 = 270,000$
<p>Yarra Valley statistics https://abs.gov.au/census/find-census-86</p>	<ul style="list-style-type: none"> • 16,800 people live in Yarra Valley 	<ul style="list-style-type: none"> • Less than 1% of the Australian population • What % of bikes do we throw out? • Less than 1% or 3000 bikes • Yarra Valley throws out around 3000 bikes every year
<p>What Upcycles is doing and what they need Source: interview with Upcycles manager</p>	<ul style="list-style-type: none"> • Taking in 250 bikes a year and selling 100 a year 	<ul style="list-style-type: none"> • 2750 go to waste a year in the yarra

what % of yarra valley
bikes get upcycled?

$$\frac{100}{3000} = \frac{1}{30} = \cancel{10} 0.03 = 3\%$$

**Only 3% of bikes get
upcycled in the Yarra
Valley**

Evidence of my learning - Question 2 How much can people save using Upcycles?

My spreadsheet showing the amount I have paid vs the retail price

cost of new Norco Storm 2 (99 Bikes)	\$1,099.00
saving	\$894.00
percentage saving	81.00%
percentage spent	19.00%

part name	cost
seat	\$3.00
stem	\$2.00
brakes	\$20.00
handle bars	\$4.00
frame	\$0.00
paint	\$9.00
sand paper	\$2.00
peddles	\$4.00
shocks	\$45.00
chain	\$22.00
cassette	\$12.00
gear shifter	\$13.00
grips	\$6.00
cranks	\$5.00
derailleur	\$8.00
wheels	\$0.00
head set	\$40.00
tyres	\$10.00
total	\$205.00

My Bike cost

\$205 in parts

~~similar~~

similar new bike - \$1099

savings:

$$\begin{array}{r} 1099 \\ - 205 \\ \hline 894 \end{array}$$

percentages:

$$\frac{205}{1099} = 205 \div 1099 = 0.186 \approx 0.19 = 19\%$$

my bike cost 19% of the retail price so I saved 81%

I have saved 81% buying a bike of equal quality from Upcycles

upcycled bike

\$170 upcycled

\$650 new

$$\begin{array}{r} 650 \\ - 170 \\ \hline 480 \end{array} \text{ saved}$$

percentage saved

$$\frac{480}{650} = 480 \div 650 = 0.73846154 \text{ (calculator)}$$

$$= 0.74 \text{ (rounded)}$$

~~73.8%~~
 $= 74\%$

$$100\% - 74\% = 26\%$$

spent 26% of new bike price.

This customer saved 74% buying a bike of equal quality from Upcycles

average savings

$$\begin{array}{r} 81 \\ + 74 \\ \hline 155 \end{array}$$

$$155 \div 2 = 77.5\% \\ \approx 75\%$$

This is the average percentage saving buying an upcycled bike

Findings

Environmental: How can Upcycles have a positive impact the environment?

Even though three thousand bikes are thrown out each year in the Yarra Valley the good news is that two hundred and fifty of those go to Upcycles and one hundred find a new home.

Personal: How much can people save using Upcycles?

I have discovered that people can save around 75% if they buy bikes from Upcycles at equal quality vs the retail price.

Conclusion

Conclusion- Environmental Impact

In conclusion Upcycles is having a positive impact on the environment however we are only managing to upcycle 3% of bikes at the moment so we need more help.

Conclusion- Personal Savings

I have found that people can save around 75% buying higher quality bikes from Upcycles rather than from an average bike retailer.

Reflection

This project has been valuable to me because I have learned so much about calculating percentages and how I can help the environment by just fixing and selling bikes. I would love to do this all over again next time but I know that no matter what I'll never forget this project. By researching costs and actually building my own bike with the help of Upcycled I was able to prove my prediction about saving money.

References

99 Bikes Website

https://www.google.com/search?q=99+bikes&rlz=1CAGSIC_enAU1118&oq=&gs_lcrp=EgZjaHJvbWUqCQgAEEUYOxjCAzIJCAAQRRg7GMIDMgkIARBFGDsYwgMyEwgCEAAYAxgKGEIYjwEYtAIY6glyDwgDEC4YAXiPARi0AhjqAjlRCAQQABgDGE

Cycling's dirty secret: 300,000 bikes a year dumped in landfill

<https://www.smh.com.au/environment/sustainability/cycling-s-dirty-secret-300-000-bikes-a-year-dumped-in-landfill-20240506-p5fp9p.html>

Bike repair a no-brainer for Australian charity

<https://www.sustainability.vic.gov.au/news/news-articles/bike-repair-a-no-brainer-for-australian-charity>

Australia population

<https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release>

Yarra Valley statistics

<data/quickstats/2021/2110512https://abs.gov.au/census/find-census-86>

Upcycles

<https://ecoss.org.au/portfolio-items/upcycles/>

Acknowledgements

I would like to acknowledge my Mum and Dad for taking all the photos and helping me stay on task. Next I would like to acknowledge Mr Wall and Mrs Dove for telling me where to go next and giving me time to get this project done. Last but not least I would like to acknowledge Damian Auton for all the information about bike waste and Upcycles stats.