

Dec 4th

Exploring Evolving Lawn Mowers

Adi Milstein
Shreyas Limaye
Young Kim
Kat Styons

Exploring the Evolving Lawn Mowers: Identifying New Markets and Opportunities

Authors: Adi Milstein, Shreyas Limaye, Young Kim, Kat Styons

This presentation was created in an open classroom environment as part of the ELPP in-class projects. There should be no proprietary information contained in this paper. No information contained in this paper is intended to affect or influence public relations with any firm affiliated with any of the authors. The views represented are those of the authors alone and do not reflect those of the University of California Berkeley.

Agenda

Team

History of Lawn Mowers

Market Summary and Analysis

Emerging Market Trends

Environmental and Regulatory Trends

Summary and Recommendations



Berkeley

Sutardja Center for
Entrepreneurship & Technology
COLLEGE OF ENGINEERING

Team



Adi Milstein
Applied Materials



Shreyas Limaye
Applied Materials



Young (YD) Kim
Samsung



Kat Styons
Yahoo!



Introduction

What is our project and why we chose it?

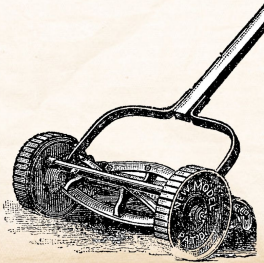
- Industry review of household lawn mowers
- Old product with a new twist every few years
- Growing market, responding to new technology



Lawn Mowers Industry History - Early Years

1830

invented by
Beard Budg
England



1902

gasoline riding
mower invented by
Aut



“A nation that forgets
its past has no future”

Berkeley

Sutardja Center for
Entrepreneurship & Technology
COLLEGE OF ENGINEERING

Lawn Mowers Industry History cont'

1935

Invention of Rotary lawn mower
lightweight
two-stroke engine

1955-1972

Zero-turn ride-on mowers focusing on lightweight materials and more powerful engines

1990 - 1992

Riding mower by John Deere
Self Propelled push mower by Craftsman got popular

1995-Today

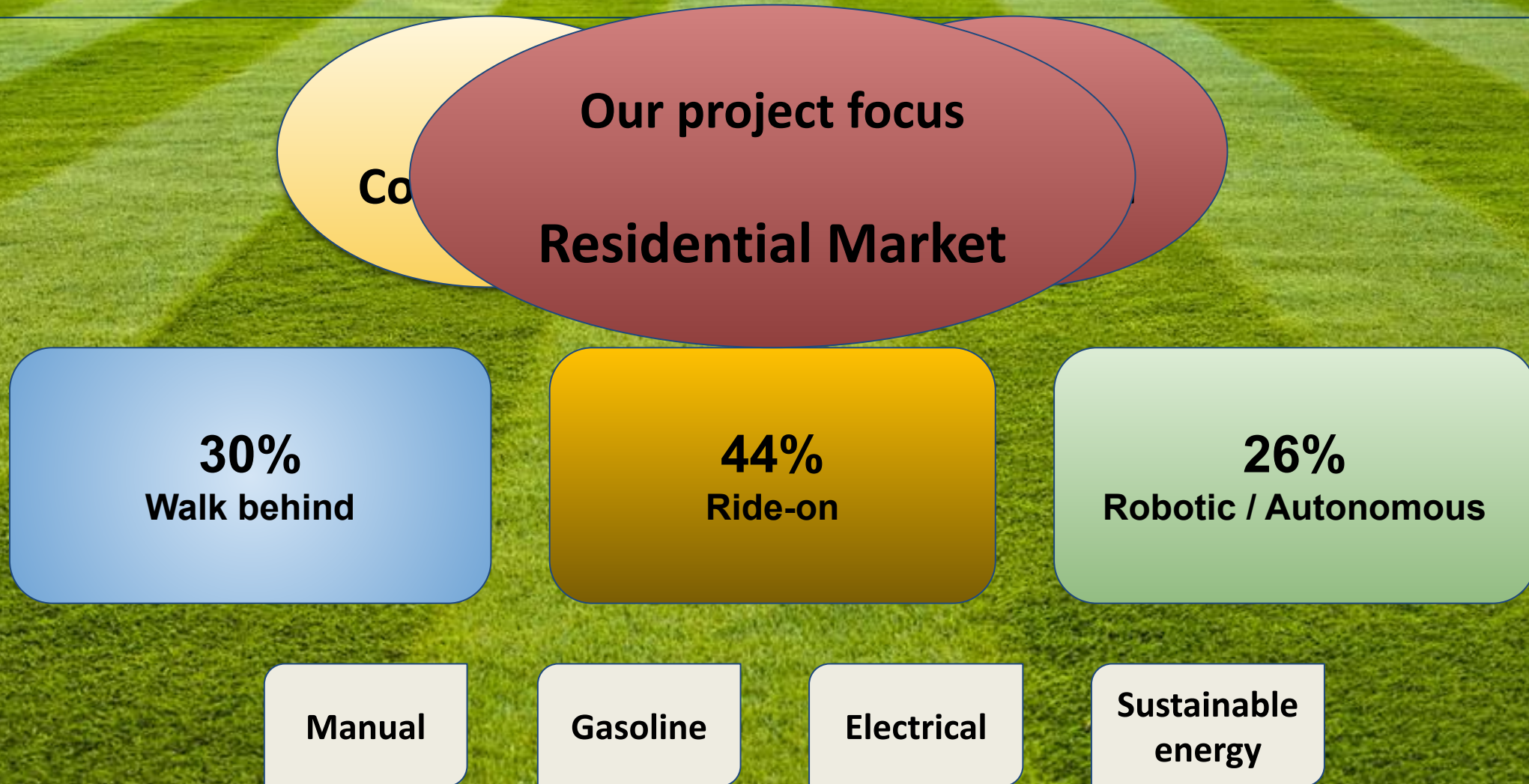
1995 1st solar Robotic mower
2012 - Cordless mower
2000-today - Robotic self manipulated, IoT mowers



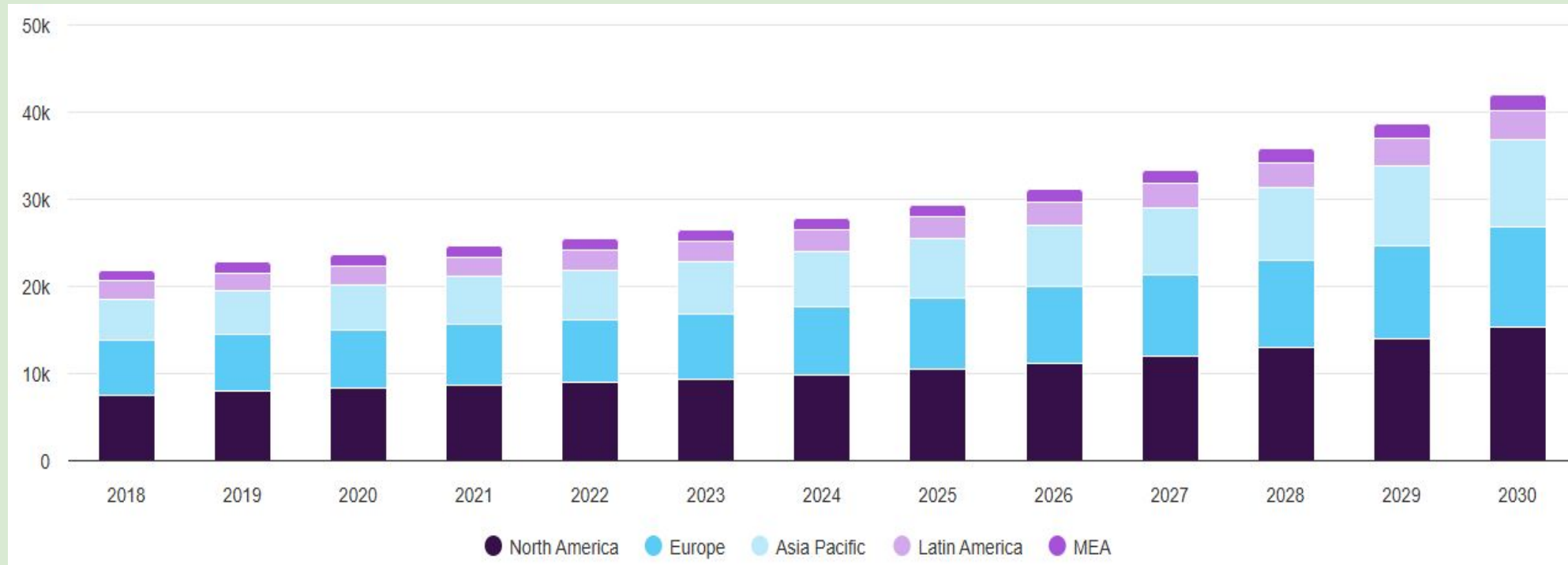
Berkeley

Sutardja Center for
Entrepreneurship & Technology
COLLEGE OF ENGINEERING

Lawn Mower Market Segments 2024

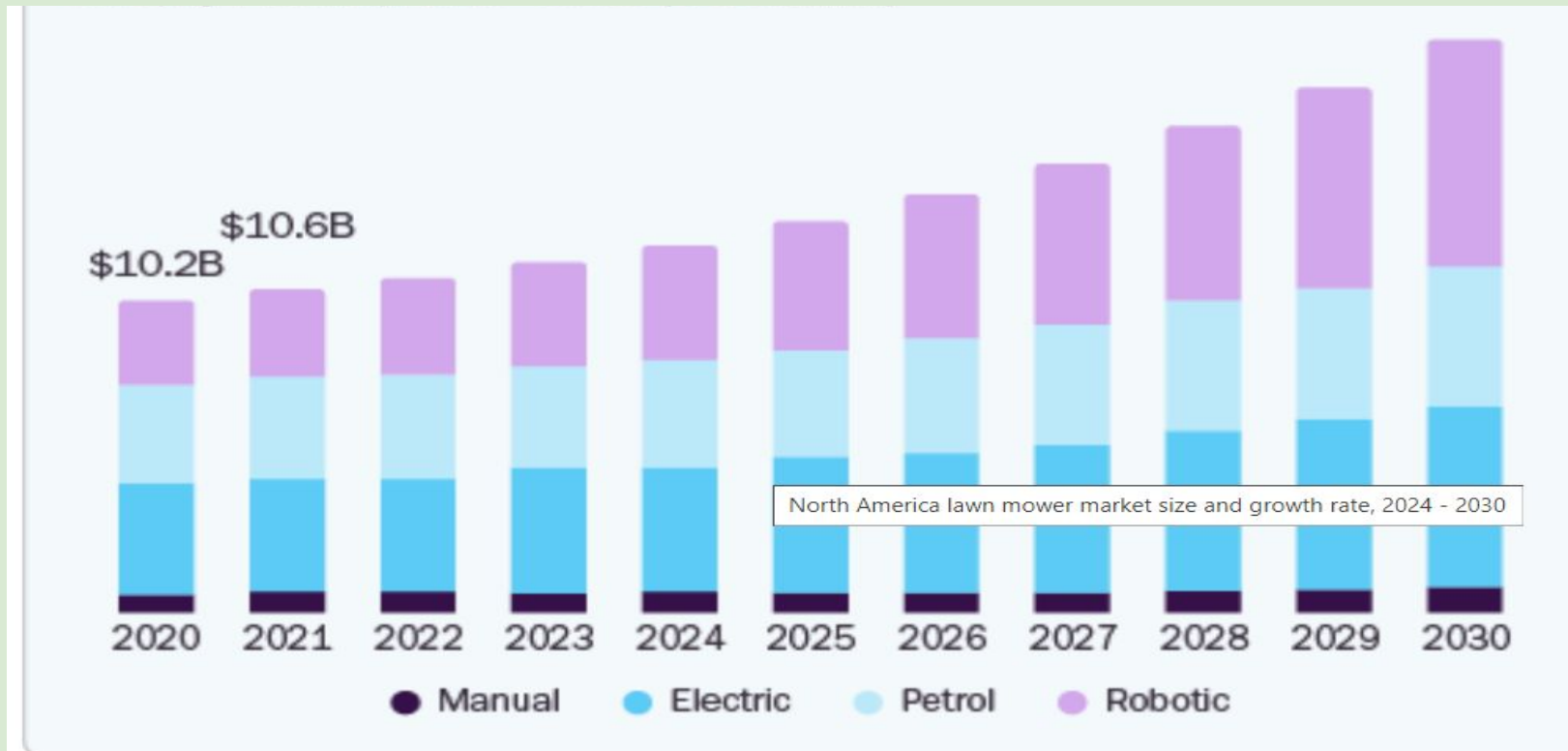


Lawn Mowers Global Market Trends



- The global market value is estimated at \$25-30B with Annual growth rate of 6.0%
- US market size is 39% of global market with annual growth rate of 7.1%
- Asia Pacific region is expected to witness the highest CAGR of 8.28%

North America Market Projection



- Awareness for environmental concerns
- Increasing demand for eco-friendly, electric, and battery-powered mowers
- Reducing reliance on traditional gas-powered models
- The robotic market annual growth rate is 11%

US Market Leaders

Deere & Co.



Stanley Black & Decker



The Toro Company



American Honda Motor Co.



Kubota Corporation



Market Concentration



Consolidated - Market dominated by 1-5 major players

← United States Lawn Mowers Market

Fragmented - Highly competitive market without dominant players

Other players: Ariensco, Husqvarna Group, Makita Corporation, Yamabiko Corporation, Stihl Group

US Market Leaders | Consumers Reviews

Deere & Co.

A diversified giant with a reputation for quality and durability. Deere & Co serves multiple sectors including agriculture, and lawn care. They have a broad portfolio and a global presence

Stanley Black & Decker

A beloved hardware company, Stanley Black and Decker is known for convenience, user-friendliness, and cost-effectiveness

The Toro Company

Known for endurance, performance and quality, Toro has a standing partnership with Lowes, and with it, access to a key marketplace. Toro is investing in the sports and fields market

American Honda

Honda stands out for their reliability and fuel efficient engines, they offer a variety of lawn mowers and as well as power equipment. Honda has manufacturing facilities around the globe

Kubota

For homeowners seeking a high-quality, professional-level mowing experience at home

Trends in Sustainable Energy Sources

Noise

Acceptable Noise level - 60 db @ Palo Alto, CA

No Gas

Bans sale Gas-Powered lawn equip. from 2024 @ CA

Gas to Battery

Growing Battery powered Lawn Mower

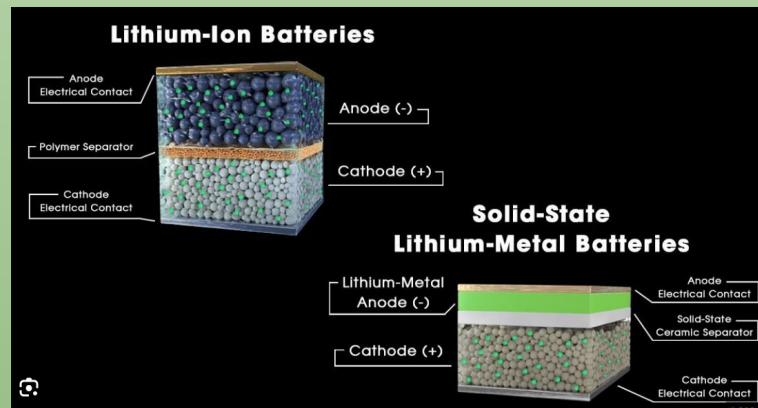
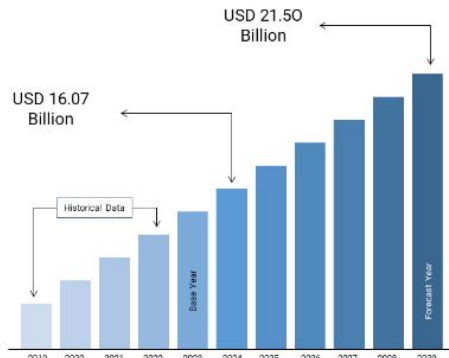
Battery Tech Trends
(Lithium-ion → Solid state Battery)

Innovative Charging Tech (Solar Power)

Global Battery Powered Lawn Mowers Market Market Size Overview

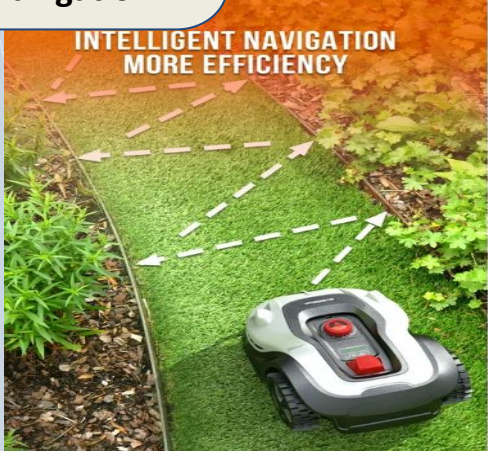
6%

Global market CAGR,
2024 - 2029



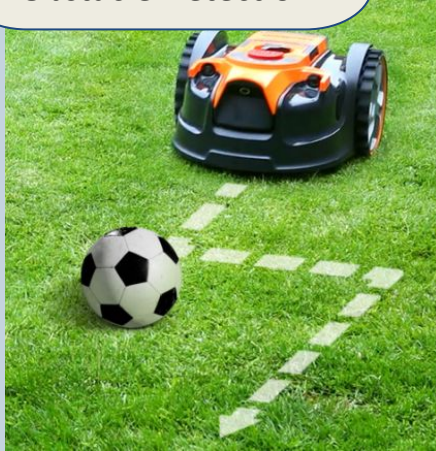
AI & Autonomous Technology

Navigation



[AI-Powered navigation - SUNSEEKER]

Obstacle Detection



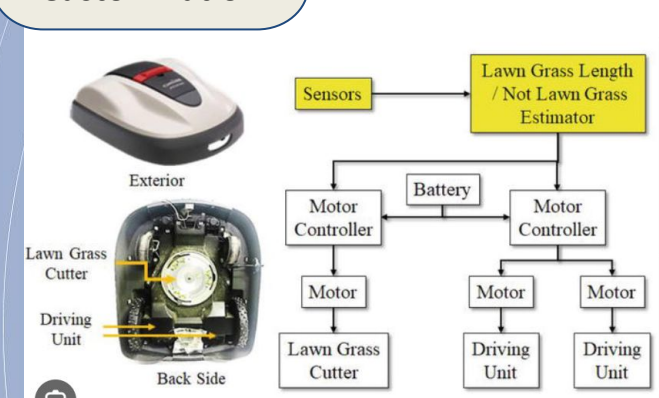
[Identify & Avoidance]

Maintenance



[Automatic Maintenance]

Customization



[Customized cutting based on ML]

CAGR of 10.93% from 2024 to 2033

VISION
RESEARCH REPORTS

Robotic Lawn Mowers Market Size 2023 to 2033 (USD Billion)



Smart Connectivity

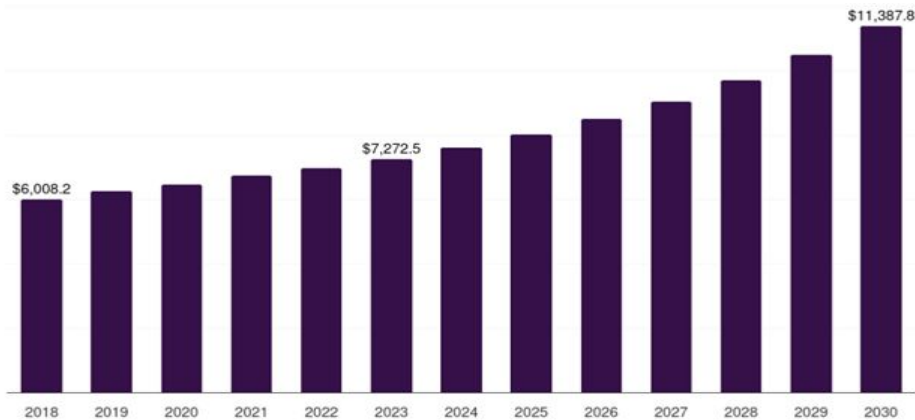
Manufacturer's app: Collecting data from users

- **MowerPlus (by John Deere):**
 - Data and insights about lawn mower performance
 - Maintenance reminders
- **AutoMower Connect (by Husqvarna):**
 - Remotely control and monitor robotic lawn mowers
- **MyToro (by Toro):**
 - Provides weather information, lawn care tips, general guidance
 - Can remotely start and stop lawn mowers

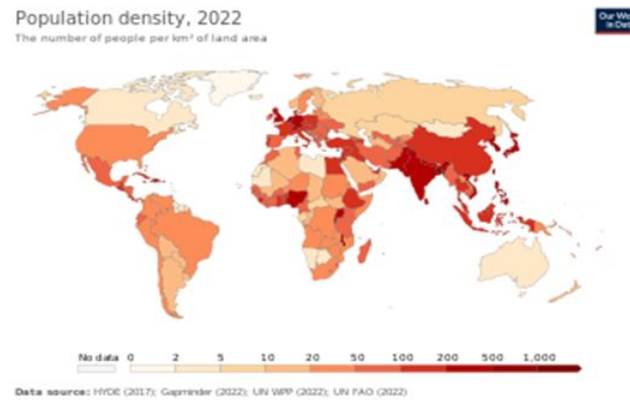


Regional Trends

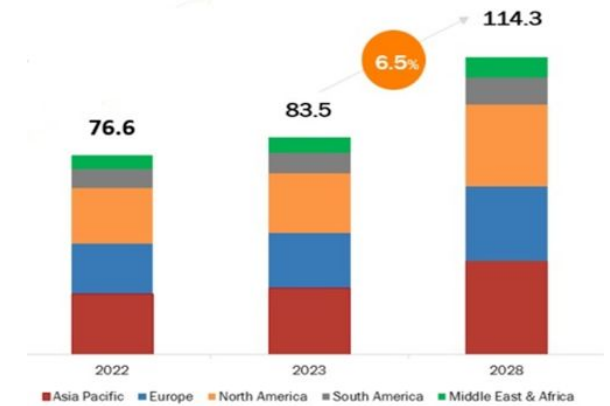
- North America is the biggest market. Will Asia-Pacific region replace it in next 10 years?
 - Big and growing market for most consumer products in big economies
 - Rapid urbanization and substantial increase in disposable income in cities
- Headwinds against growth for residential lawn mower market
 - High-population density leads people to live in high-rise buildings
 - Growth is in commercial market aided by government initiatives
 - Smart city projects in India, Eco-city and urban greening initiatives in China
 - Higher growth in artificial lawn market in Asia Pacific
- North America region to continue dominating the residential lawn mower market



Increasing Asia-Pacific Market (in US \$M)



High Population Density in Asia



Growth in artificial turf market

Environmental, Societal, Regulatory Trends

Ban on gas-powered lawn mowers

- California's Green Lawn Care Law - January 2024
- Affects sale of new gas-powered lawn mowers

Limits on Outdoor Water Usage

- California and cities across east Texas have limited amount of outdoor water usage
- Increase awareness that artificial lawn cannot absorb water - positive for lawn care industry

Hiring help for lawn mowing

- Nearly 40% households hire help to mow their lawn
- Potential market for robotic lawn mowers



City of Round Rock, Texas limits outdoor water usage

Effective June 2024 – New Watering Rules are in Effect Year Round



Water Conservation



Drought Restrictions



My Watering Day

≈40%
Households hiring a gardner for lawn mowing

Summary

- Lawn mower market growth:
 - Global outlook : Steady growth by 2030, with Robotic Mowers growing faster

US : 7.1 % CAGR , Asia-Pacific : 8.28% CAGR (Faster growth Expected)

- Market Trends & Characteristics:
 - Eco-Awareness —→ Increased demand for :

Eco friend, Electric(Battery) powered Mower

Low-Maintenance & Easy-to-Use products

- Innovative Techniques

AI & Autonomous Tech

Smart Connectivity

Remote Monitoring & control



Recommendations

- Target the U.S. residential market with a focus on robotic lawn mower segment
- Explore solar charging (backup) as a selling point
- Extend multifunctionality to robotic mowers: Mowers for seeding, spraying fertilizer, weed-killer
- Smart features: Connectivity, and advanced autonomous features are a key for competition
- Use data for cross-selling opportunities: Recognize grass-type, recommend products & upgrades, etc.



Manual Tow-behind Spreader



My Lawn App



PlantSnap App

Any Questions?





Thank You, Happy Mowing!