

Reuse and Recycling of Medical Devices and Equipment

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Motivation

- Healthcare is the second largest waste-generating industry with over 4 million tons of general waste each year in the U.S.
- Reducing the costs of healthcare through reuse of materials can lead to savings for medical establishments and ultimately patients
- Recycled and refurbished equipment can be donated to developing nations

Introduction

- Three paths for medical equipment: Landfill, Recycling, and Refurbishment
- Goal: discuss the environmental and social impact of these practices and explore improvements, show the social, environmental, and economic advantage to recycling or refurbishing, vs landfill

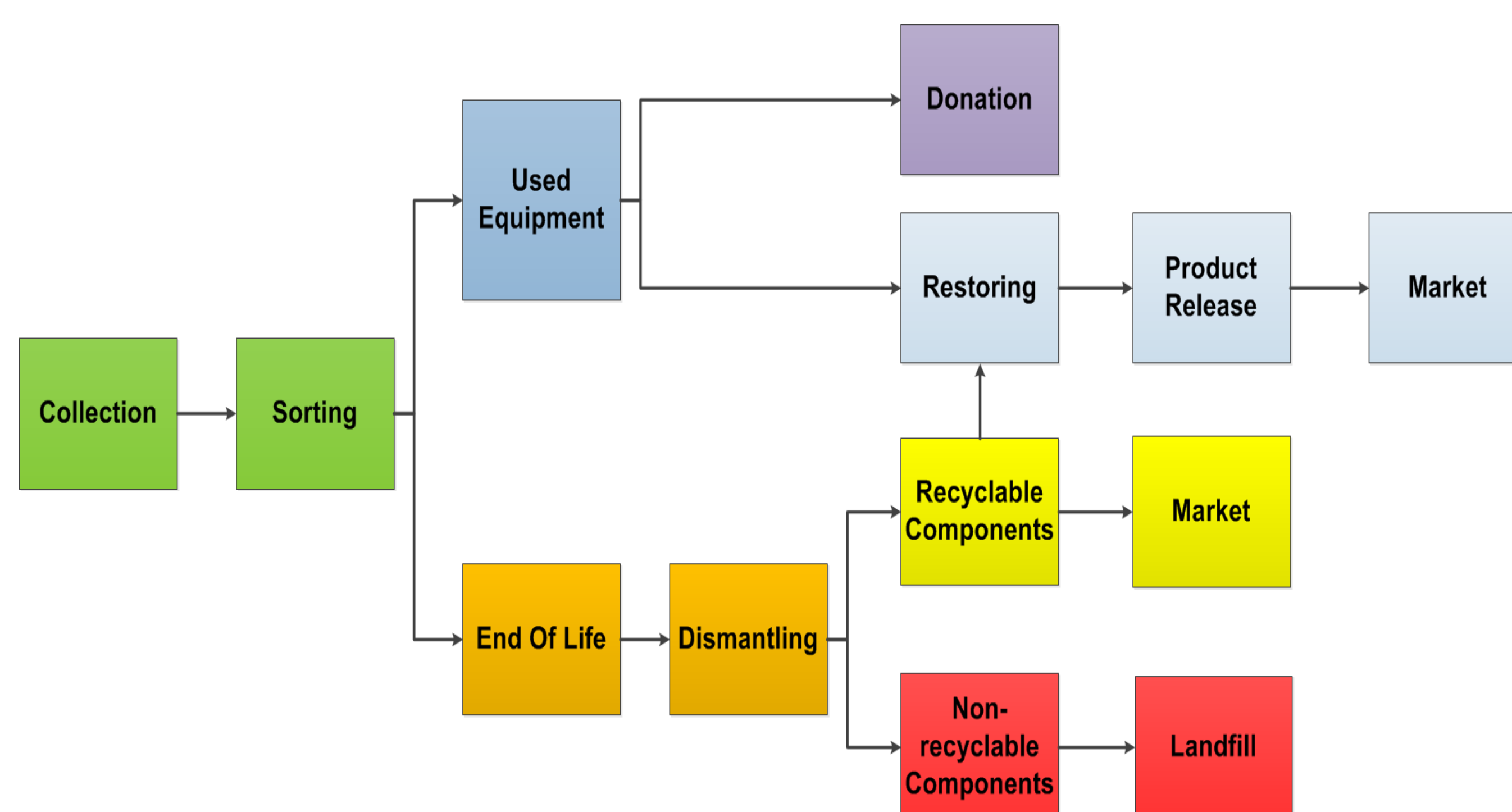


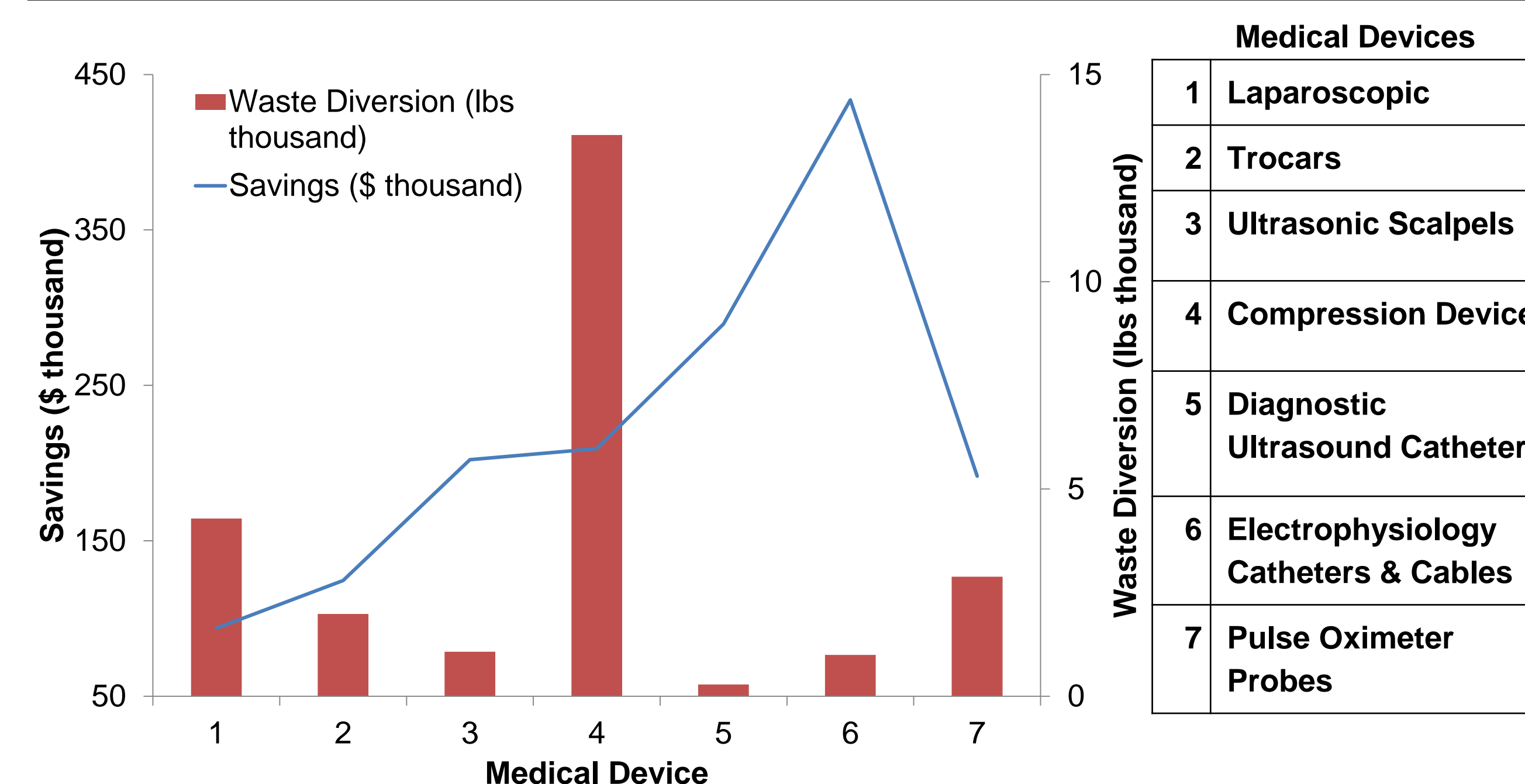
Figure 1: Medical Equipment Recycling and Refurbishing Process Diagram

- The medical device reprocessing market is relatively infantile but continues to grow as more organizations increase their sustainability efforts and look to reduce costs

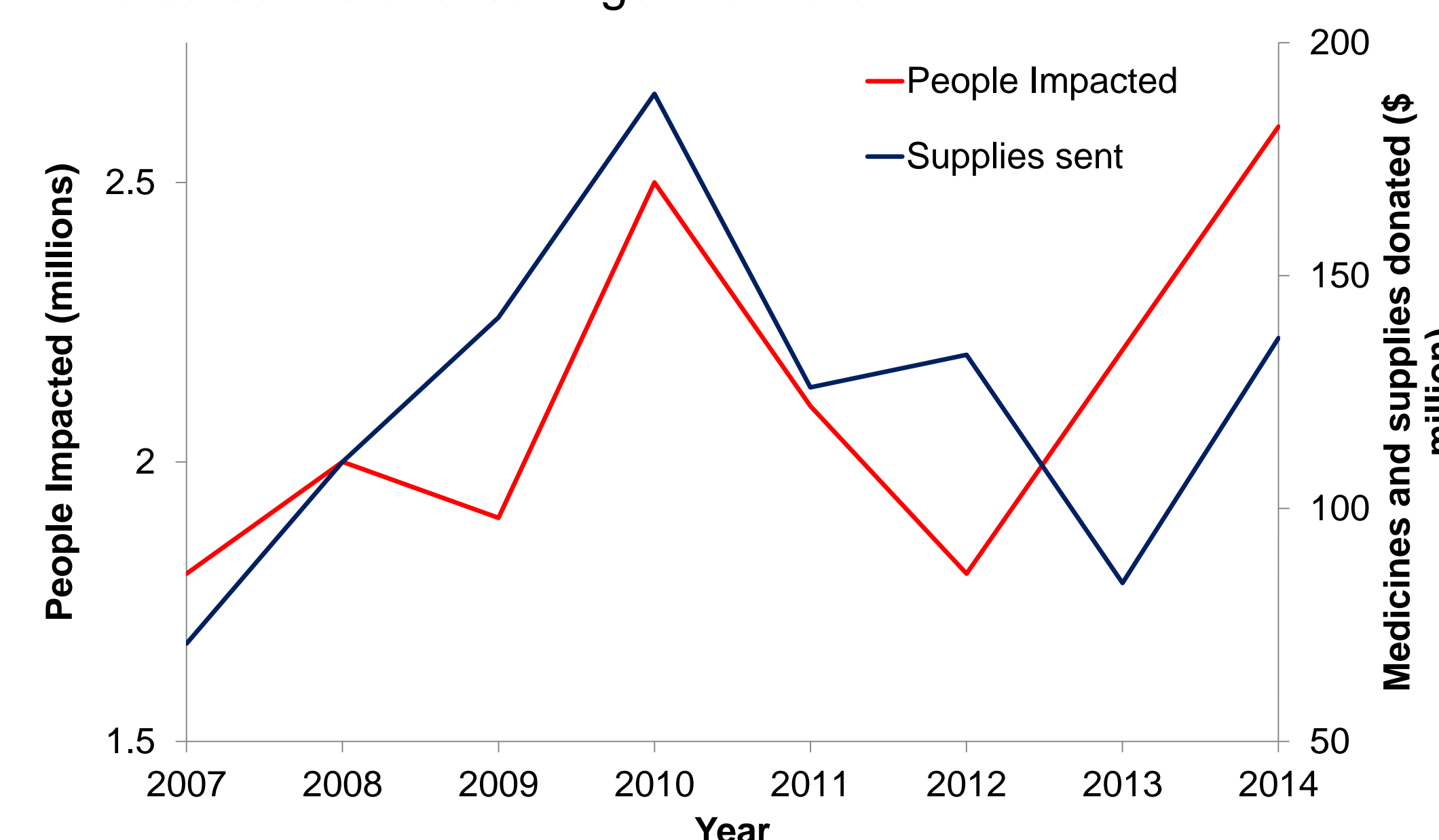
Methodology

- Research on current disposal practices
 - Medical reprocessing grows 10-15% annually
 - Determine large medical equipment paths
 - Recycle/refurbish
 - Landfill
- Determine environmental impact of recycling vs landfill
- Quantify savings from reprocessing
 - In 2012: \$336 million reported in savings

Results



- Figure 1 Estimates the Savings for a 500 Staffed Bed Hospital from utilizing re-processed medical devices. The red bars indicate the waste diverted from landfills and the blue line indicates the cost savings in dollars



- Figure 2 depicts the amount of people impacted worldwide by donations from Medical Teams International. The difference correlation may be due to lack of proper supply-chain and distribution tactics as well as data for donated devices

Conclusion

- A substantial amount of savings can be seen from using refurbished medical equipment.
- Regulated medical waste can be reduced by as much as 65% by switching to reusable equipment.
- A substantial environmental impact can also be seen from sending recyclable materials to a recycling center instead of sending the equipment to landfill.
- It is an overall better ethical and environmental decision to refurbish or recycle medical equipment instead of sending it to landfill.
- Figure 1 suggests that it is both environmentally and fiscally beneficial to utilize reprocessed medical devices over disposable ones

Recommendations

- Gather data from hospitals, preferably device specific so it can be compared to other hospitals
- Focus on a smaller scale (city or region specific)
- Perform Life Cycle Analysis to compare environmental impact of reprocessed and non-reprocessed medical devices

