Randwick City Council
a sense of community

WASTE MANAGEMENT

Content

The council wants to understand waste generation measures in order to consider the possibilities of enacting new policies in the short, and long term.

The goal

The purpose is to reduce the rubbish residents generate and encourage people to recycle more. By completing the four challenges, the council can understand the current situation of waste and have appropriate solutions for each area.

Click here for the detailed data for all the questions below.

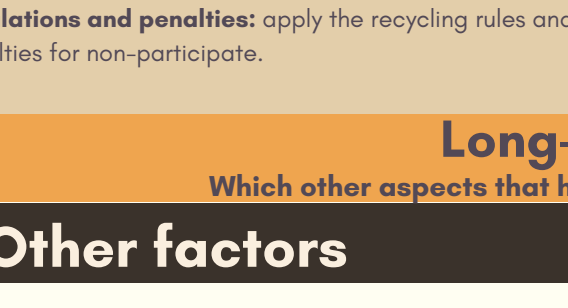
Tools

- Python is used to clean and analyse data.
- Flourish and Looker studio are used to visualise data.
- Canva is used for presentation.

Data and sources

1. Confidential data.
2. Census data from the Australian Bureau of Statistics.
3. Literature:
   - Ball State University Muncie 2020, The Impact of College Education on Recycling Practices, Audrey Loomis, Indiana.
   - Wang, Y., Hao, F., & Liu, Y. (2021). Pro-environmental behavior in an aging world: Evidence from 31 countries.

Short-term Policies



1. Waste collection schedule

Consider a different schedule:

Areas where waste is collected 3 times a week tend to have an average weight per collection that is half that of areas where waste is collected 2 times a week. This may not be cost-effective. Therefore, the council may consider reducing the frequency of waste collection to 2 times a week in such areas. For detailed data about waste by street and schedule, please refer to the **detailed dashboard**.

Which Streets / Zones and Suburb are the best/worst garbage generator?

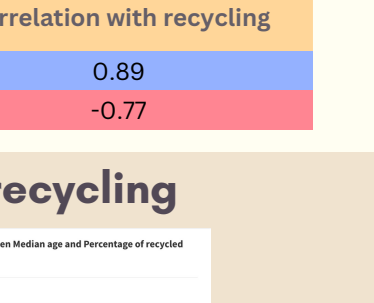
2. Waste by Streets

Best & worst recyclers
by % of recycled waste

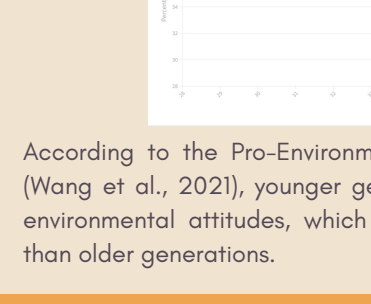
90 Streets recycled 100% of their waste.

96 Streets recycled 0% their waste.

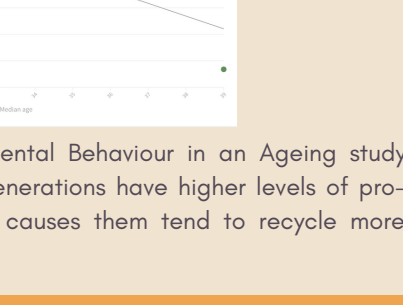
Top 5 worst garbage generators
by total weight of garbage/week



Top 5 best recyclers
by avg. weight of recycled /week/unit



Top 5 worst garbage generators
by avg. weight of garbage/week/unit



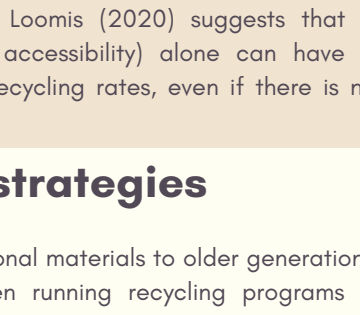
3. Waste by Zones & Suburbs

Best & worst recyclers
by % of recycled waste

16 Zones recycled 100% of their waste.

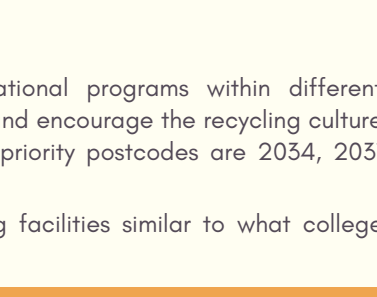
15 Zones recycled 0% their waste.

Top 5 worst garbage generators
by total weight of garbage/week



Top 5 best recyclers
by avg. weight of recycled /week/unit

Top 5 worst garbage generators
by avg. weight of garbage/week/unit



Proposed strategies

- **Incentives:** give rewards/discounts on waste bills for the household in selected streets to encourage them to recycle.
- **Regulations and penalties:** apply the recycling rules and penalties for non-participate.

The cost of training campaigns

- For cost-effectiveness, the costs for human resources, training materials, and venues, we should prioritise the streets and zones that have 0% recycling.
- With the incentives strategies, offering discounts on waste bills is the additional cost of training campaigns.

Long-term Policies

Which other aspects that have relationship with waste and recycling?

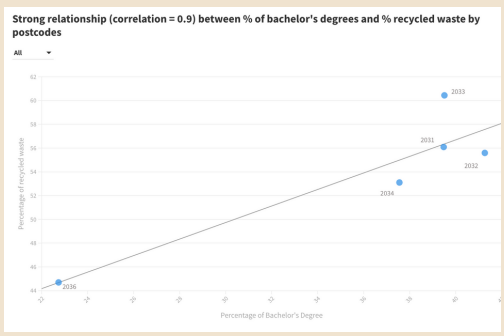
4. Other factors

2 Factors having strong relationship with recycling.

1. **Age:** Suburbs with younger populations (lower median age) tend to recycle more.
2. **Education:** Suburbs with a higher percentage of bachelor's degrees recycle more.

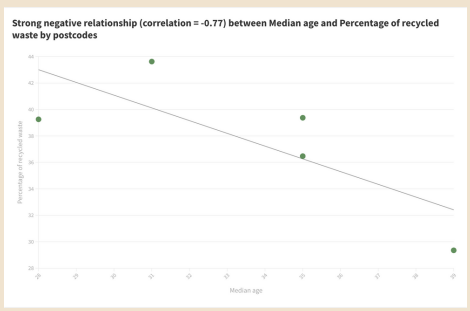
Factor	Correlation with recycling
Education	0.89
Age	-0.77

Education and recycling



A research conducted by Audrey Loomis (2020) suggests that a college environment (culture and accessibility) alone can have a positive impact on an individual's recycling rates, even if there is no dedicated subject about recycling.

Age and recycling



According to the Pro-Environmental Behaviour in an Ageing study (Wang et al., 2021), younger generations have higher levels of pro-environmental attitudes, which causes them tend to recycle more than older generations.

Proposed strategies

Age

- Tailor messages and educational materials to older generations' interests and concerns when running recycling programs in suburbs with the older population (2031, 2034, 2036).
- Involve them in recycling communities. Implement stronger policies related to recycling.

Education

- Run campaigns and educational programs within different suburbs to raise awareness and encourage the recycling culture within the community. High-priority postcodes are 2034, 2031 and 2036.
- Increase access to recycling facilities similar to what college environments offer.

Reflection and Ethical Considerations

Challenges

- **Communication:** working as a team, we need to deal with miscommunication which can cause misunderstandings, affecting the final results.
- **Coordination:** we need to come up with different ways to collaborate as we have different preferences in terms of tools and schedules.
- **Time constraints:** as the time for the challenges is limited, we need to manage time effectively and ensure the quality of the solutions.

Opportunities

- **Diverse perspectives:** this helps us to create more creative solutions and new insights that working individually can not achieve.
- **Better efficiency:** we can divide tasks so that each of us can focus more on our parts. Furthermore, we can help each other to review and enhance the quality of our works.
- **Innovation and Creativity:** working as a team, we can generate more innovative solutions and approaches to problems that we might not achieve when working independently.

Ethical Considerations

- **Privacy:** this dataset contains sensitive information like addresses and the amount of waste. Therefore, ensuring the data is protected and kept confidential is important.
- **Accuracy:** analysing waste data is complex, especially when interpreting the relationship between waste and other census indicators. Therefore, any conclusion drawn from the analysis should be taken with caution.
- **Environmental risks and impacts:** we should always consider environmental concerns that may have significant long-term effects before making any decision. Responsible waste management practices should be followed, ensuring that the benefits of waste data analysis outweigh any potential harm to the environment.
- **Data bias and fairness:** waste data analysis should be conducted with careful consideration to avoid perpetuating biases.
- **Data transparency and accountability:** It is essential to be transparent about the use of waste data and be accountable for the results and decisions derived from its analysis.