

The background of the slide is a photograph of a beach. In the foreground, a clear plastic bottle is partially buried in the sand. In the background, gentle waves are breaking on the shore under a clear sky.

Ocean Cleanup - TIDES

Team - DC20006

Ankit Dhall, Kankshi Dhar, Monalisa Swami, Nisha Dayananda

This is Data Challenge

So what is the Data?

- Provided by BAH, TIDES is the public data system containing world's largest ocean trash dataset
- Filtered to U.S. Data only
- Includes 37,904 entries - Meaning 37,904 Cleanup activities



Motivation

- **Our Testudo is hurting with garbage**
- **University of Maryland with State of MD is putting efforts to preserve Chesapeake Bay**
- **UMD's Sustainability Campaign Efforts**
- **Originating from India, the country which banned the use of Plastic Bags**



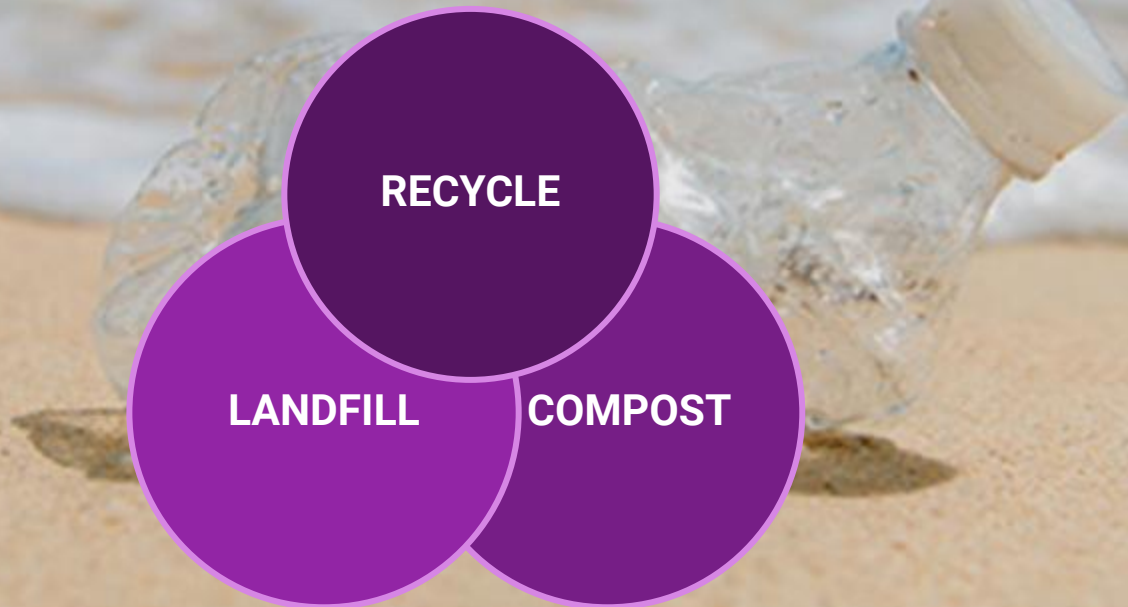
UMD's Sustainability Campaign

“Terps Leave Small Footprints”

- **Educating the campus community about sustainability**
- **Fostering collaboration between units of the university and external resources**
- **Measuring and reporting on campus sustainability efforts**

UMD's Sustainability Campaign

Following are UMD's segregations that we adopted:



RECYCLE

YES ✓



MIXED PAPER
& CARDBOARD



(Rinsed Out)
PLASTIC CONTAINERS



(Rinsed Out)
METAL CANS

NO ✗



FOODS &
LIQUIDS



PAPER FOOD ITEMS



e-WASTE



SMALL
PLASTICS



PLASTIC WRAP
& BAGS



HYGIENE
PRODUCTS



GLASS
BOTTLES



PACKETS &
WRAPPERS



OFFICE SUPPLIES

COMPOST

YES ✓



PAPER FOOD
CONTAINERS



FOOD SCRAPS



PAPER TOWELS
& NAPKINS



FLOWERS
& PLANTS



ITEMS LABELED
COMPOSTABLE

NO ✗



(Rinsed Out)
PLASTIC
CONTAINERS



(Rinsed Out)
METAL CANS



PLASTIC WRAP
& BAGS



HYGIENE
PRODUCTS



PACKETS &
WRAPPERS



GLASS
BOTTLES



SMALL
PLASTICS



CLOTHING

LANDFILL

YES ✓



PACKETS
& WRAPPERS



PLASTIC WRAP
& BAGS



GLASS
BOTTLES



SMALL PLASTICS



STYROFOAM



HYGIENE
PRODUCTS

NO ✗



(Rinsed Out)
PLASTIC
CONTAINERS



(Rinsed Out)
METAL CANS



MIXED PAPER
& CARDBOARD



FOOD
SCRAPS



FLOWERS
& PLANTS



PAPER FOOD
ITEMS



e-WASTE

What We Did

Trash

Grouped the 47 trash variables into Compost, Recycle and Landfill

Seasons

Grouped the 37904 dates into the seasons: Summer, Fall, Winter and Spring.

Region

Grouped the 54 states into 4 geographic regions: South, East, North-East and Mid-West.

What We Had

**Information about
people participating in
cleanup drives**


**Trash segregation and
measure (count, weight
etc.)**



**Geographical data and
dates (1992 - 2019)**

**Garbage segregation
methods and mediums**

Popular Cleanup Times



Most popular
cleanup
month:

SEPTEMBER

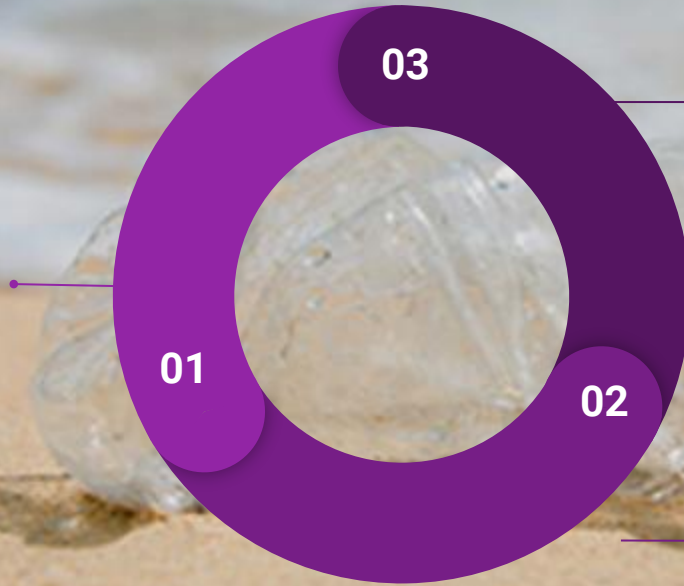
Most popular
cleanup
season:

FALL

What We Did?

ADULTS VS CHILDREN

Are children as effective as adults in picking up trash?



MOST COMMON CLEAN UP DAY

Fridays - Saturdays

IS PLASTIC THE MAIN CULPRIT?

Plastic makes 9% of Ocean Waste
Compost makes 10 parts of 13
dumped in ocean

What We Found

Watercraft Cleanup

Watercraft cleanup follows up with the total trash picked at 386358.9 lbs

2

Underwater Cleanup

Underwater cleanup results in the least trash collection by weight with the total being at 9361.94 lbs

3
3

Land Cleanup

Land cleanup mode collects the most trash with the total at 11383661.24 lbs

1



What We Found

Cleanup frequency in decreasing order:

- Florida
- California
- North Carolina
- Washington
- New York





HOW LONG UNTIL IT'S GONE?

Estimated decomposition rates of common marine debris items



Estimated individual item timelines depend on product composition and environmental conditions.

Source: NOAA (National Oceanic and Atmospheric Administration), US / Woody Hole Sea Grant, US
Graphics: Oliver Lide / Museum für Gestaltung Zürich, Zürich

What We Fact Checked



10/20 millions tons of plastic end up in the Ocean each year.



Sea animals mistaken plastics for food and eat it, which end up in our plate.



Oceans water volume that is totally devoid of oxygen has **X4** over the past 50 years



By 2050 it is estimated that the Ocean will have **more plastic than fish**



Oceans cover **2/3** of Earth surface



Oceans holds **97%** of the planet's water



Oceans produces **1/2** of the atmosphere's oxygen



Oceans are the source of food of **230,000** species

What We Mean By Sustainability

Environmental

- More Cleanups Starting NYC, Washington, NC
- Categorize Trash
- Water Quality improves
- Air Quality improves
- Ocean's give 50% of world's oxygen
- Reduce waste
- Reusable straws, water bottles

Social

- Partnership of Authorities with Cleanup drives. Ex: National Aquarium
- Educate people with statistics + implications
- Build programs in schools & communities
- Compost Waste affects 3 generations

Economical

- Creates more Jobs
- Collect Fines for trash generation
- Give incentives to locals/departments for maintaining
- Increase water based energy
- Dams generate Water Power



ArcGIS Demo

<http://uofmd.maps.arcgis.com/apps/presentation/index.html?webmap=8b8a8e636aa040f4b348da877db72755&builder>

