



TEXAS A&M
UNIVERSITY®

CAMPUS MASTER PLAN UPDATE

Focus Group – Sustainability

AGENDA

- **Introductions**
- **Planning Scope**
- **The 2004 Campus Plan and Survey**
- **Observations**
- **SWOT Exercise**
- **Analyze**
- **Goals and Advice**
- **Questions & Discussion**



INTRODUCTIONS



intro:

Ayers Saint Gross

PHILOSOPHY

We engage people and places to create designs that enrich the world.

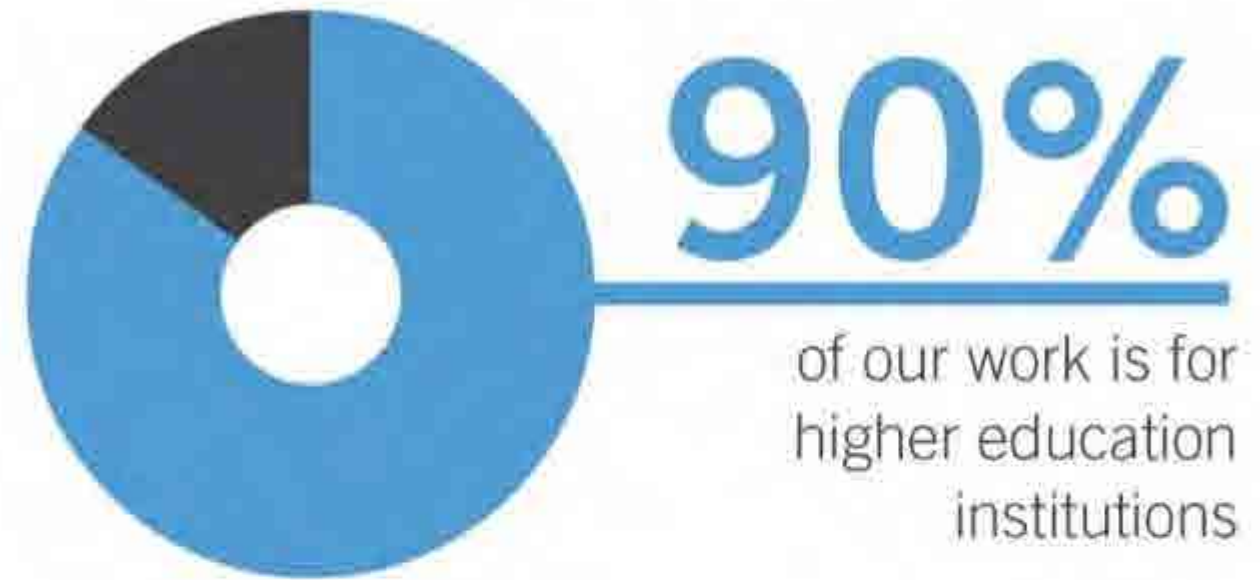
FOUNDED

1912

OFFICES

Baltimore, MD • Tempe, AZ • Washington, DC

CLIENTELE



S T A F F

160

Professional Staff Members

75%

of our Staff Members are LEED Accredited

intro:

A Commitment to Higher Education

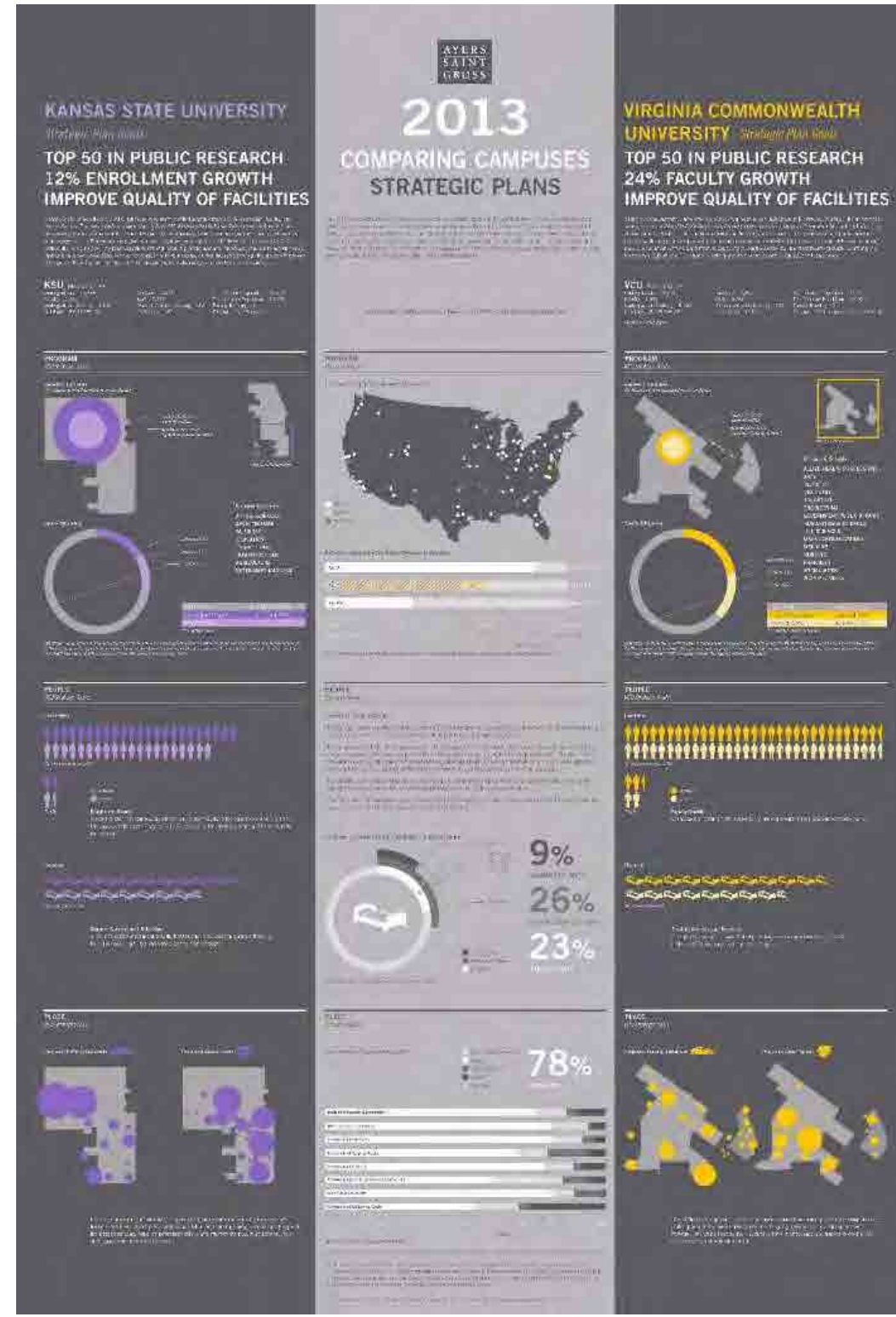
Workshop-Based

Process structure around intensive campus engagement



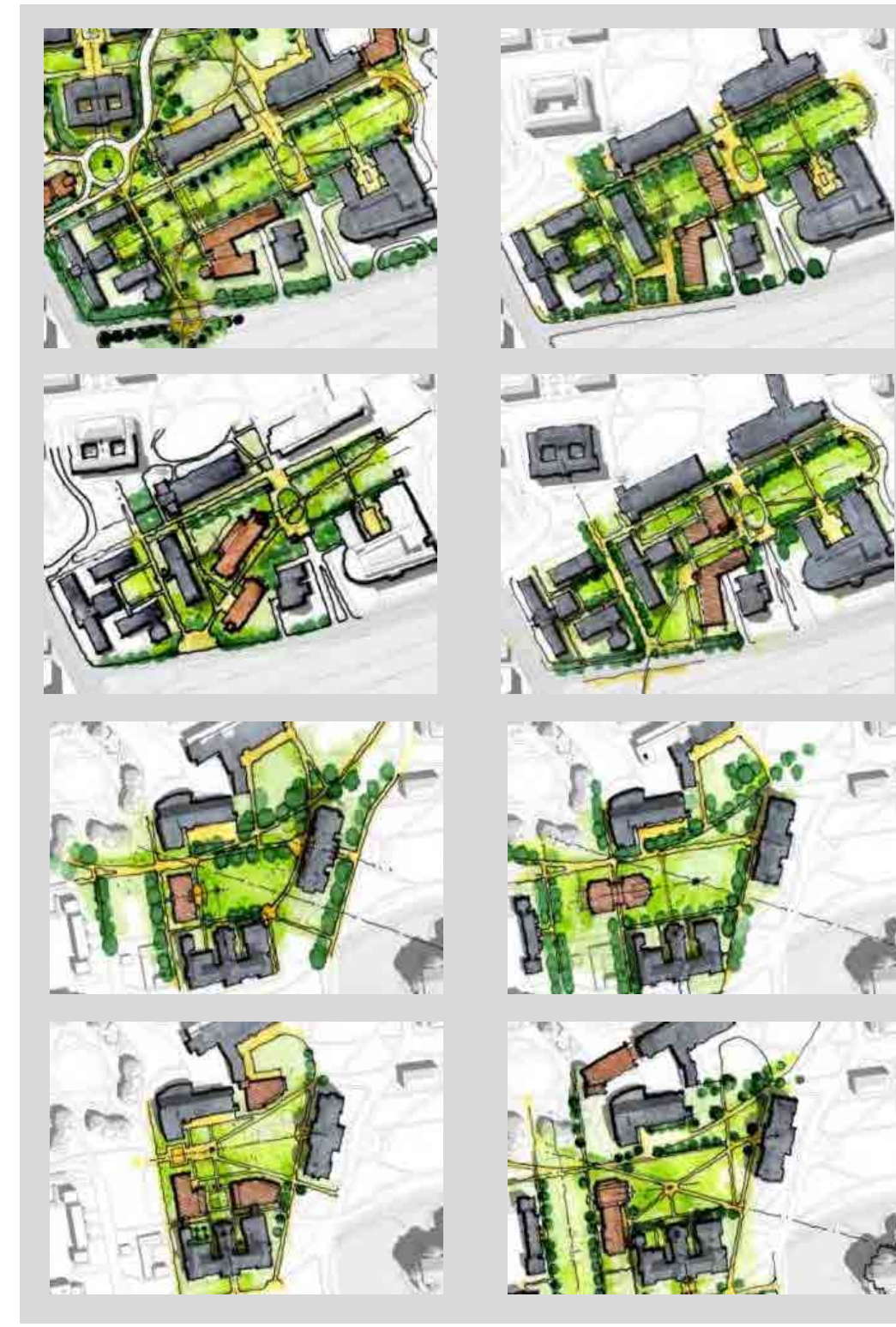
Research-Informed

Active research on higher education trends since 1998



Scenario-Tested

Campus Capacities explored via multiple development scenarios



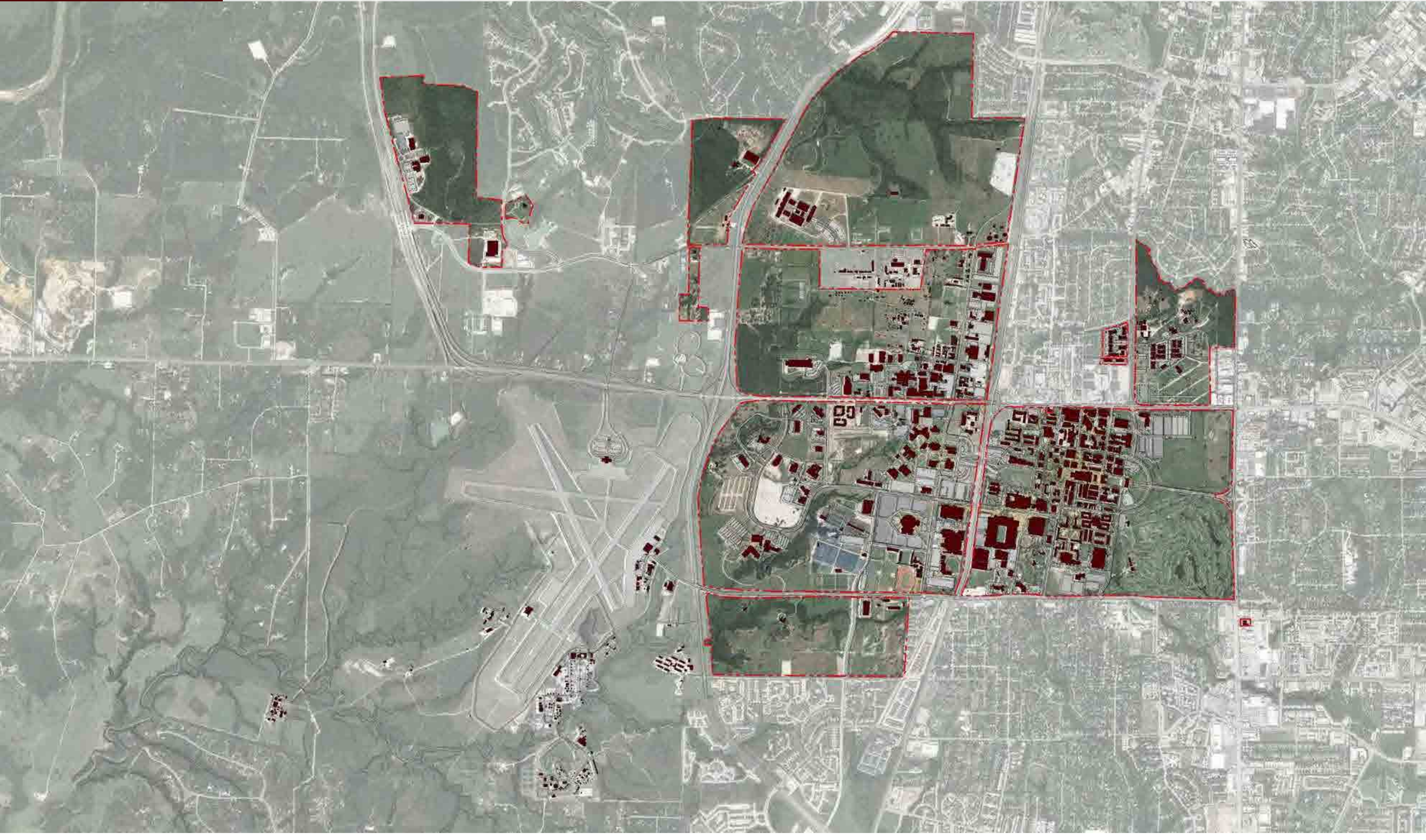


PLANNING SCOPE



scope:

Physical Planning Areas



Development Framework Plan

A review and analysis of existing planning efforts undertaken by the University since the adoption of the Campus Master Plan in 2004 will be completed. This will include the adopted and proposed District Plans, Vision 2020, current Academic Plans, current Strategic Plan(s), and other planning efforts.

Circulation & Transportation Plan

The planning effort will evaluate current campus access and circulation along with projected scenarios based on potential growth. Emphasis will be placed on the pedestrian experience along with campus gateways, edge conditions, alternate mobility opportunities, future garage locations and connections to the community.

Sustainability Plan

Develop a set of sustainability guidelines that will inform the planning effort and the Development Framework Plan. Identify both planning and building best practices relevant to sustainability strategies. Incorporate standards into a set of Sustainability Guidelines.

Preservation & Adaptive Reuse Plan

Review the current list of heritage campus buildings to identify necessary additions or deletions, coordinated with facilities indicated for potential demolition in the 2004 Campus Master Plan and adopted District Plans. The current Heritage Building Guidelines will be reviewed and recommendations made for revisions.

Signage Plan

Develop a signage and wayfinding master plan. This effort will focus on developing a breakdown of where wayfinding is needed and the development of new signage standards for the university. The wayfinding system includes directional, identification, and orientation signs to facilitate campus navigation and identity.

Design & Landscape Guidelines

Review and recommend additions, deletions or modifications to the current 2004 Campus Master Plan guidelines for architectural and landscape components.

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scope:

Engagement

Orchestrate

Co-Chairs

Dr. Jorge Vanegas
Ms. Lilia Gonzales

Direct & Advise

Executive Committee

President
Provost
VP for Finance & Administration

Advisory Committees

Council of Deans
Council on the Built Environment

Focus Groups

Multiple Entities

Campus & Community

Open Forums
Website

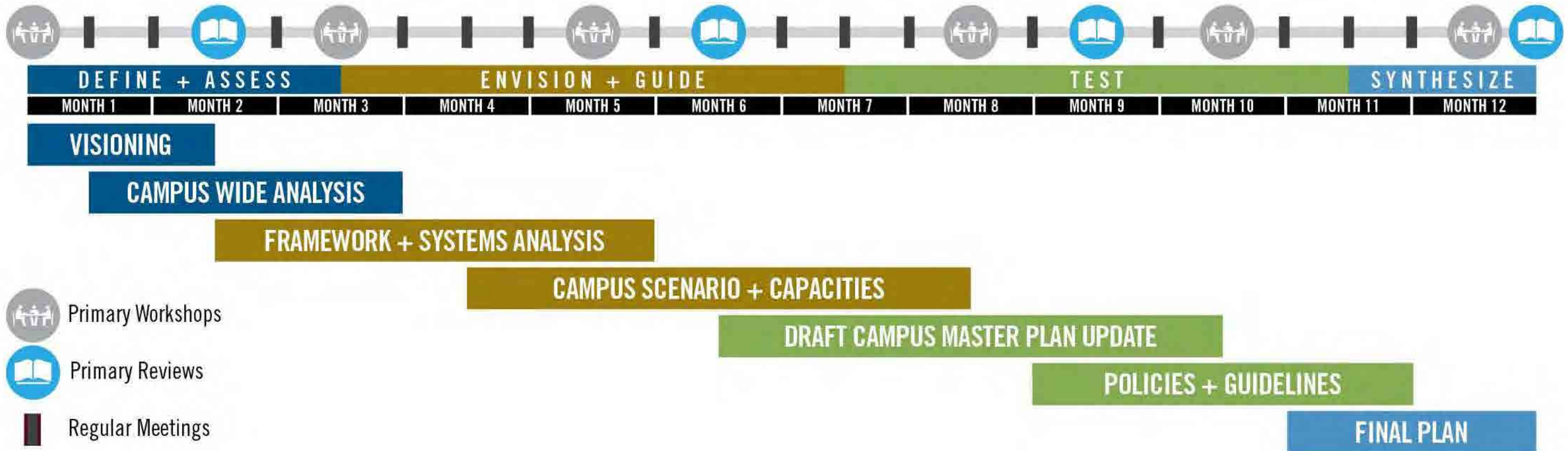
Support

Information Requests

University Architect
Transportation Services
UES
Student Affairs
Academics

scope:

Timeframe



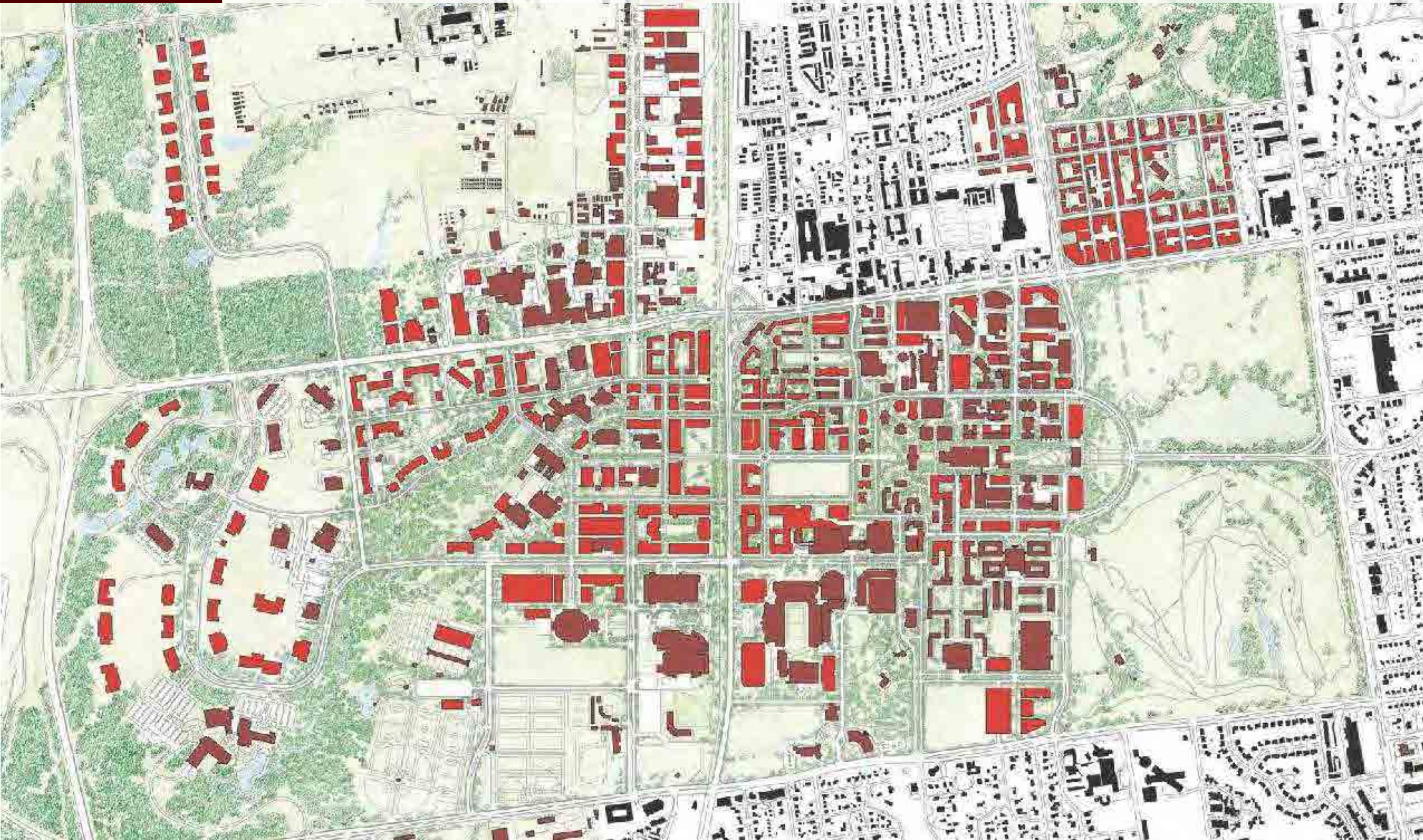


THE 2004 CAMPUS PLAN



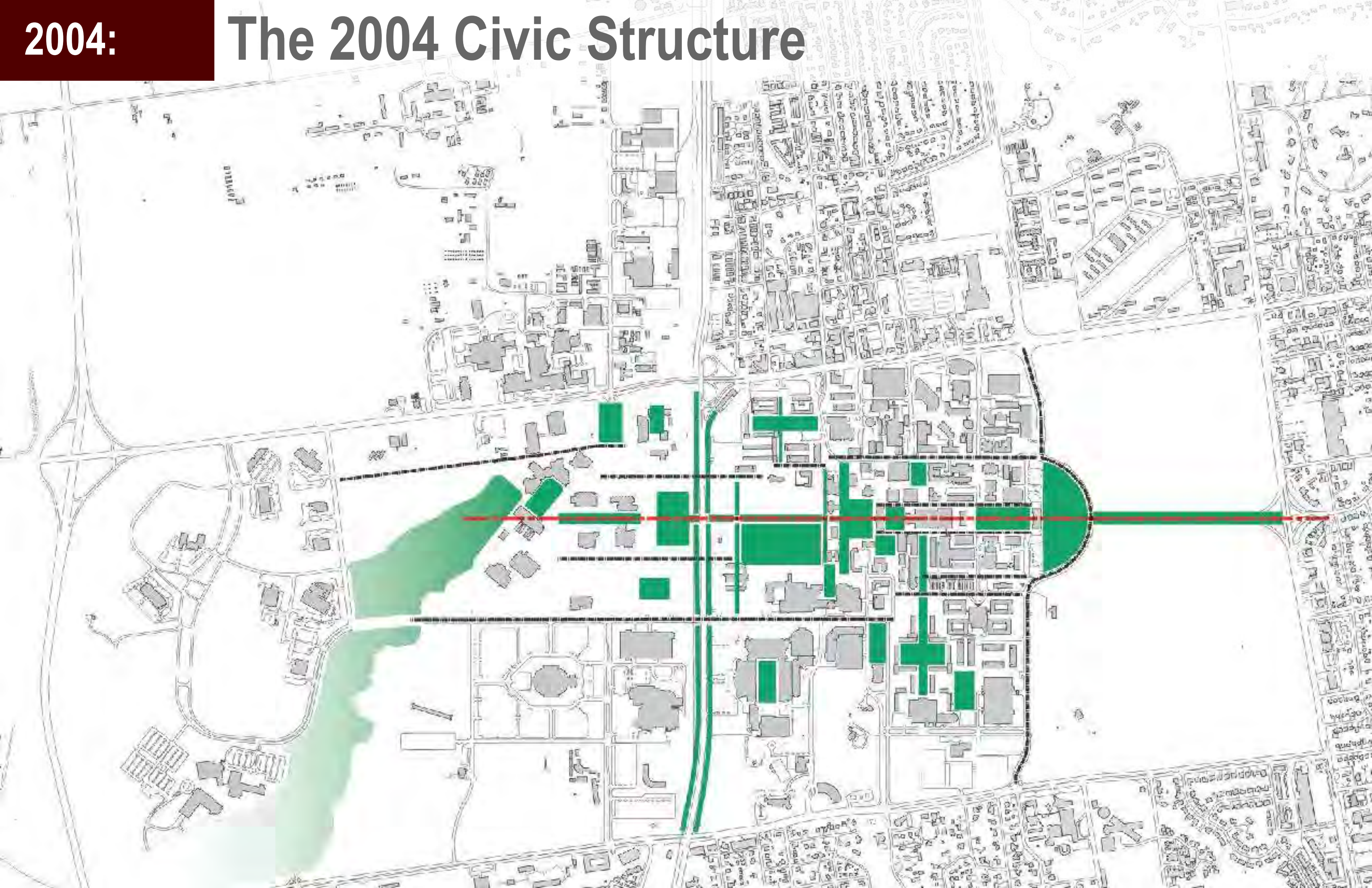
2004:

The 2004 Campus Master Plan



2004:

The 2004 Civic Structure



2004:

The 2004 Landscape Plan





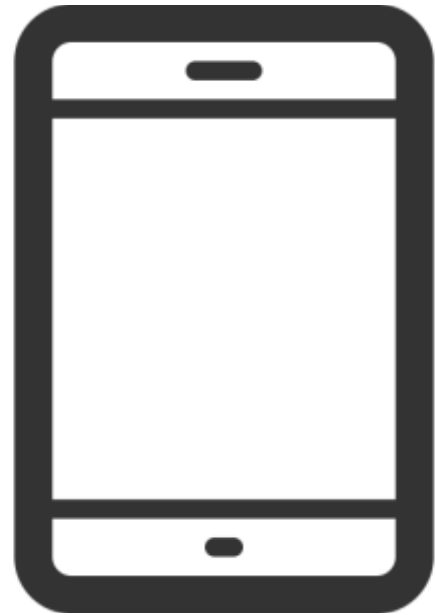
THE 2004 PLAN: SURVEY



2004:

Survey Instructions

Phone



Text ASGCAMPUS to **37607**

Computer



Pollev.com/ASGCAMPUS

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2. Reinforce Campus Community

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3. Establish Connectivity

Interdisciplinary activity is essential to research and knowledge today. Connectivity needs to be reestablished between places, between academic and research activities, between faculty and students, and between campus and the community.

4. Create Architecture that Contributes Positively to the Campus Community

Too many recent buildings are isolated objects that contribute little to the campus community. Buildings should be better neighbors through their siting, exterior design, interior public space design, and landscape. The renovation of existing buildings should consider and reinforce their relationship to the community.

5. Promote Spatial Equity & Appropriateness

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6. Establish an Accessible, Pedestrian Campus

The “population” of the campus is approximately 52,000 students, faculty, and staff. About 10,000 students live on campus. This means that approximately 42,000 people commute to campus —many by car. There are also numerous service vehicles, buses, and so on. The goal is to rationalize the circulation patterns, keep private cars to the periphery, and make the campus an accessible, pedestrian one.

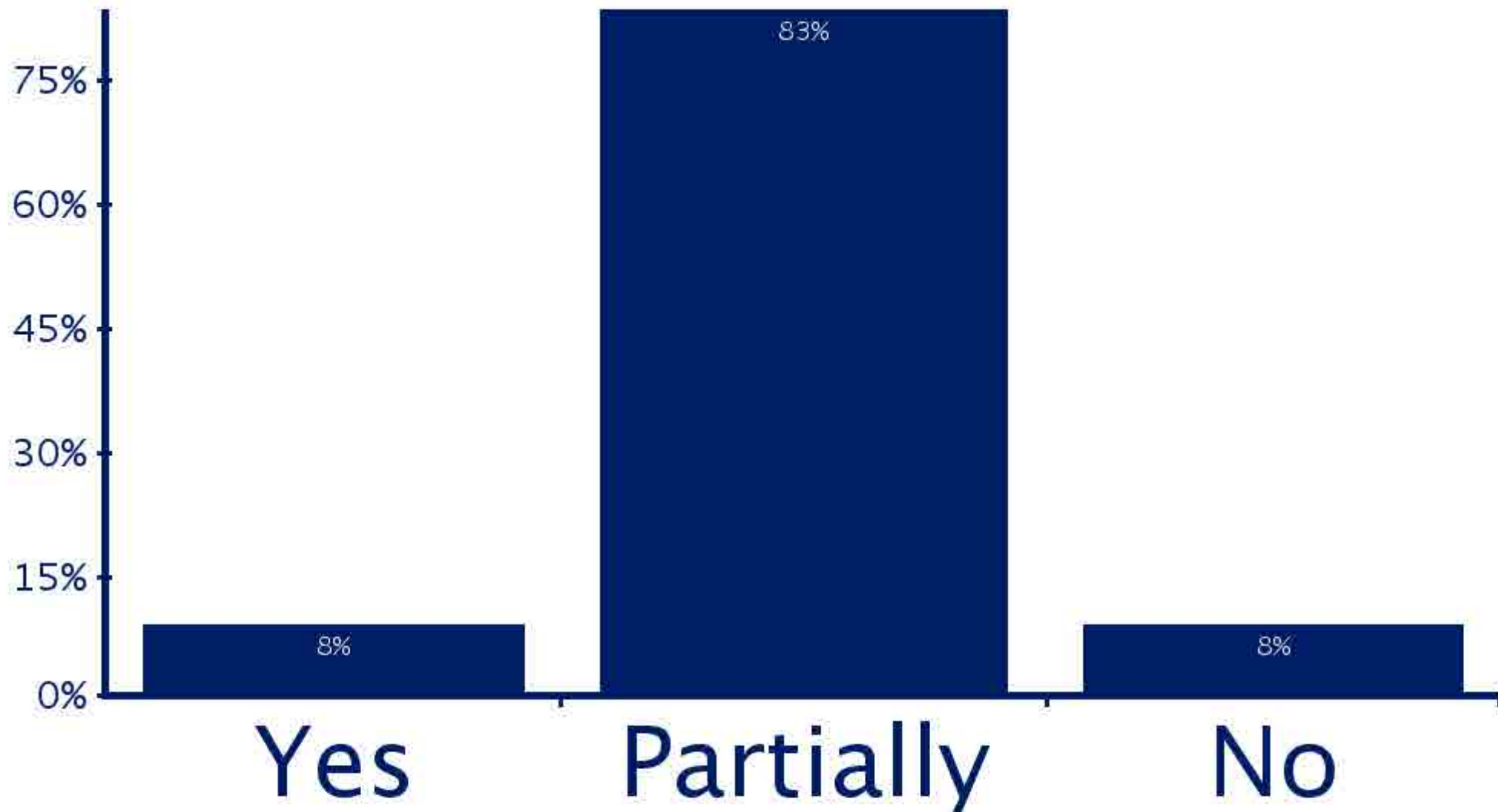
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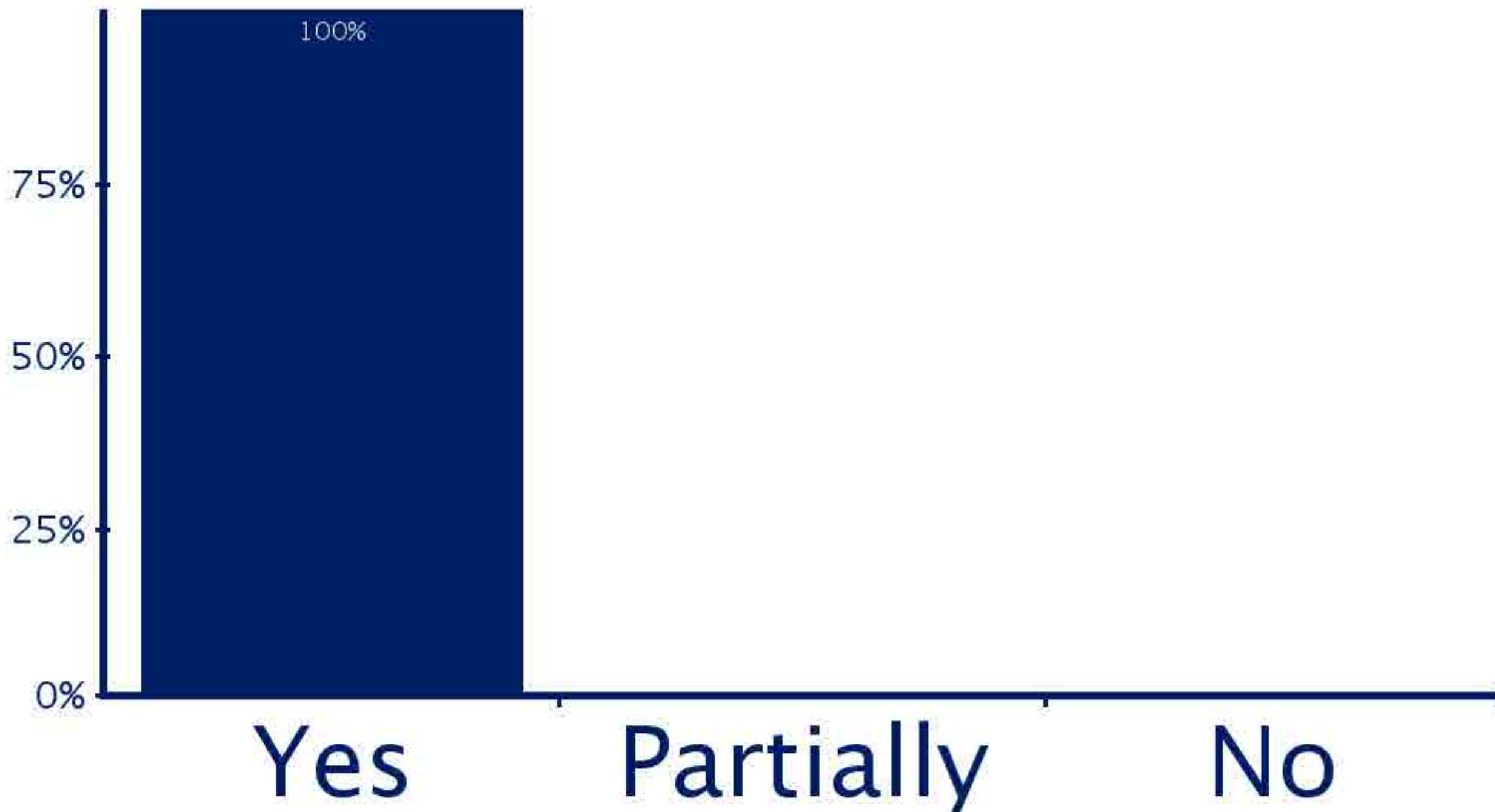
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The aim is to develop a process that enables the attainment of the above goals in a transparent, inclusive, and efficient manner.

Reinforce Campus Identity: Was this goal successfully implemented since the 2004 plan?



Reinforce Campus Identity: Is this goal still relevant and important?



Goals of the Plan

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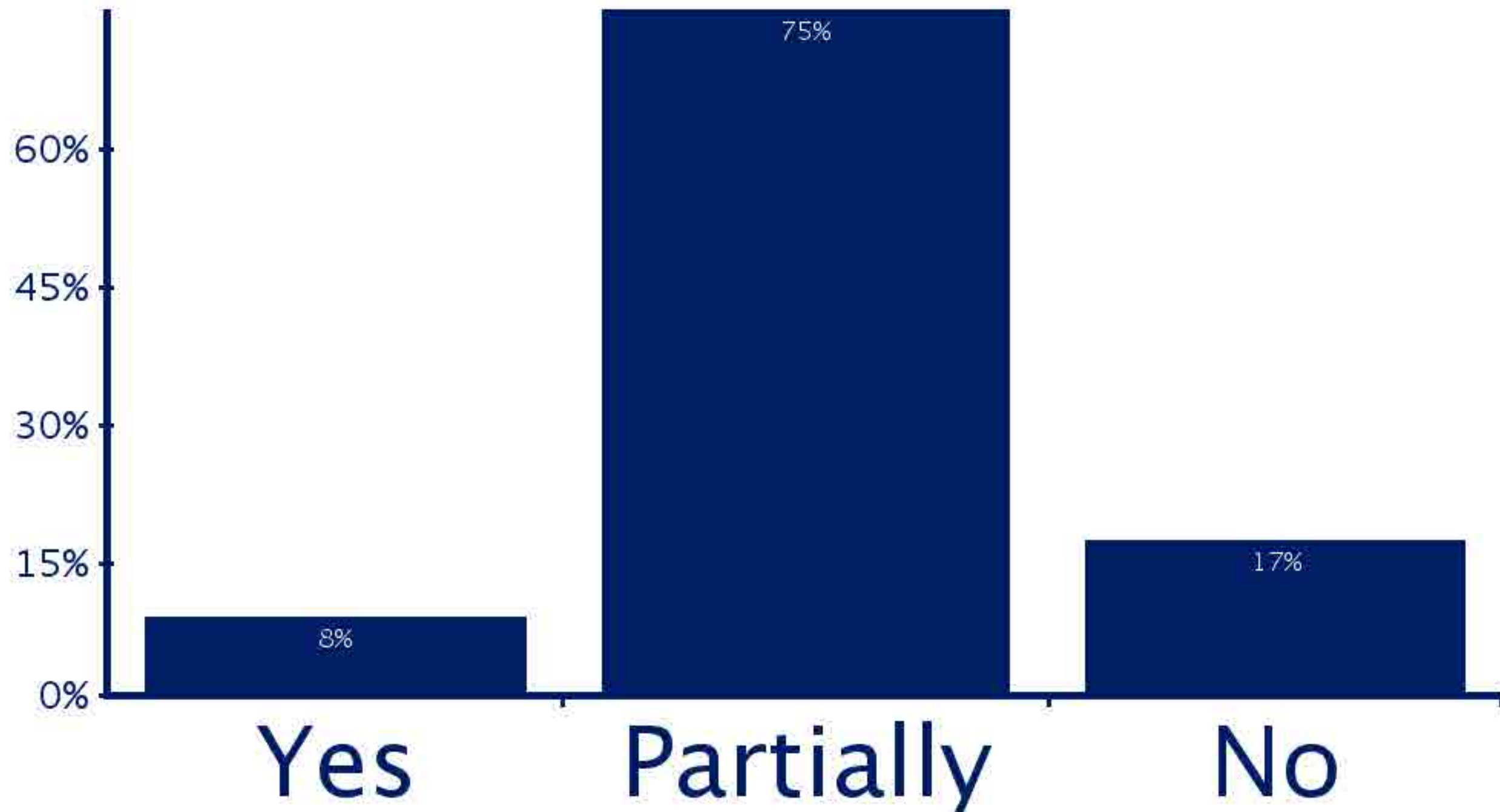
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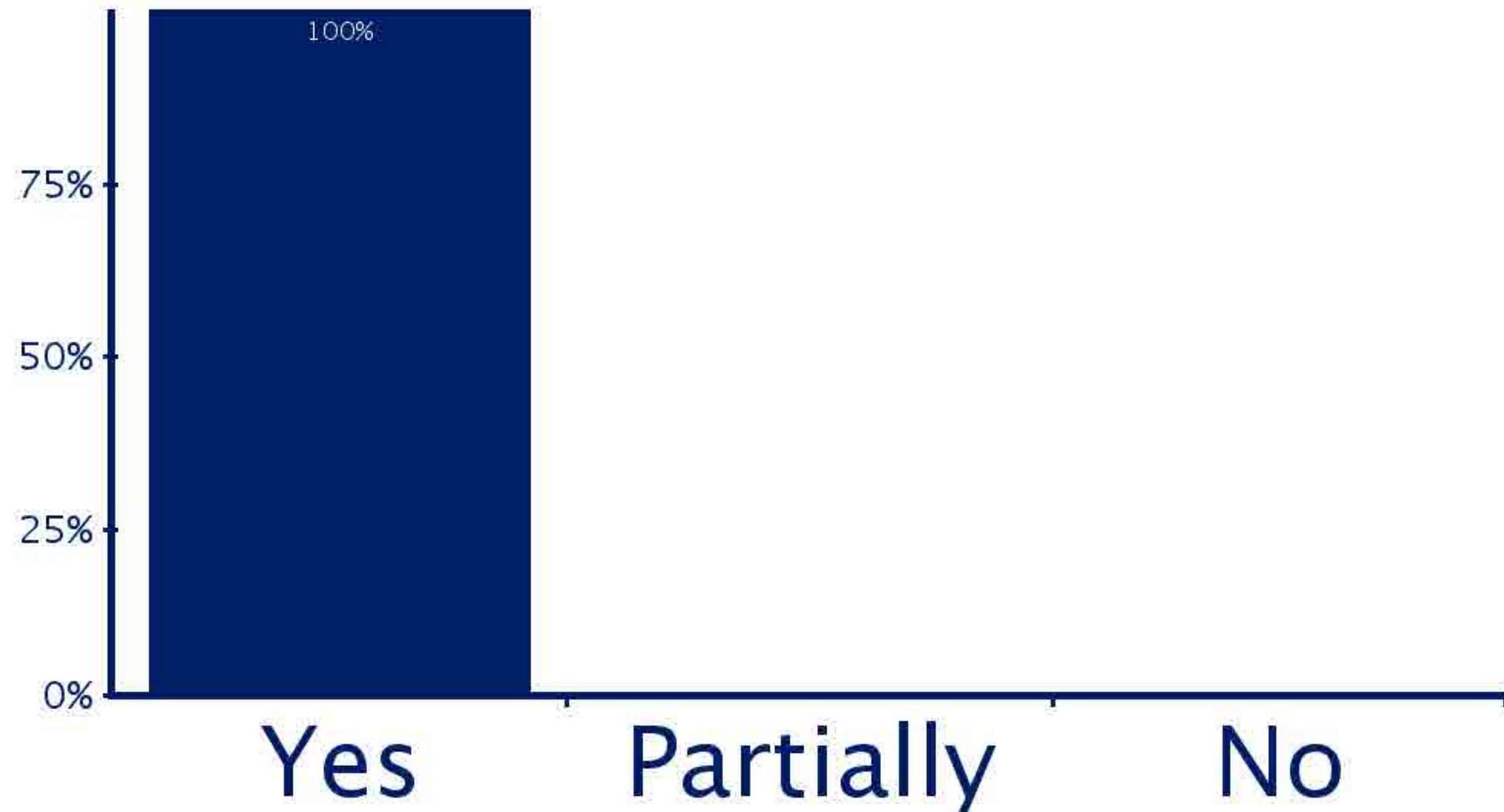
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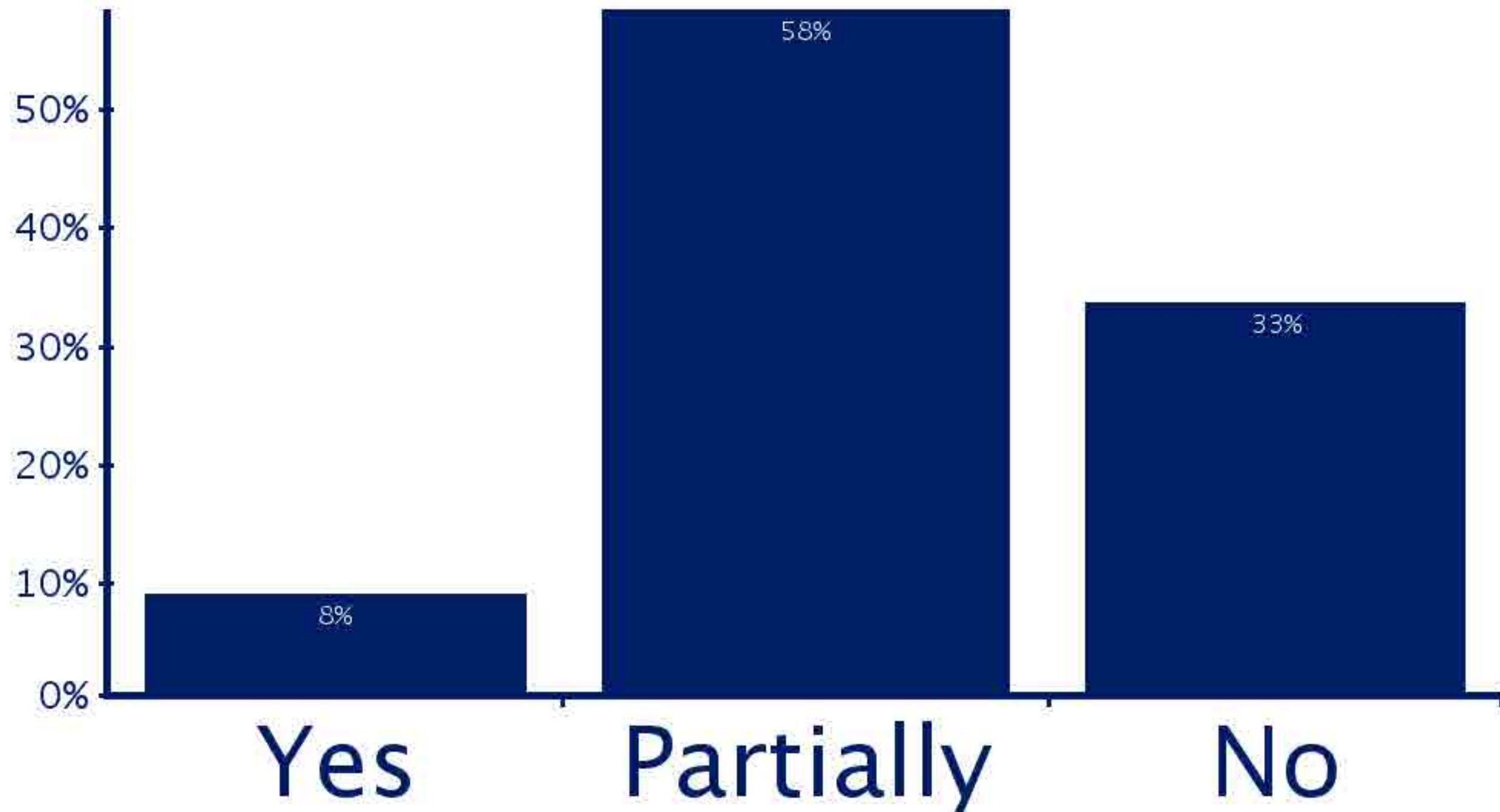
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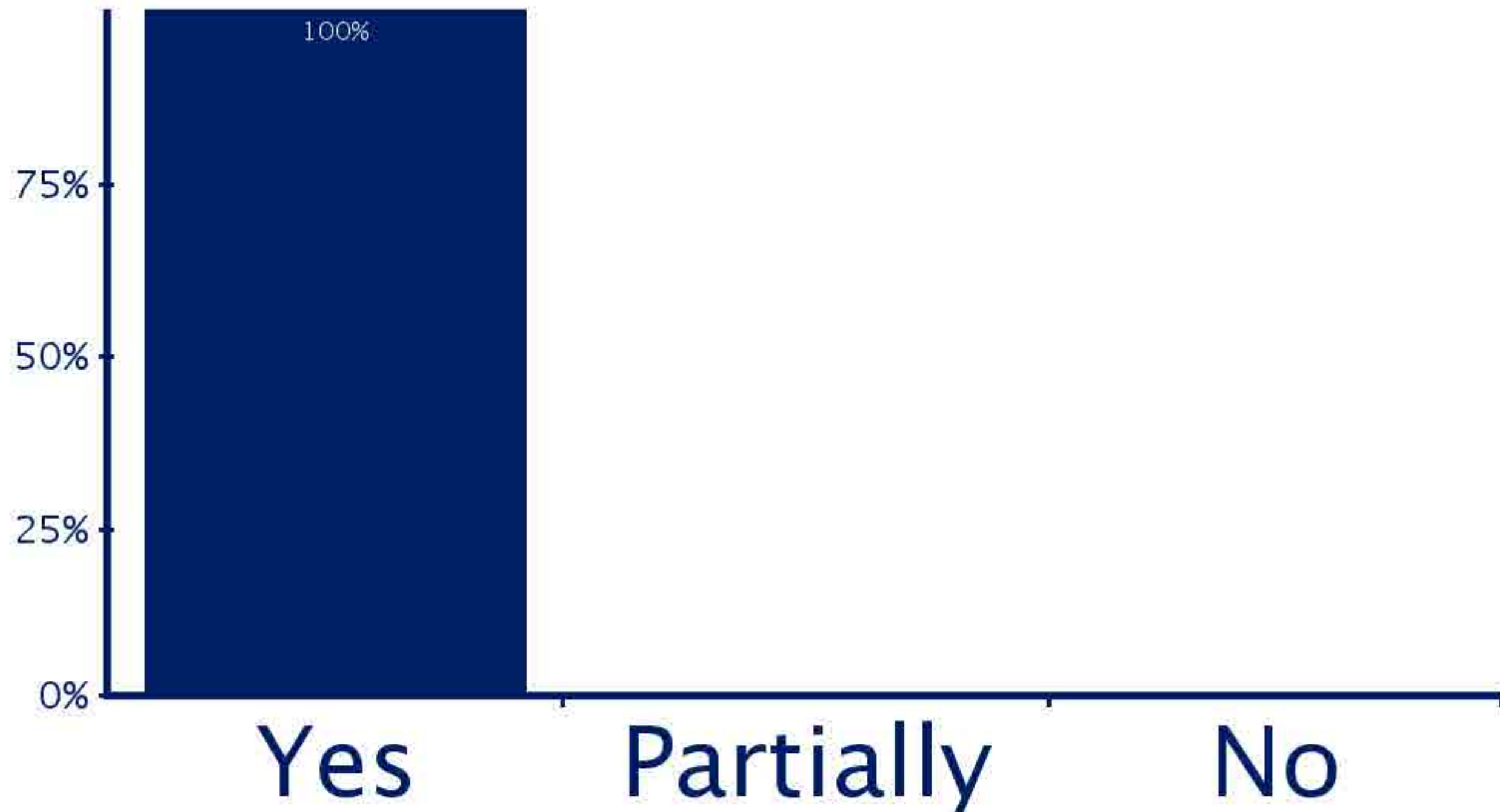
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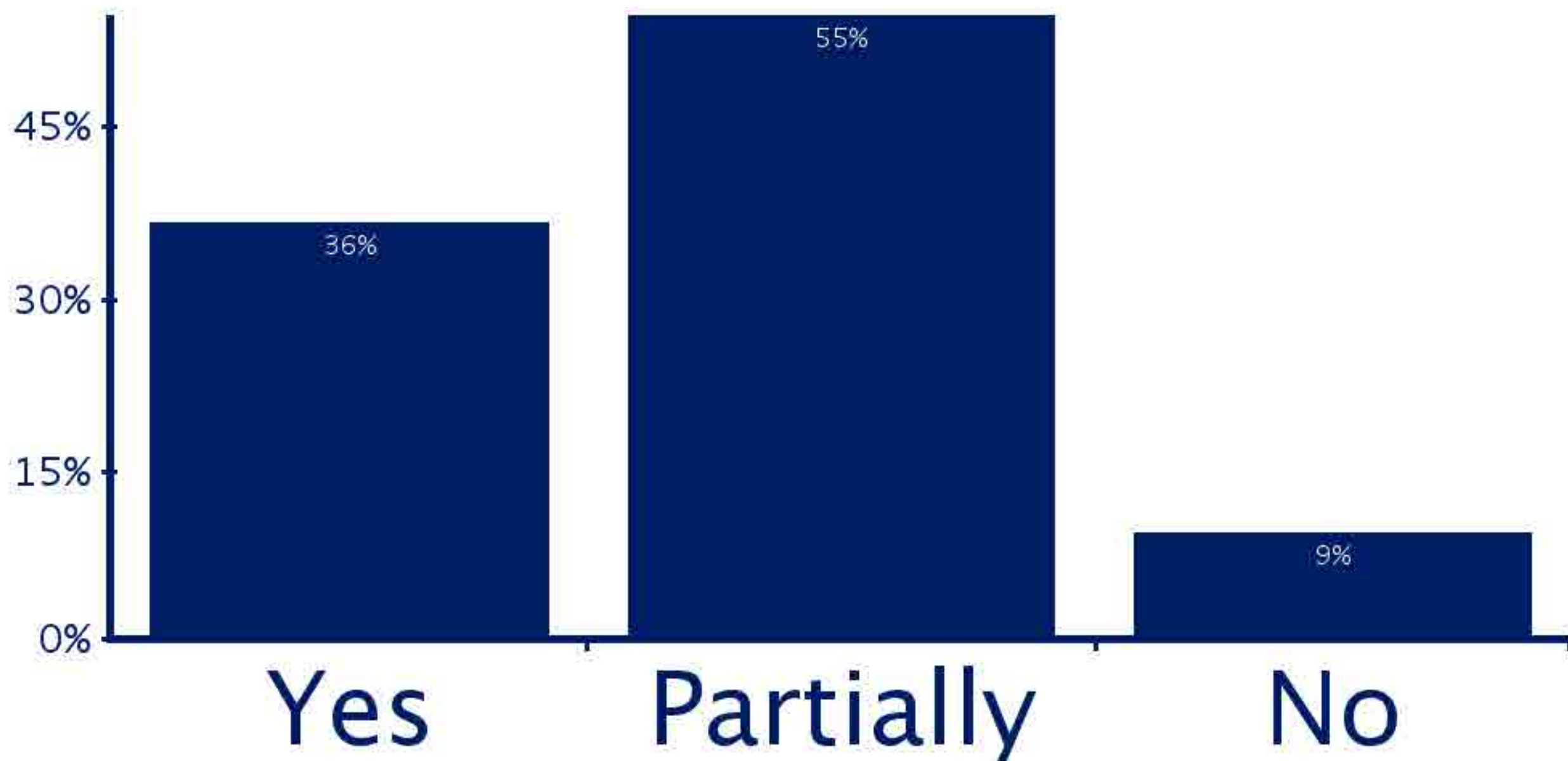
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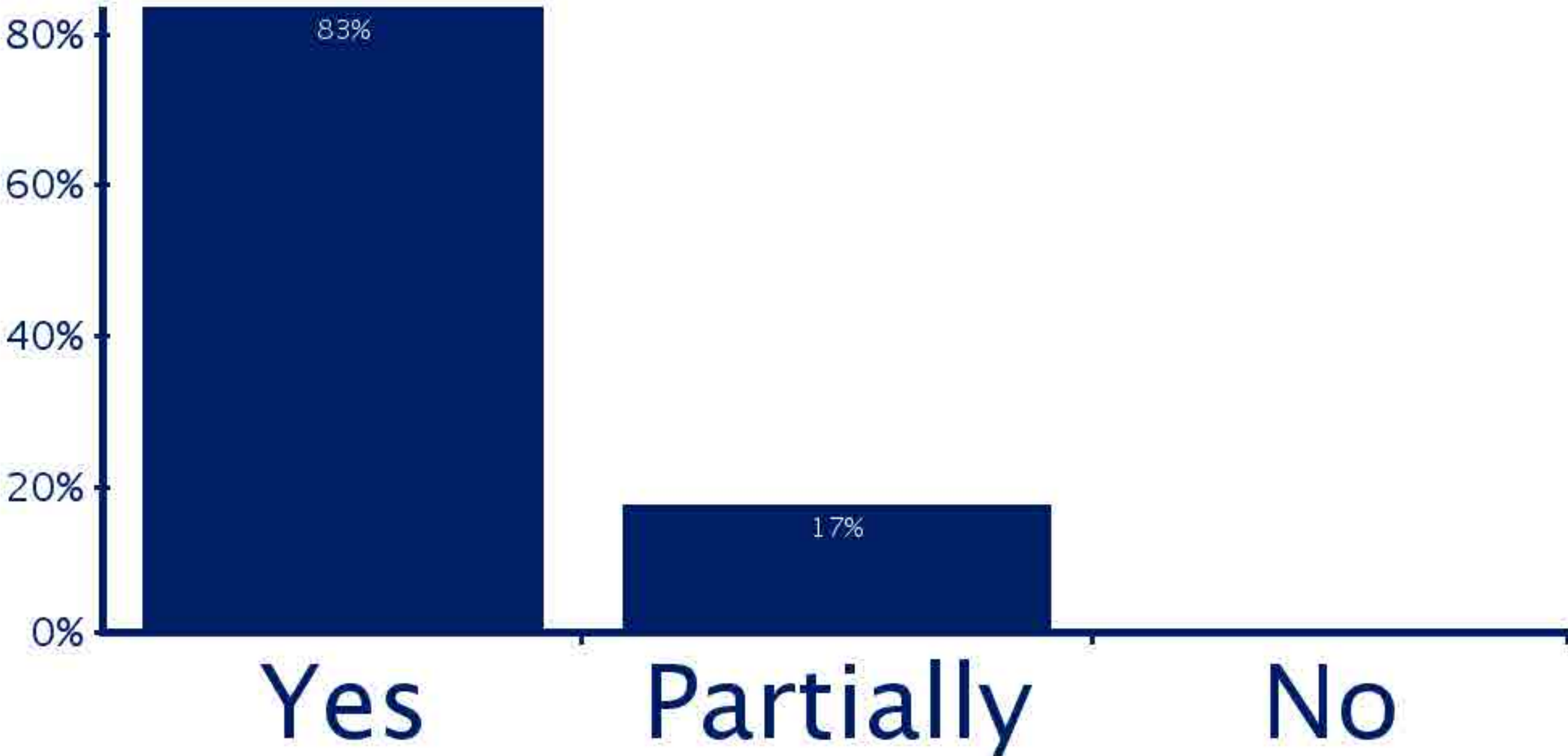
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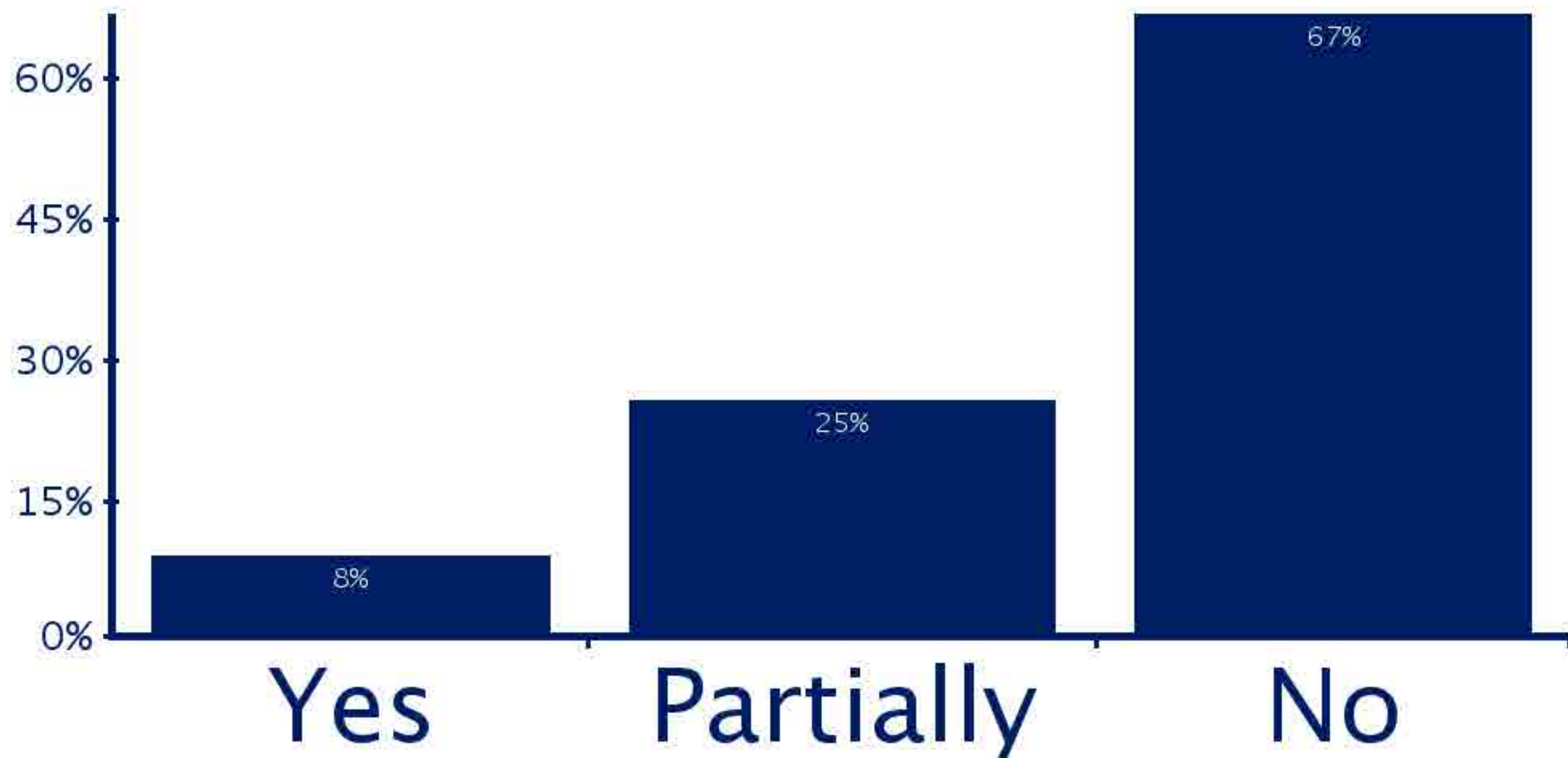
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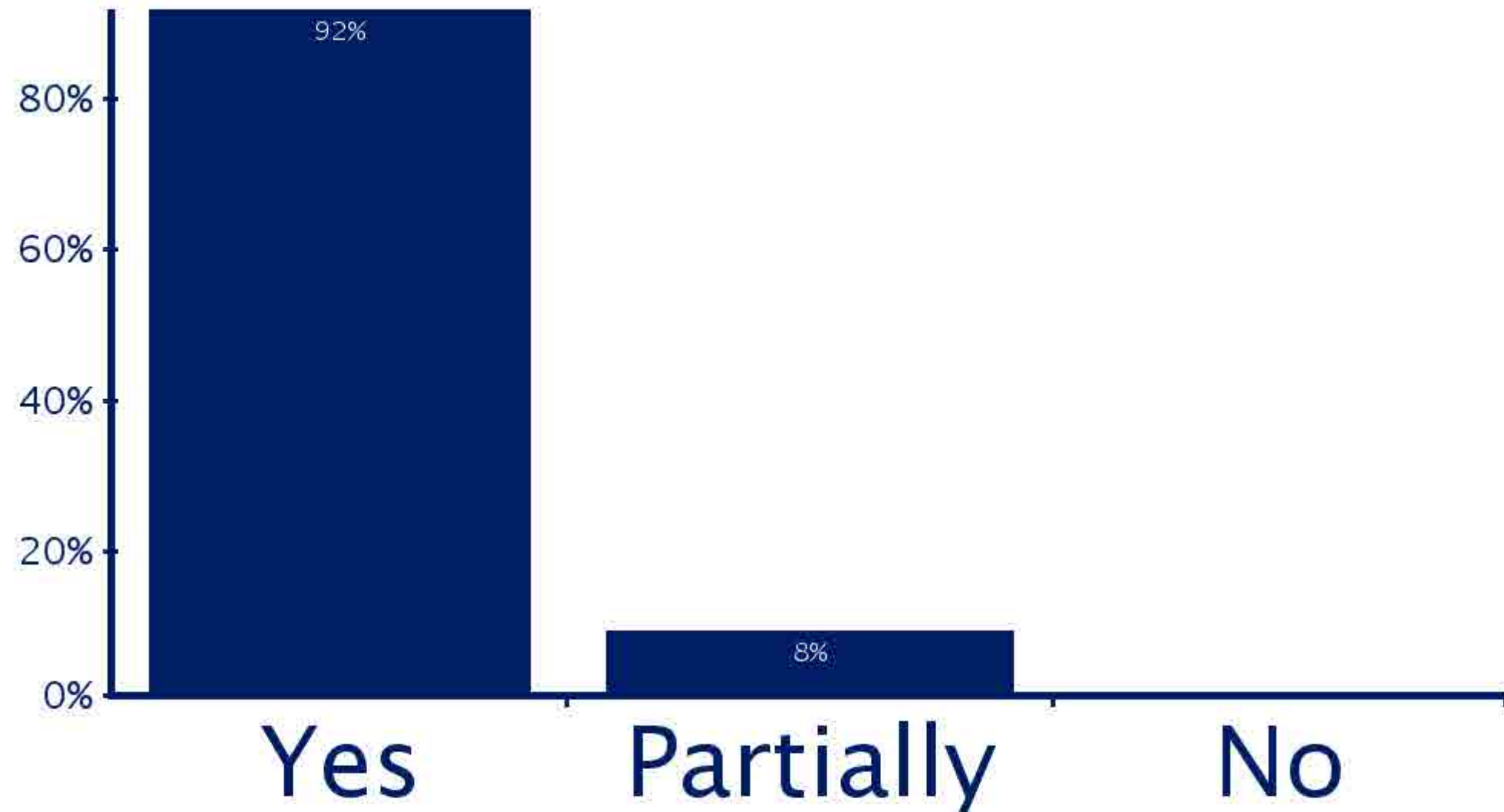
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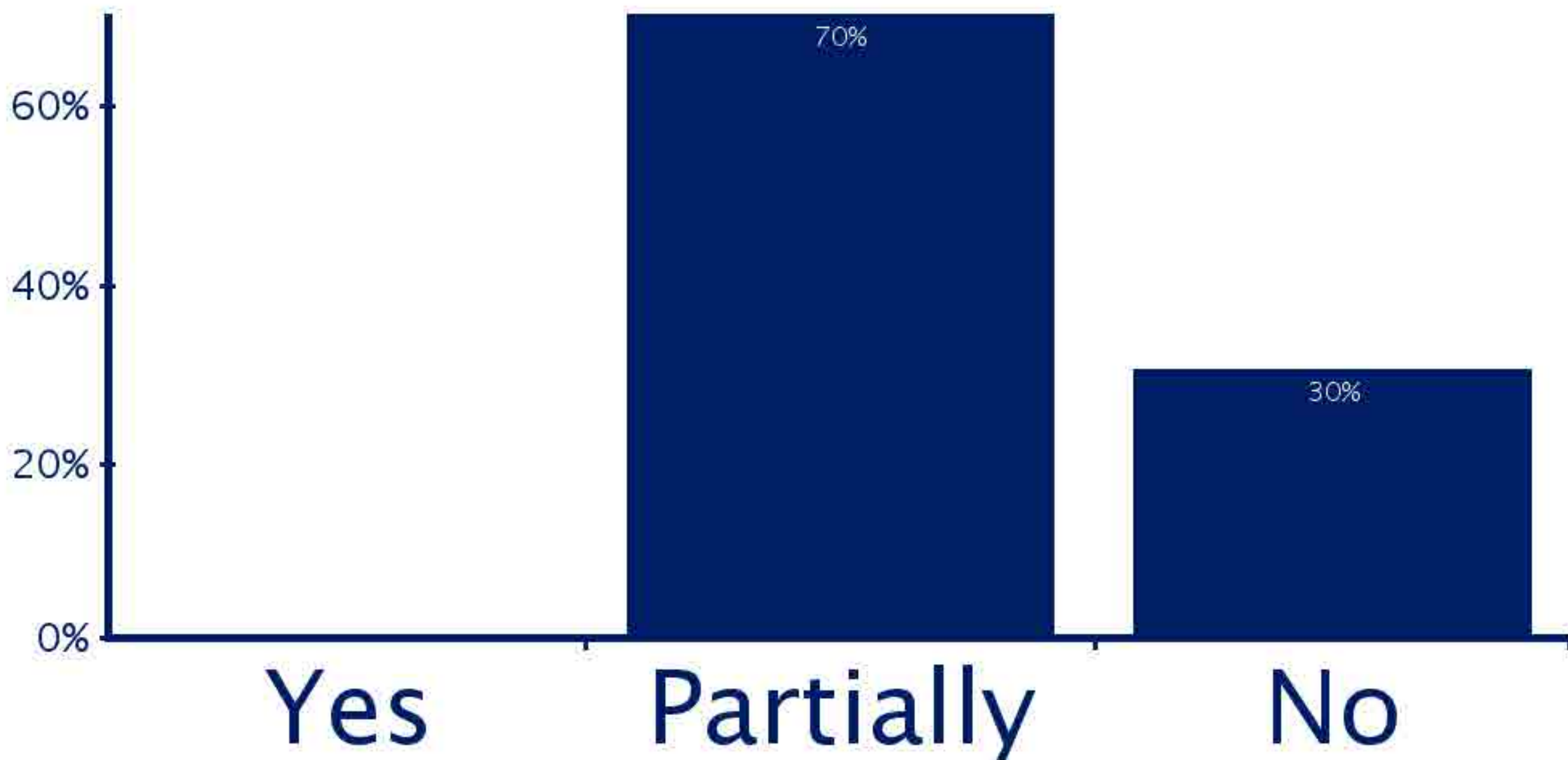
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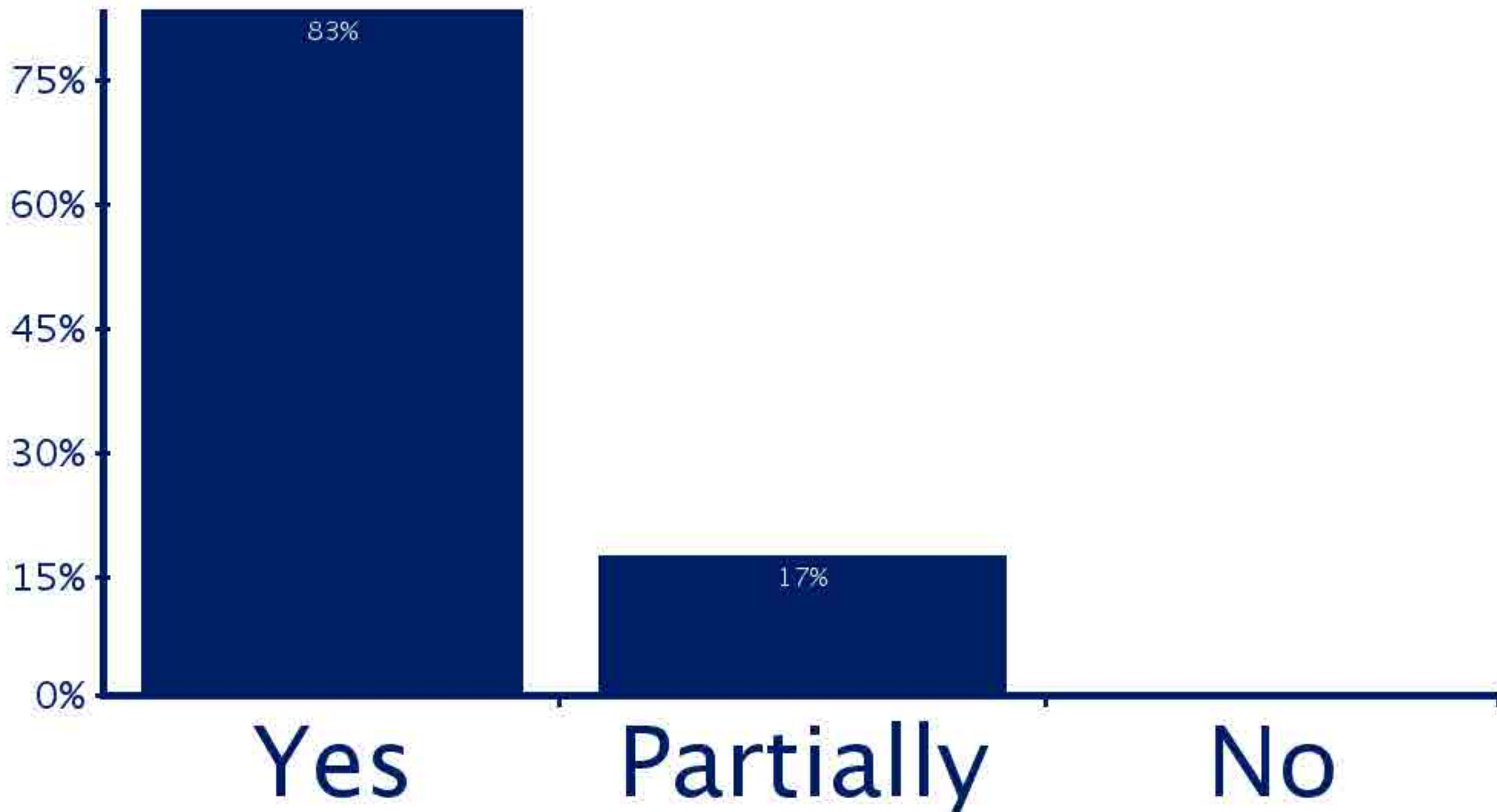
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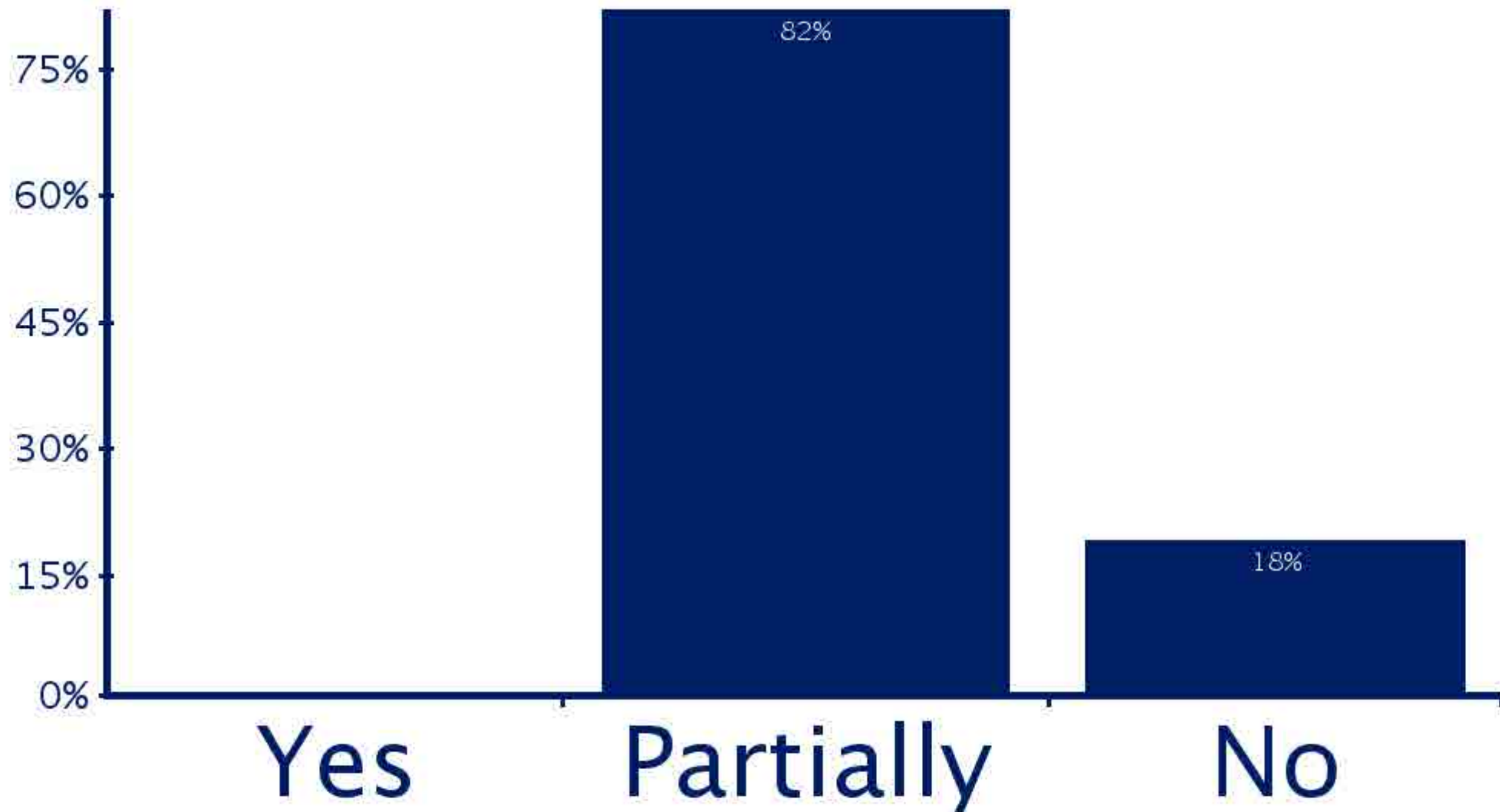
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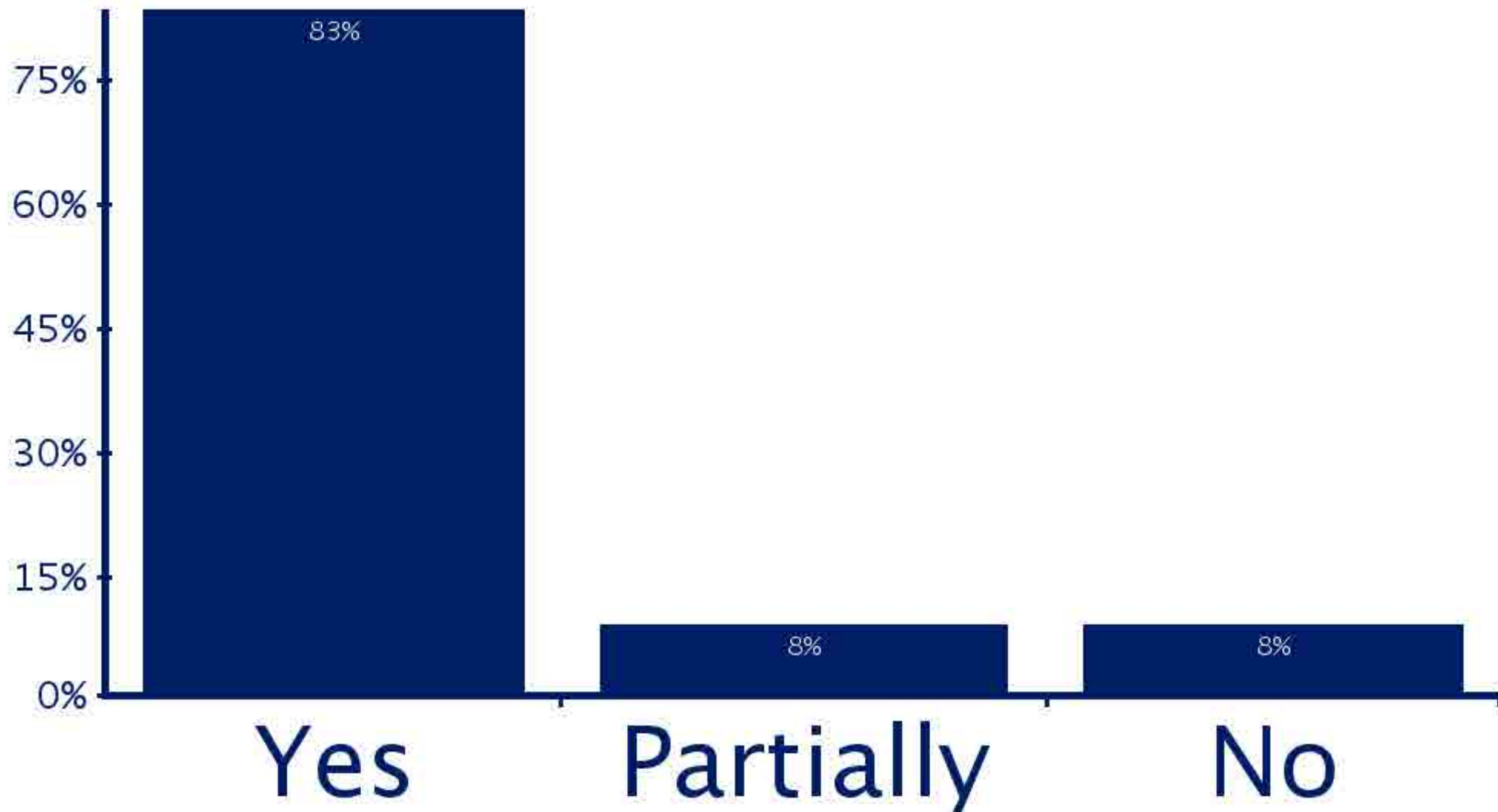
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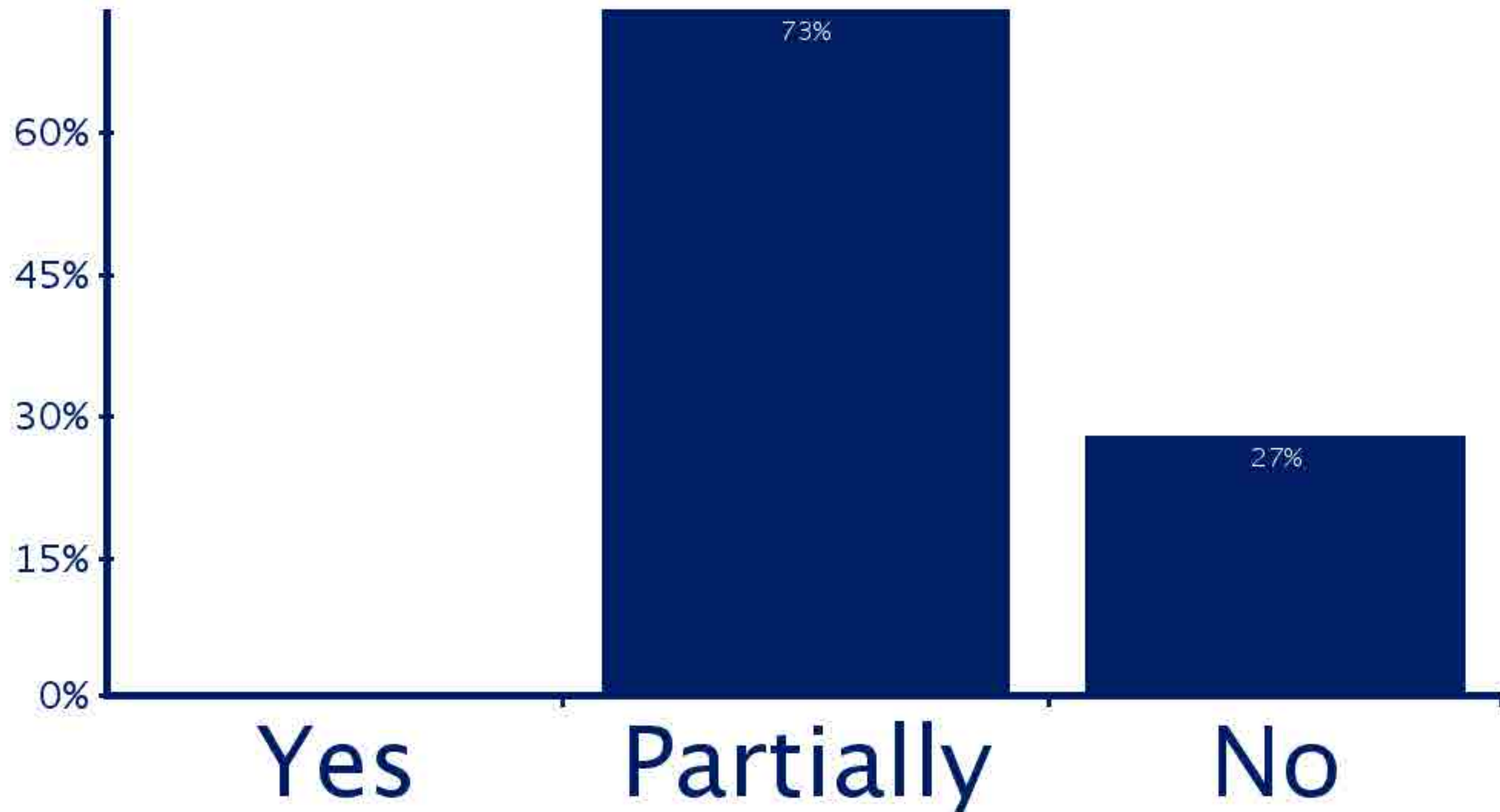
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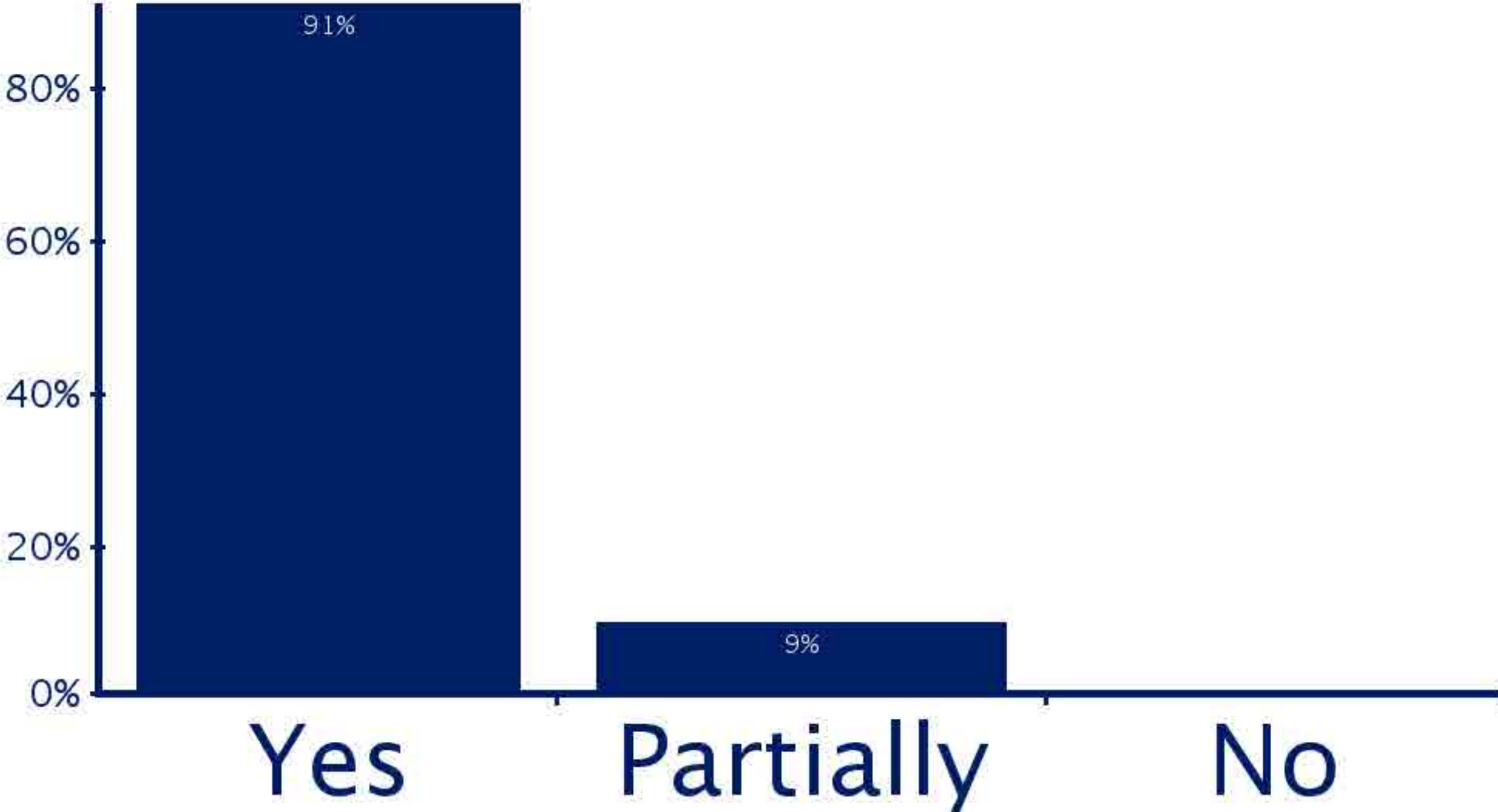
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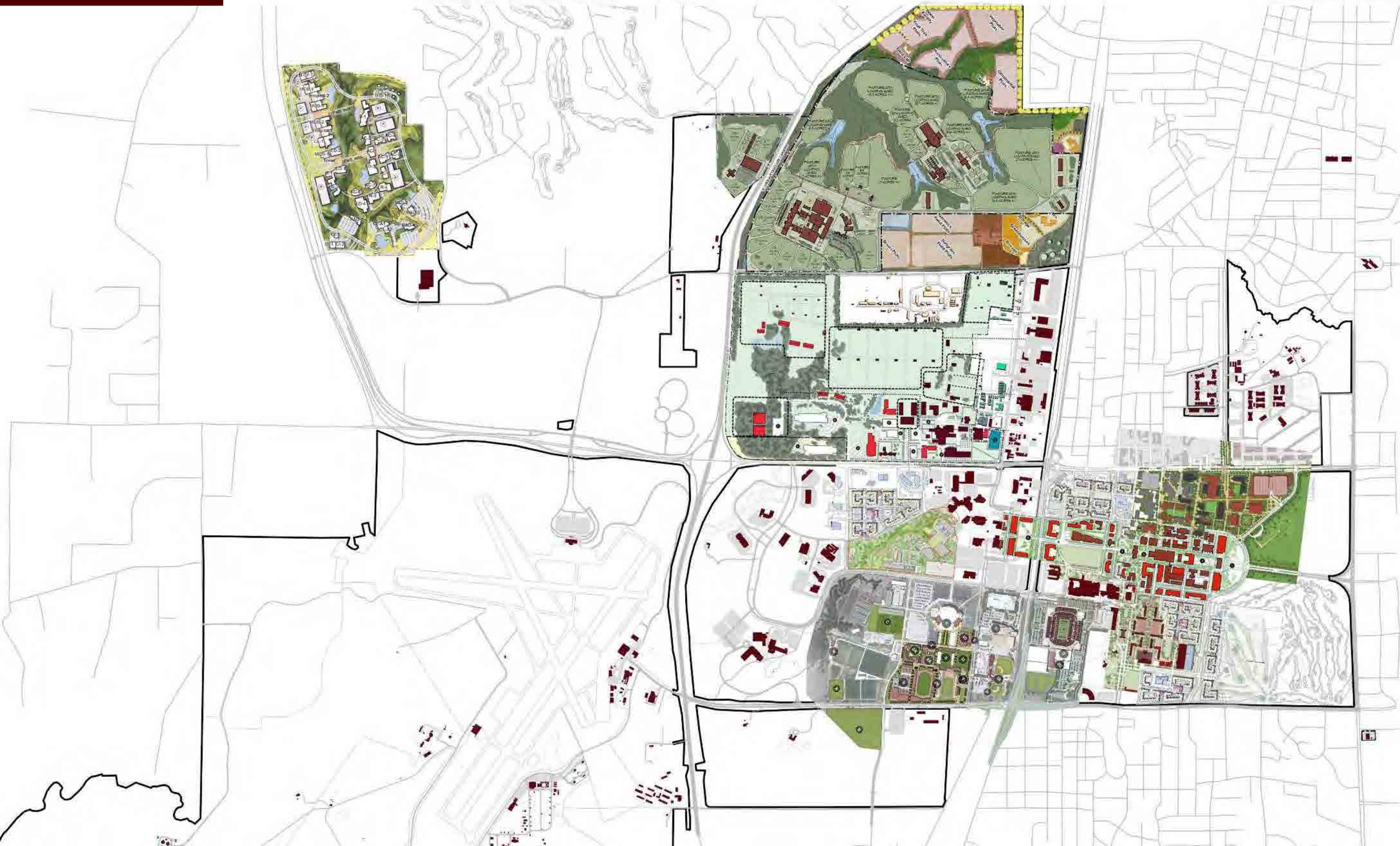


Develop a Supportive Process: Is this goal still relevant and important?



2004:

The District Plan Patchwork Quilt





OBSERVATIONS



observe: Sustainability Topics

- Campus Character Zones
- Campus Edge Conditions
- Campus Mobility
(Transportation, Bicycle, Pedestrian, Parking)
- Campus Use Distribution
- Utilities
- Energy Consumption
- Stormwater Management
- Materials Management
- Green Space Network



observe:

Campus Character Zones



observe : Open Green Space



observe:

Dense, Academic Core



observe :

Suburban



observe:

Underdeveloped

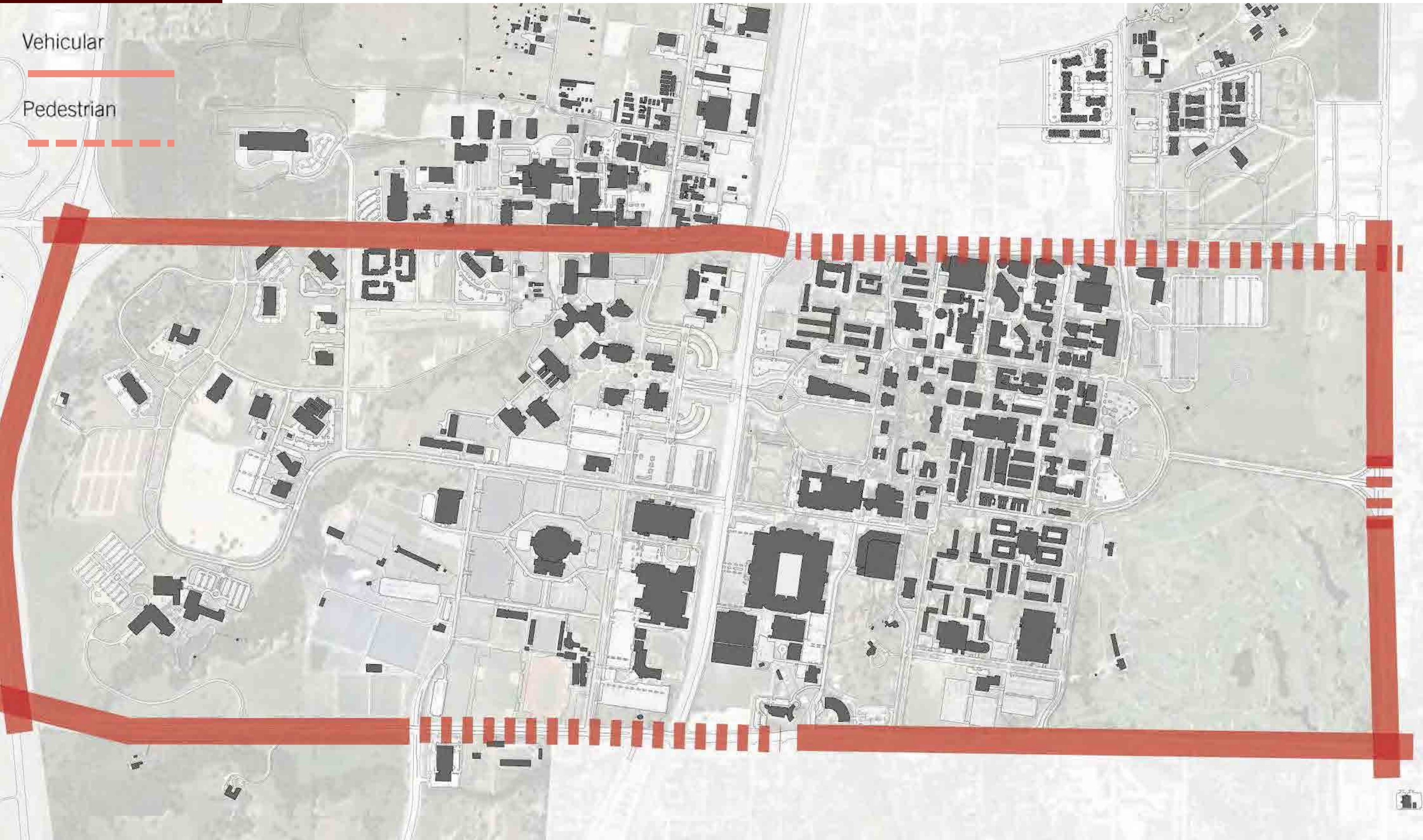


observe : Open Green Space

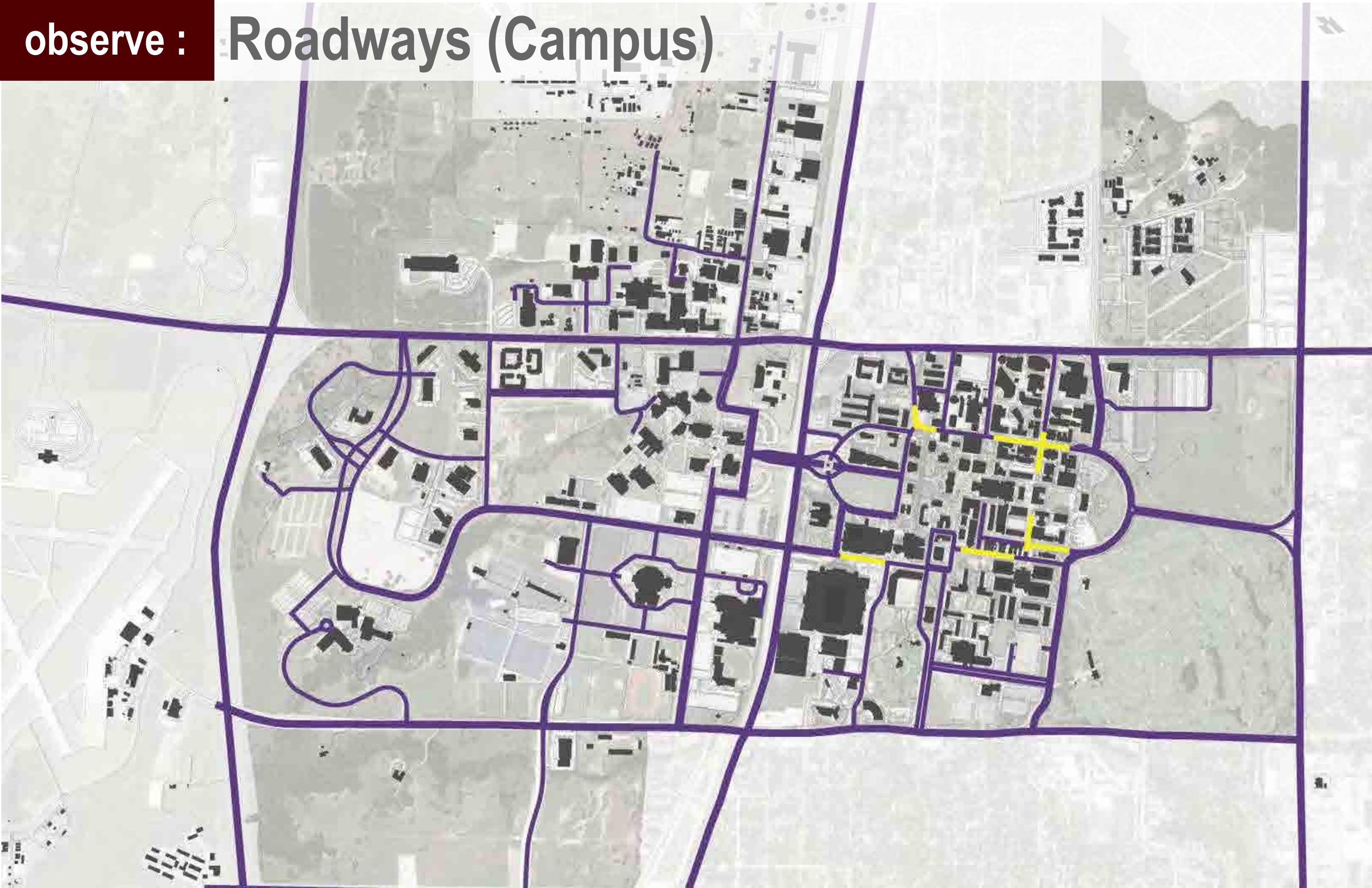


observe:

Campus Edge Conditions

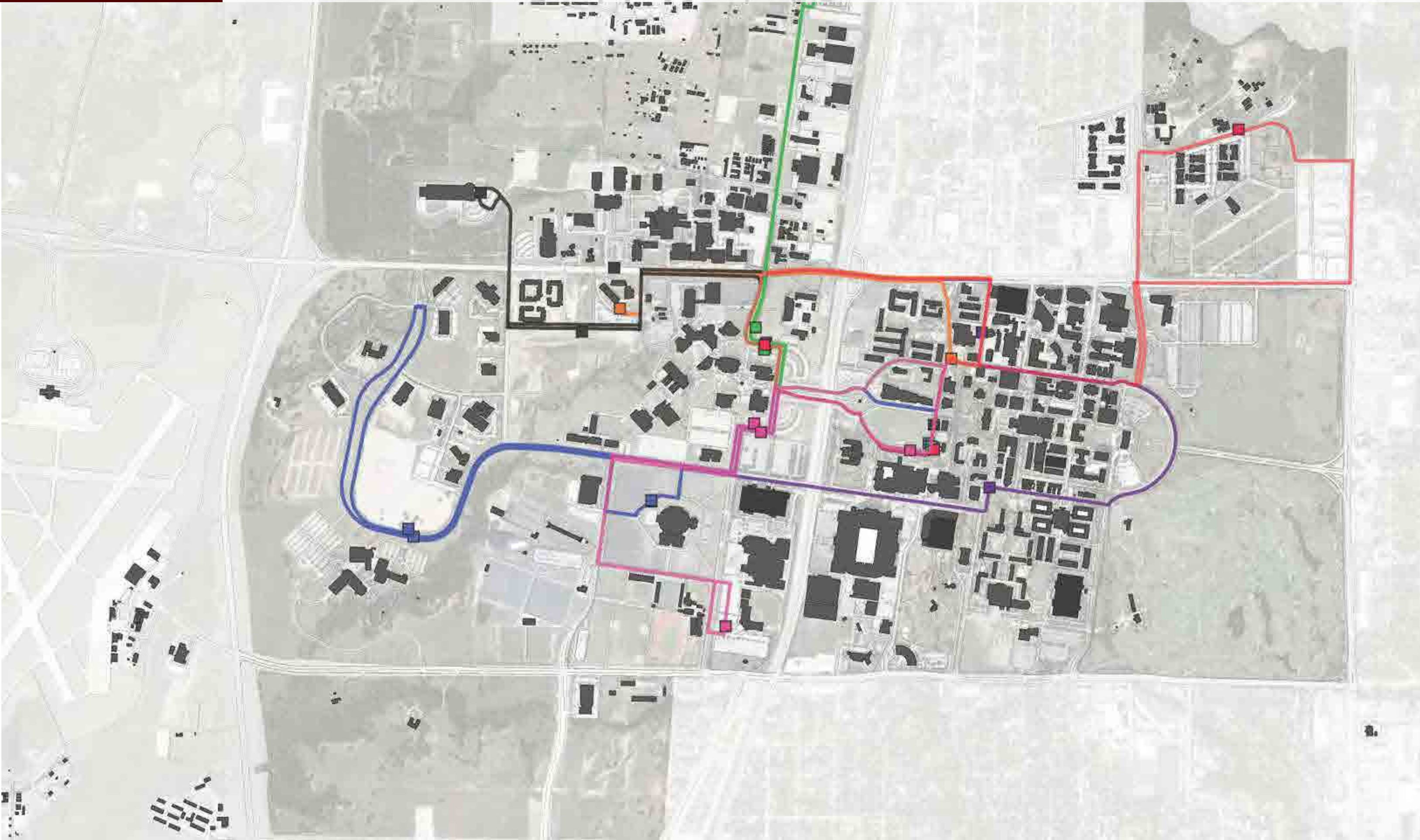


observe : Roadways (Campus)



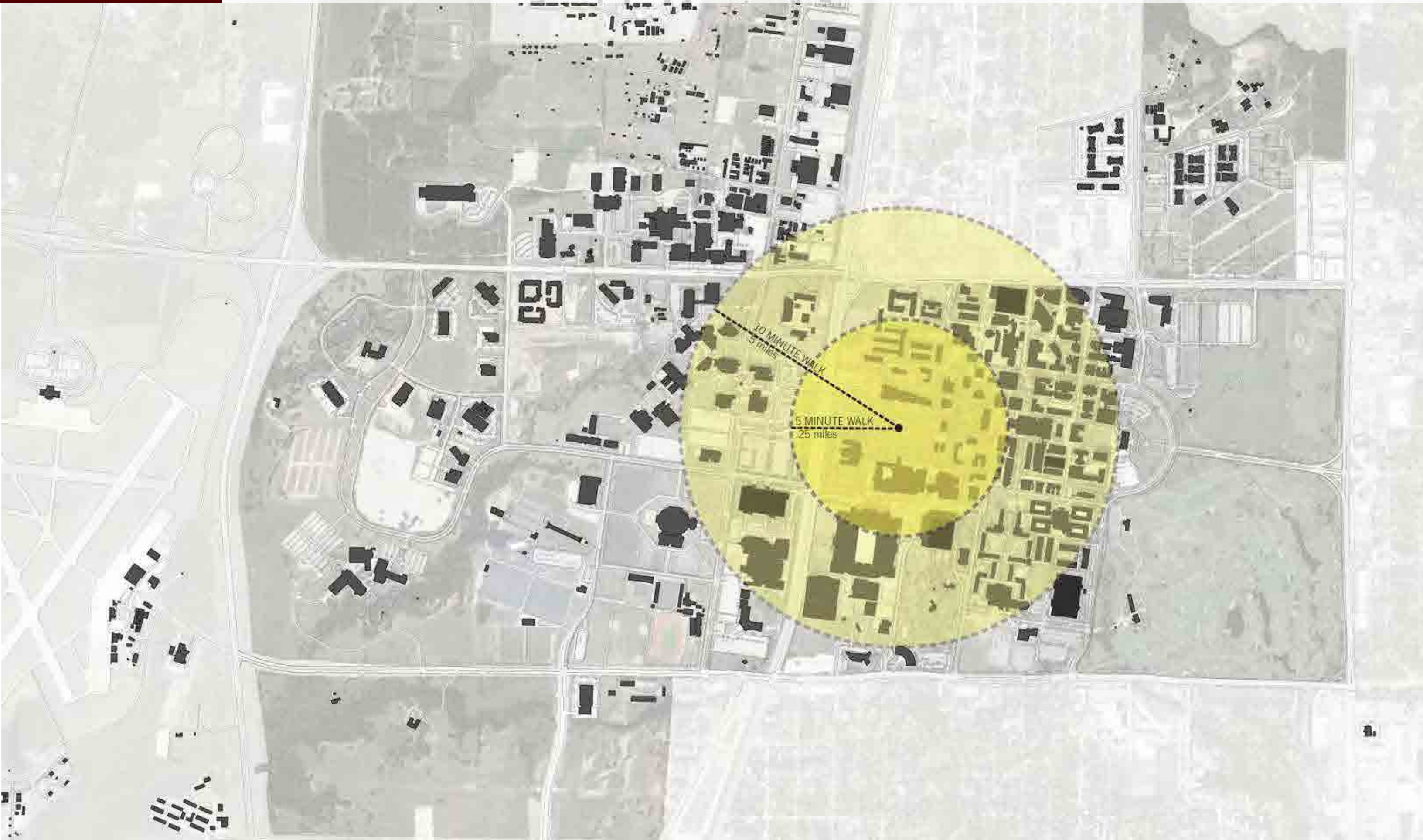
observe:

Aggie Spirit (On-Campus Routes)



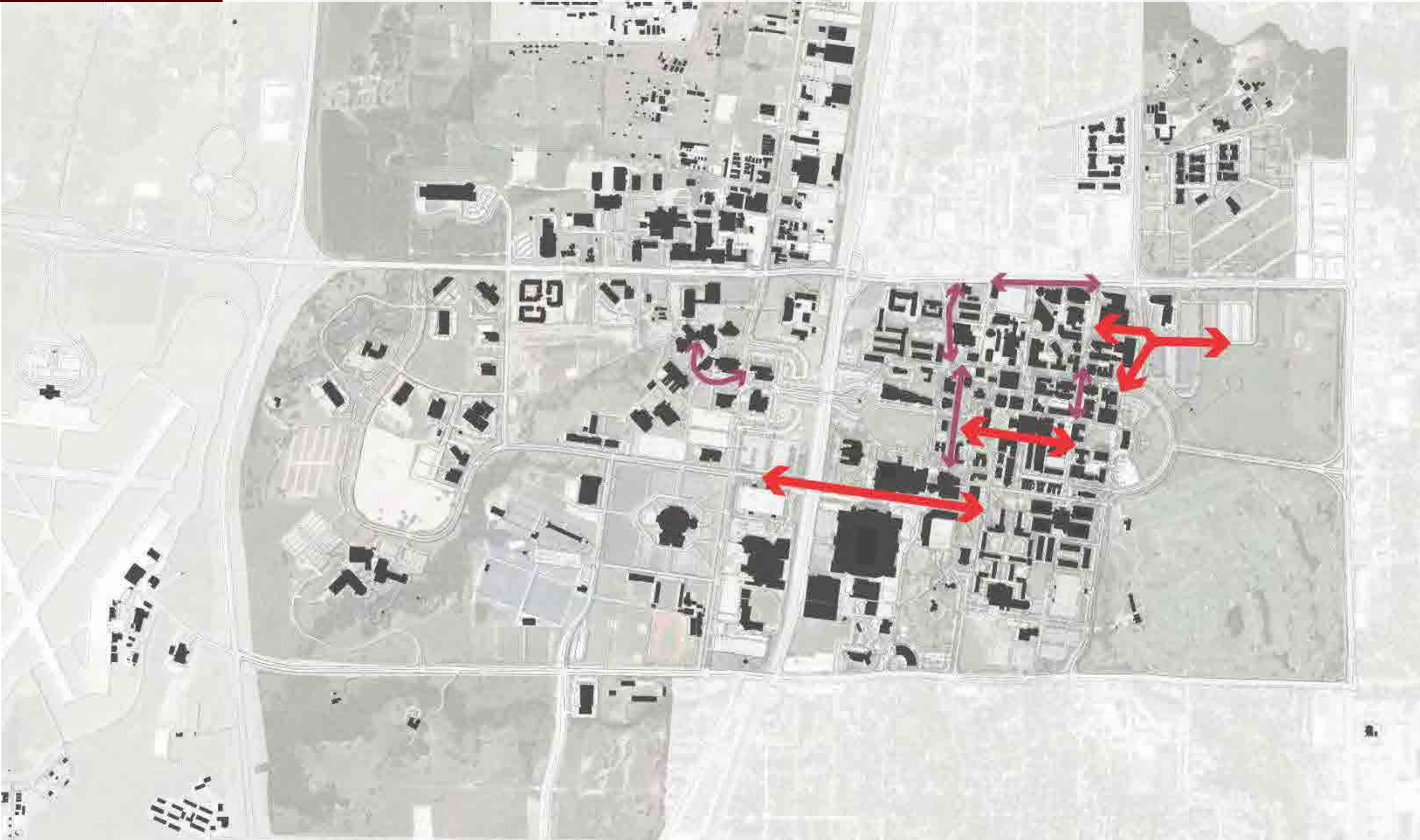
observe:

Pedestrian Walking Radius



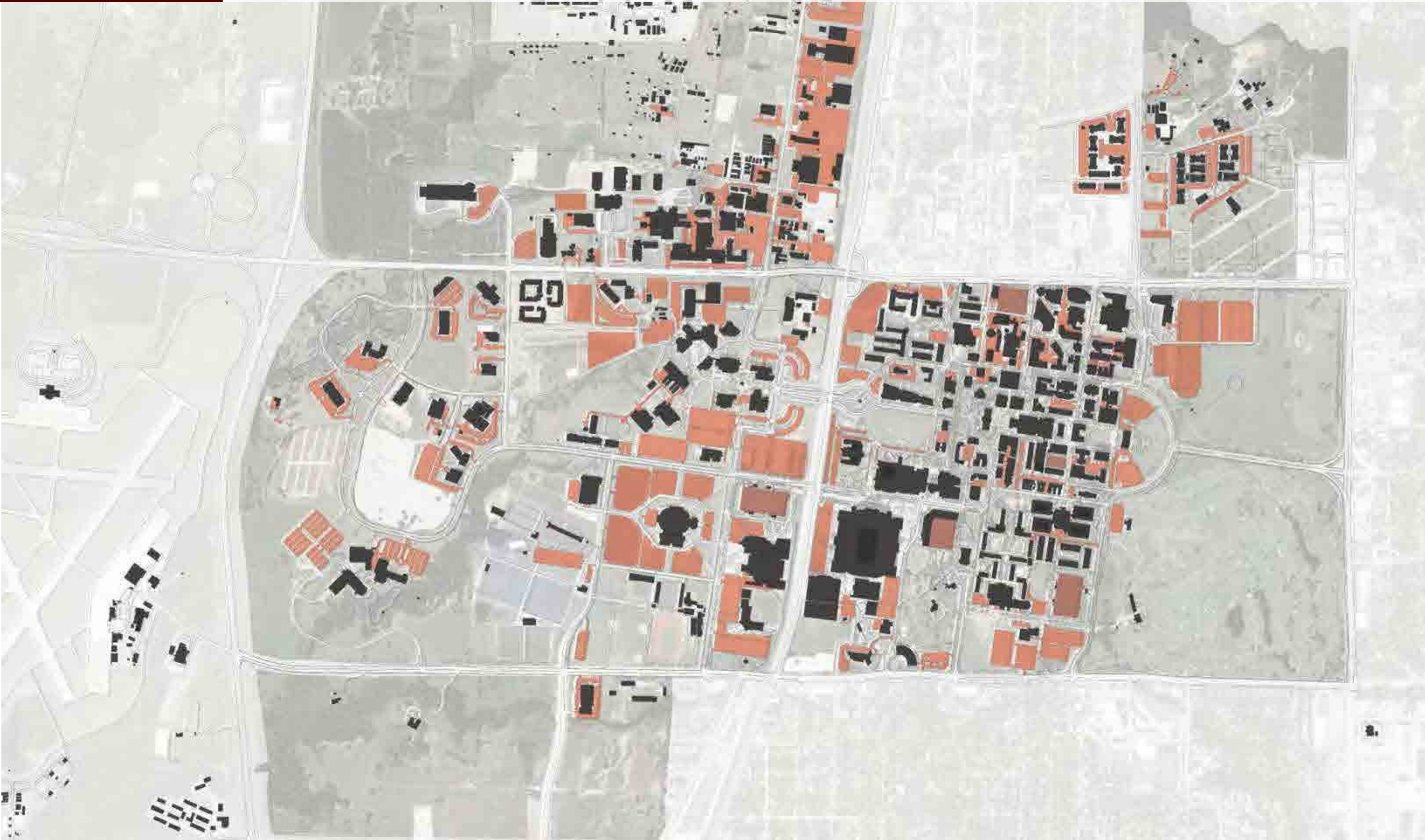
observe:

Concentrated Pedestrian Zones



observe:

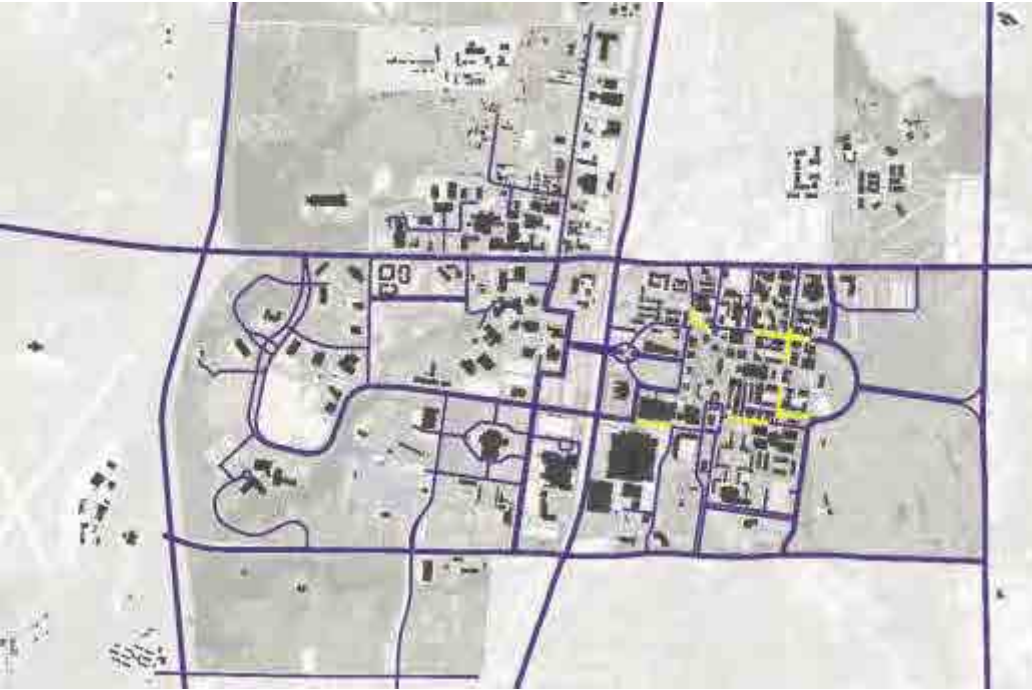
Campus Parking Locations



observe:

All Systems

ROADWAYS



SHUTTLE ROUTES



BICYCLE ROUTES



WALKING RADIUS



CONCENTRATED PEDESTRIAN ZONES



PARKING LOCATIONS



observe:

Use Distribution

ACADEMIC



HOUSING



ATHLETICS & RECREATION



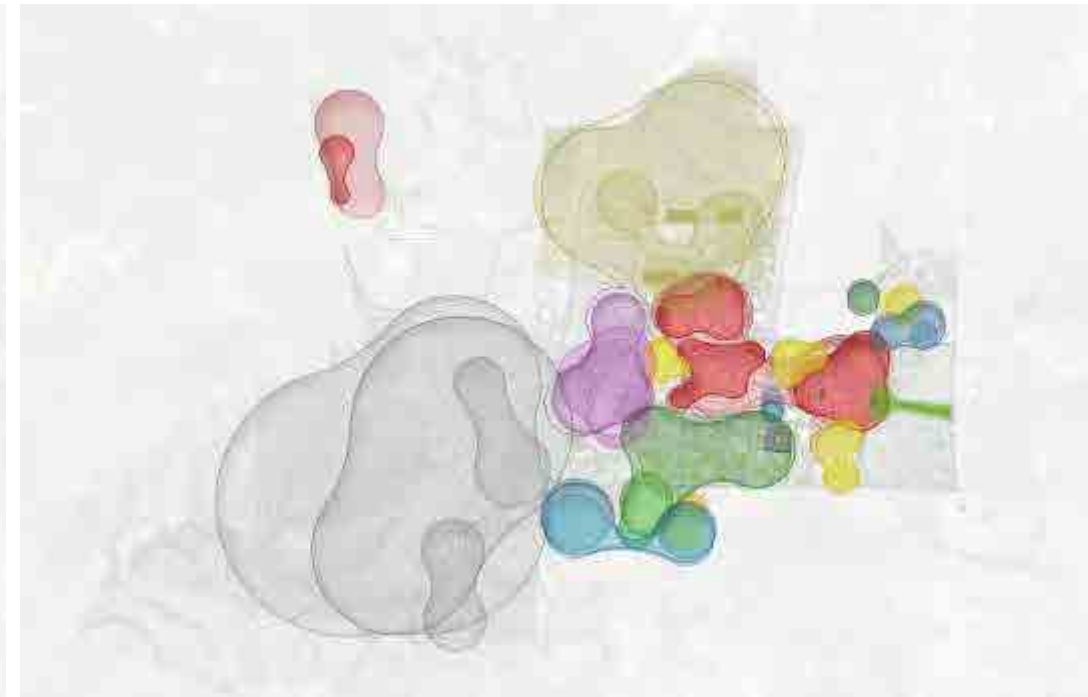
RESEARCH



VET MED & AGRILIFE



PARTNERSHIPS



observe:

Use Distribution Overlay



observe:

Roadways



observe:

Aggie Spirit (On-Campus Routes)



observe:

Existing and Proposed Bicycle Routes



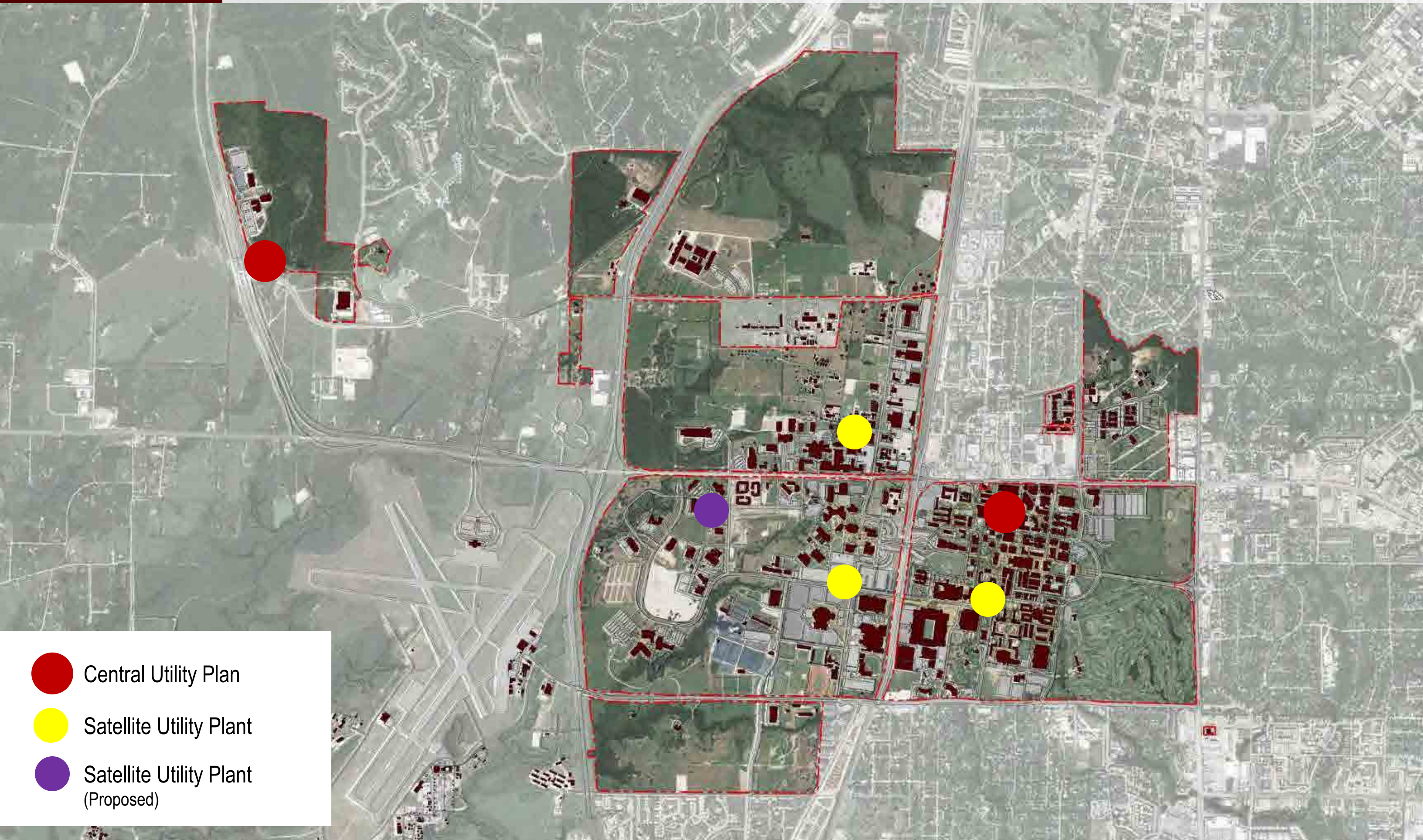
observe:

Composite Systems



analyze:

CUP & SUP Locations



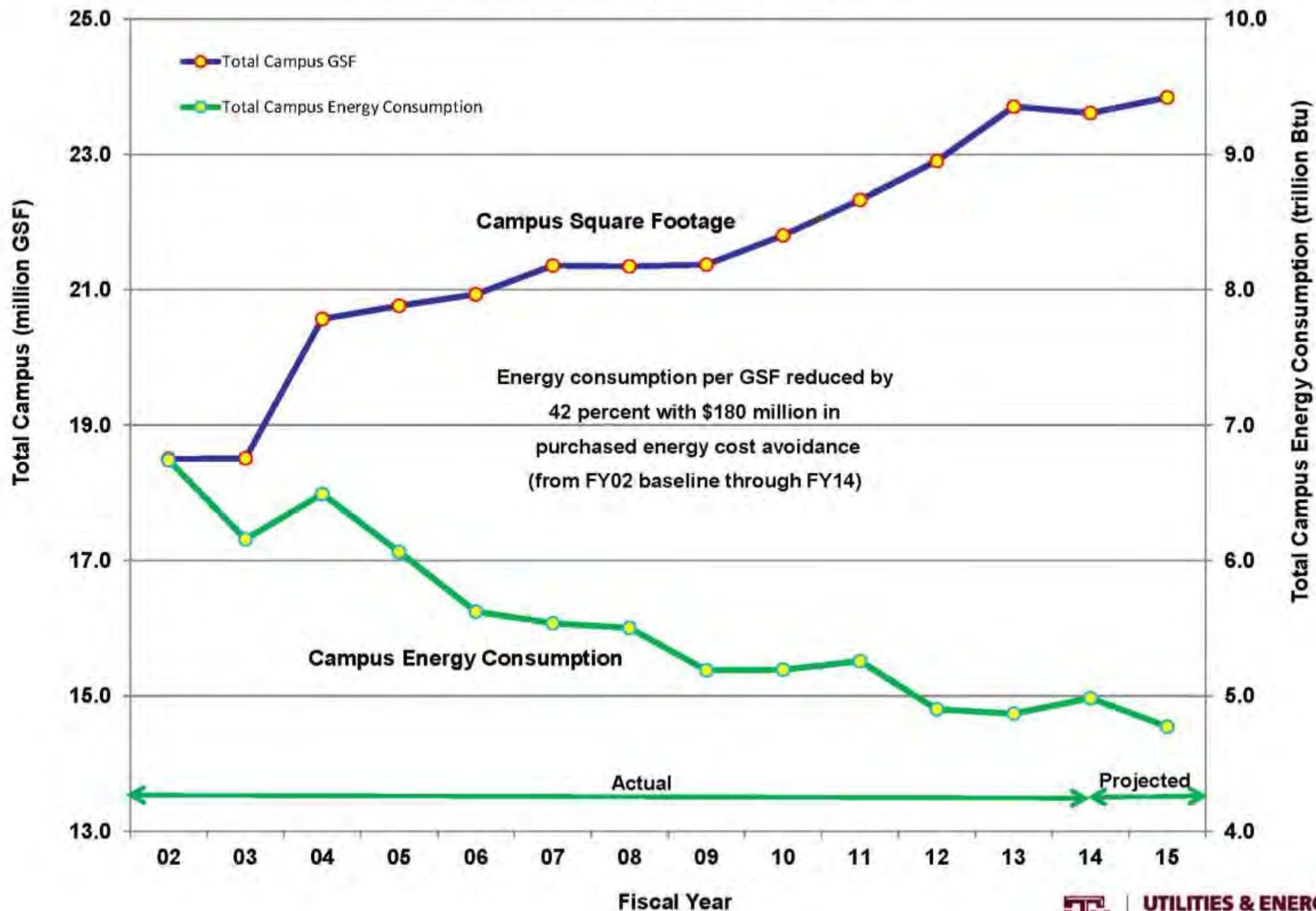
 Central Utility Plan

 Satellite Utility Plant

 Satellite Utility Plant
(Proposed)

Energy Consumption

Campus Size vs Energy Consumption
Texas A&M University, College Station, Texas

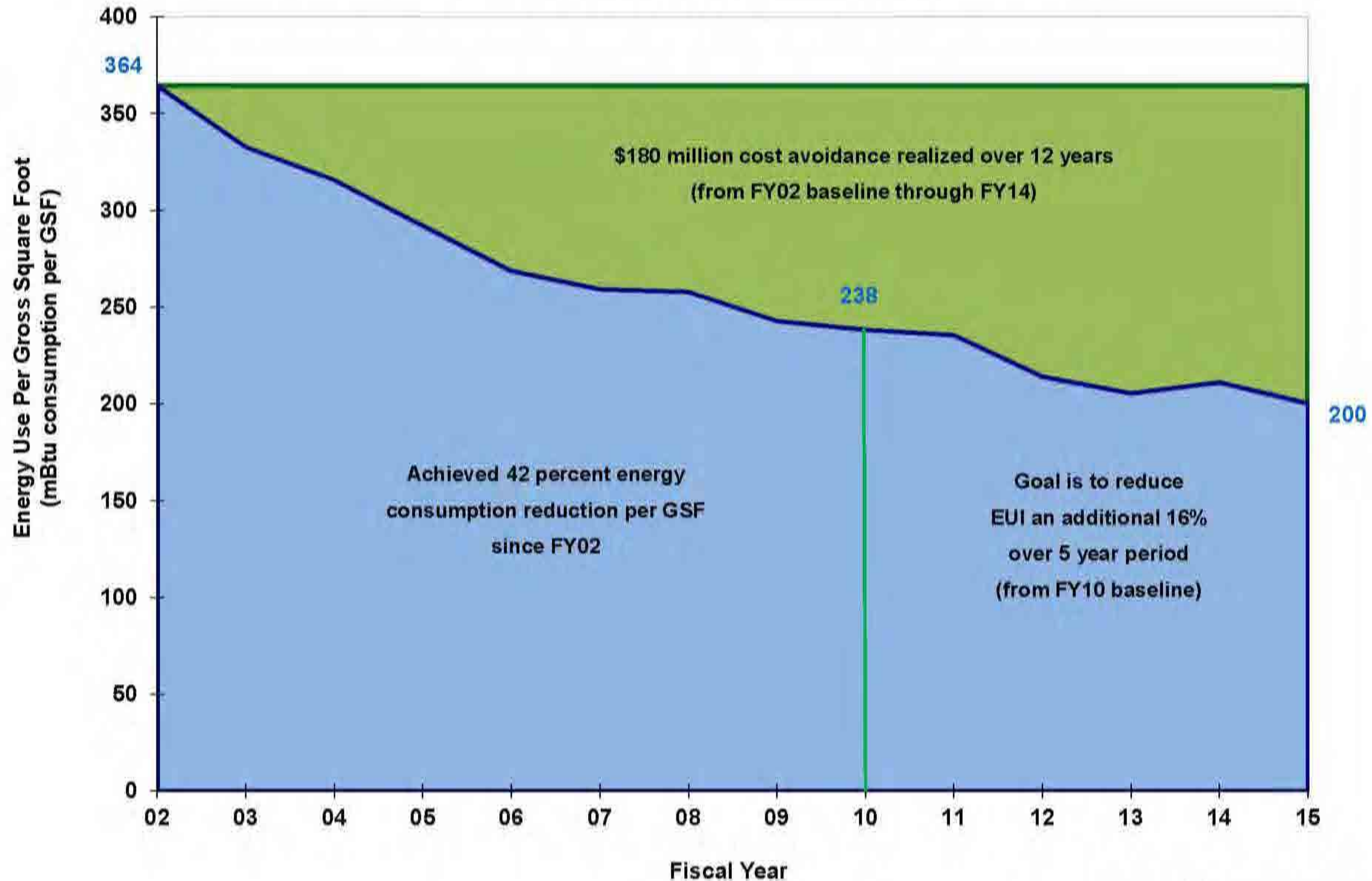


analyze:

Energy Consumption

Energy Use Index (Energy Consumption per GSF)

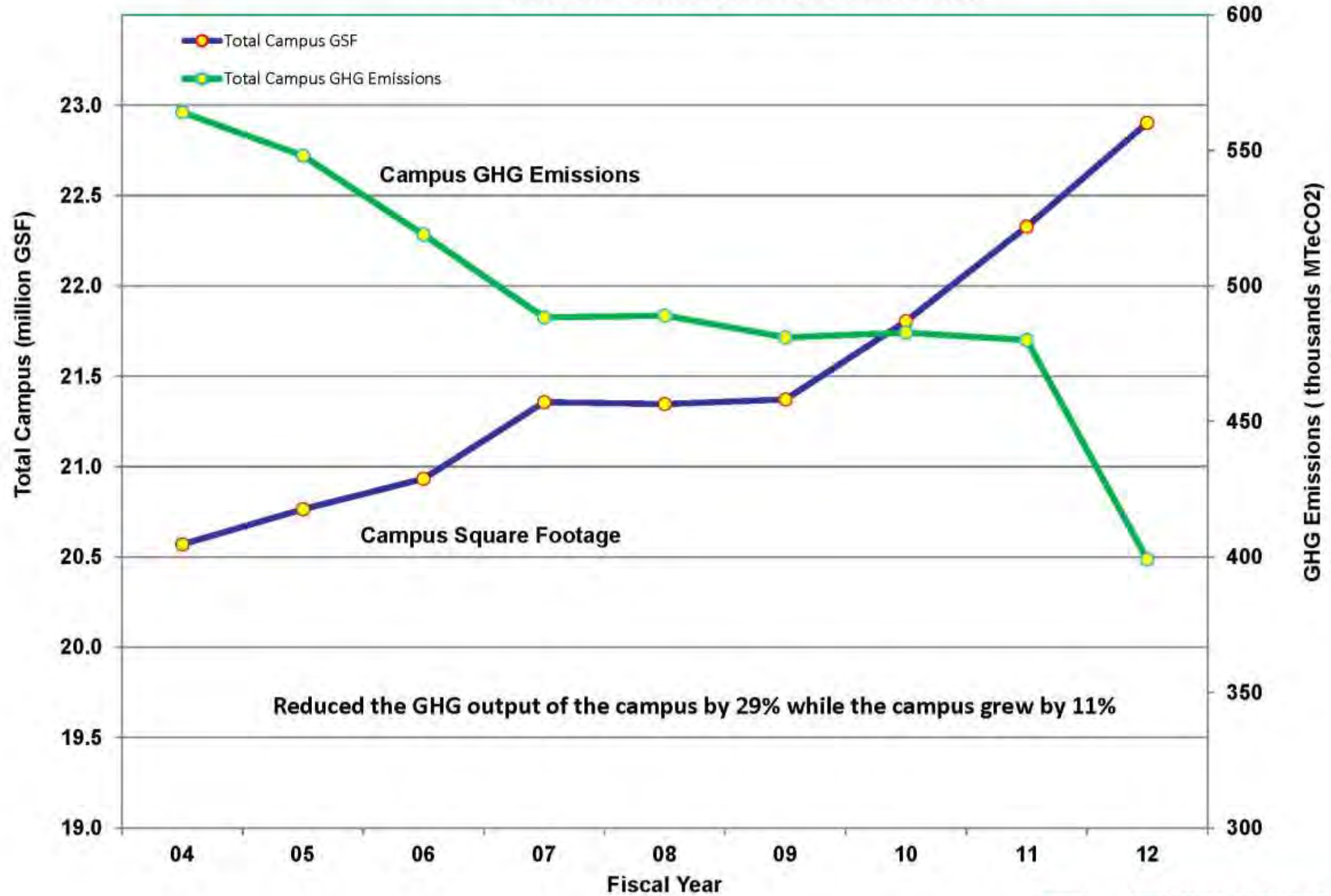
Texas A&M University, College Station, Texas



Energy Consumption

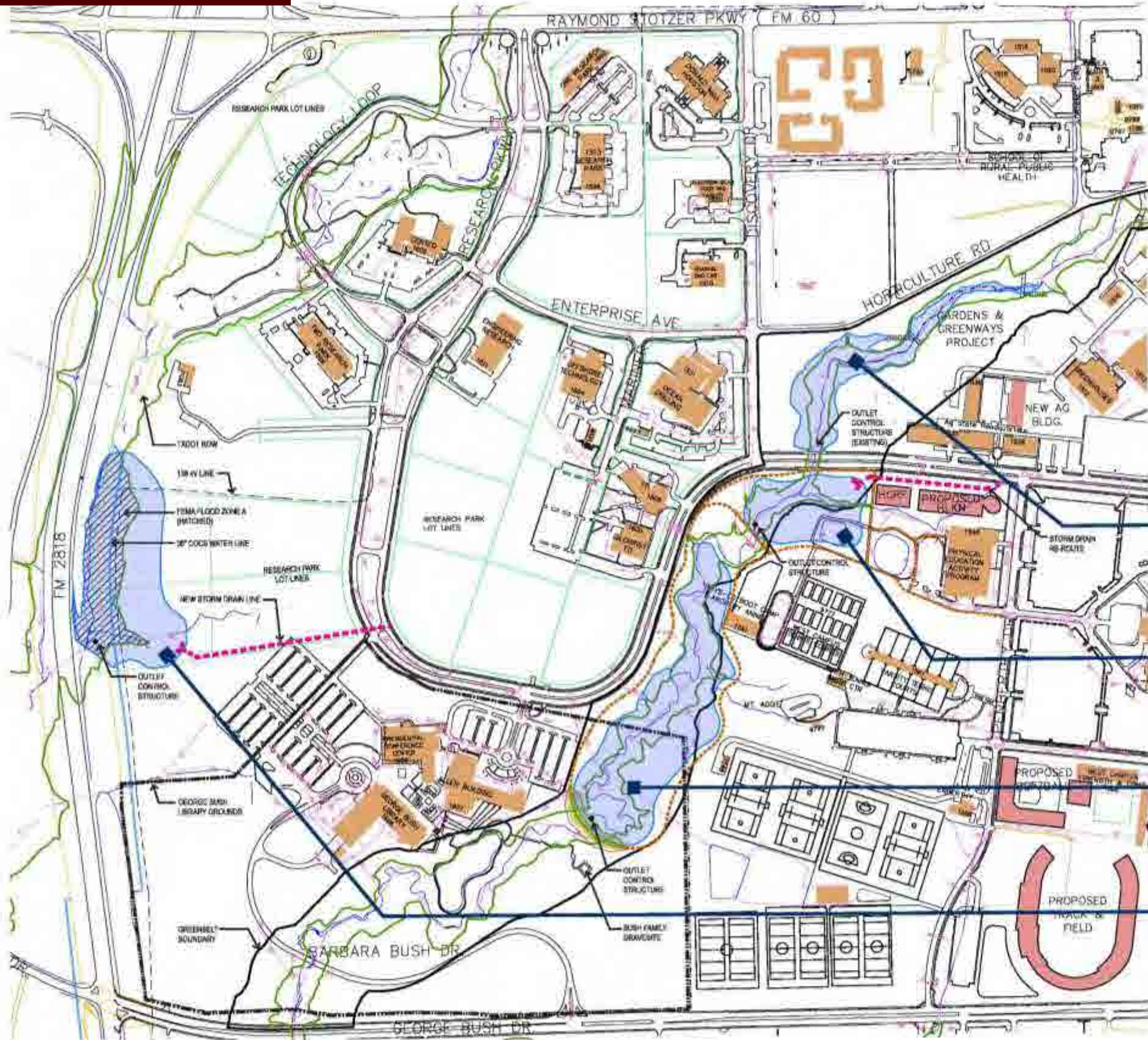
Campus Size vs Greenhouse Gas Emissions

Texas A&M University, College Station, Texas



analyze:

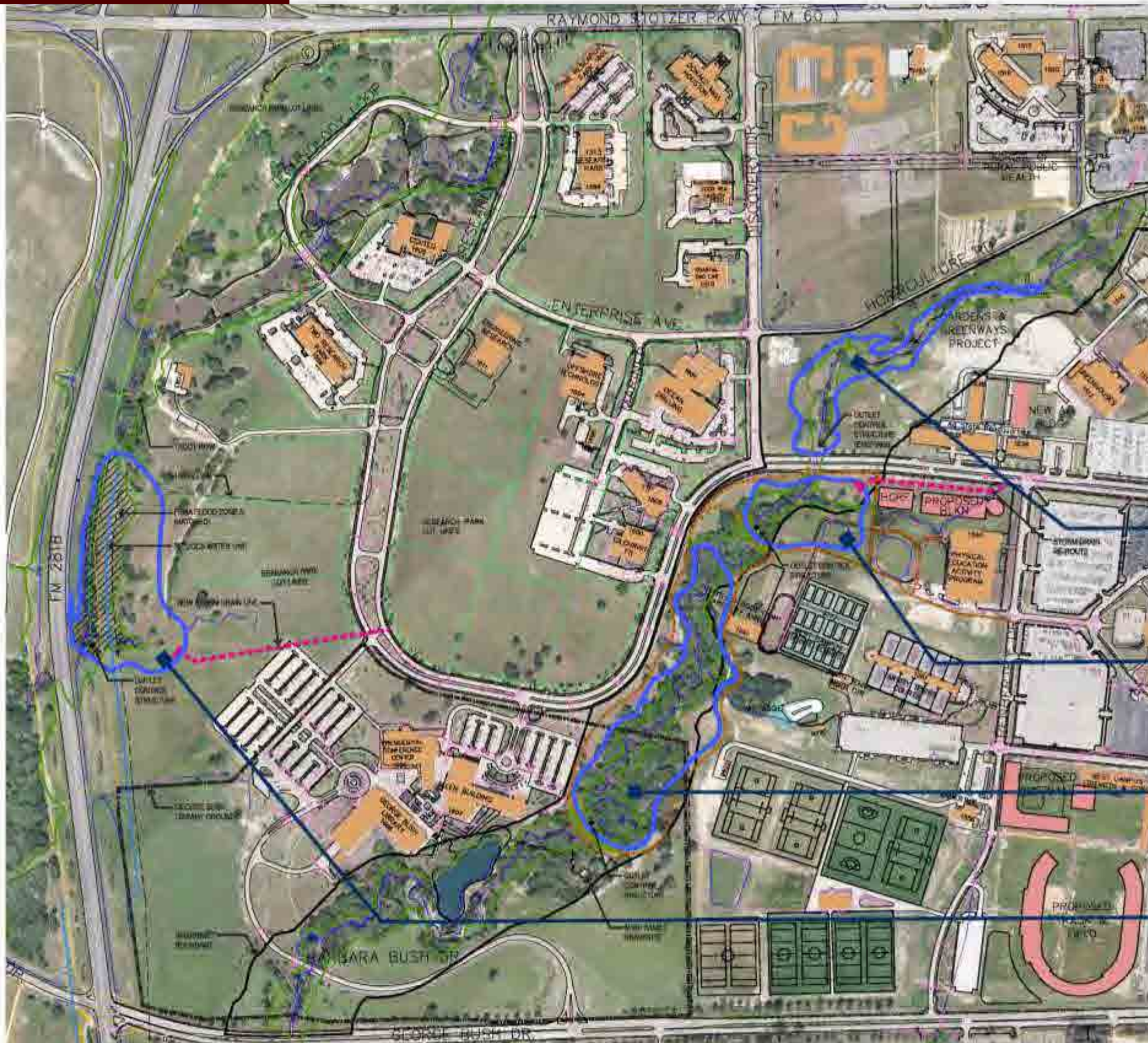
Stormwater Management – West Campus



- Gardens & Greenways Detention**
volume: 11.7 acre feet
- White Creek #1 Detention**
volume: 38.3 acre feet
- White Creek #2 Detention**
volume: 47.4 acre feet
- Research Park Detention**
volume: 65.6 acre feet

analyze:

Stormwater Management – West Campus



DETENTION TRAIL FLOOD ZONE BOUNDARY



**Gardens & Greenways
Detention**
volume: 11.7 acre feet

**White Creek #1
Detention**
volume: 38.3 acre feet

**White Creek #2
Detention**
volume: 47.4 acre feet

**Research Park
Detention**
volume: 65.6 acre feet

analyze:

Population & Space Growth



+64,600 Students

+400
Undergraduate & Graduate
Degree Programs

+23 MM
Gross Square Feet

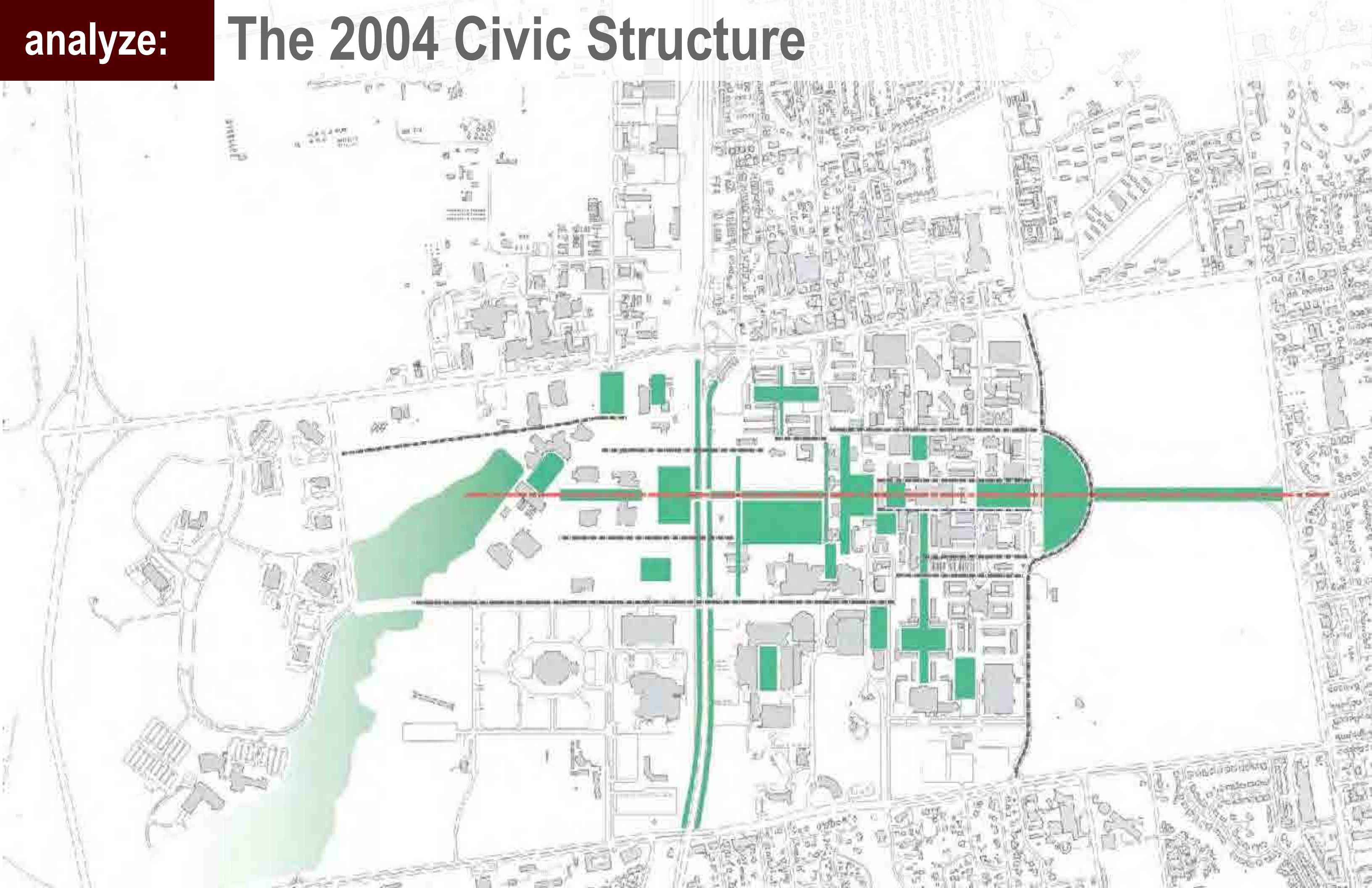


ANALYZE



analyze:

The 2004 Civic Structure



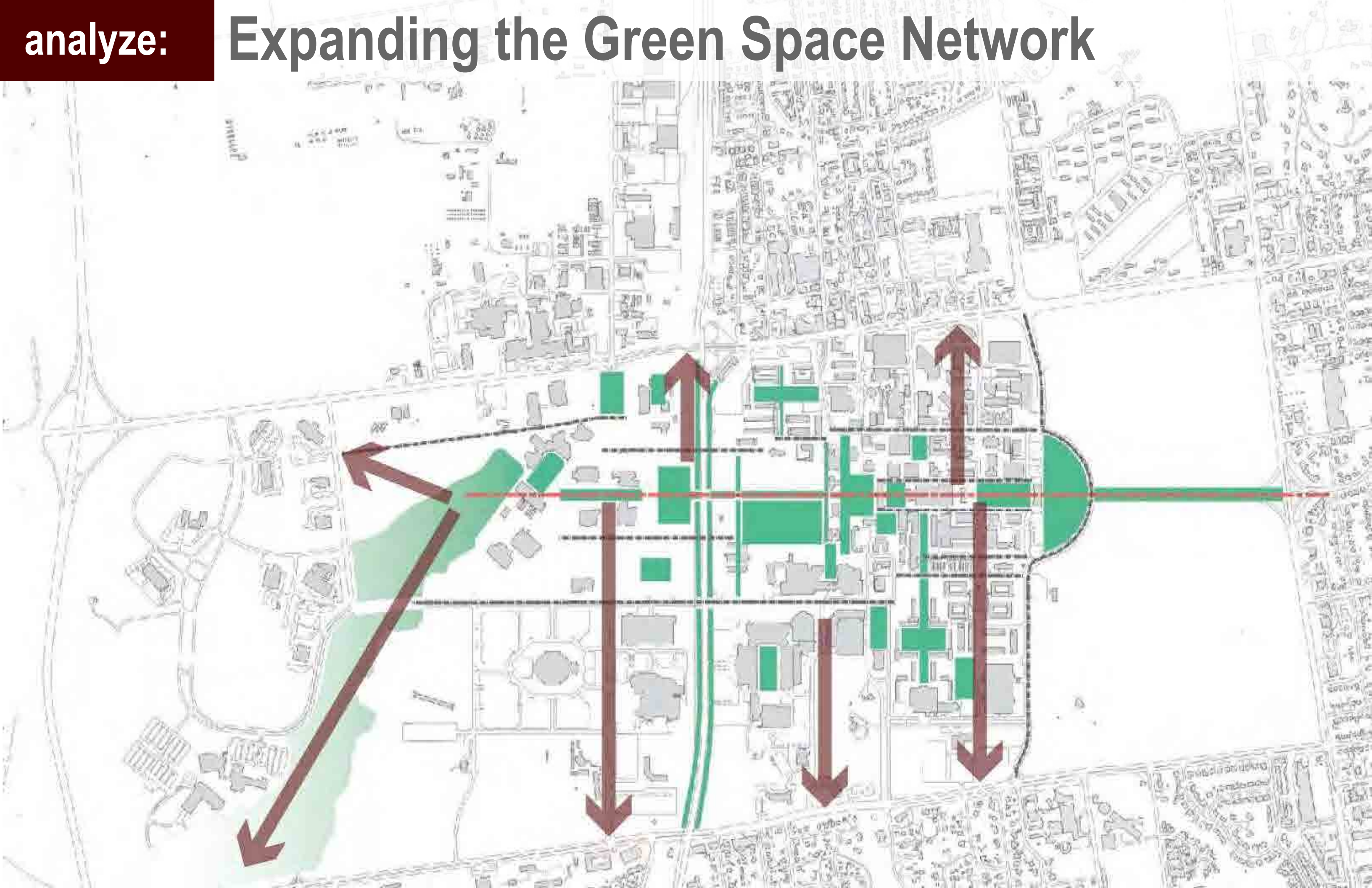
analyze:

Expanding the Green Space Network



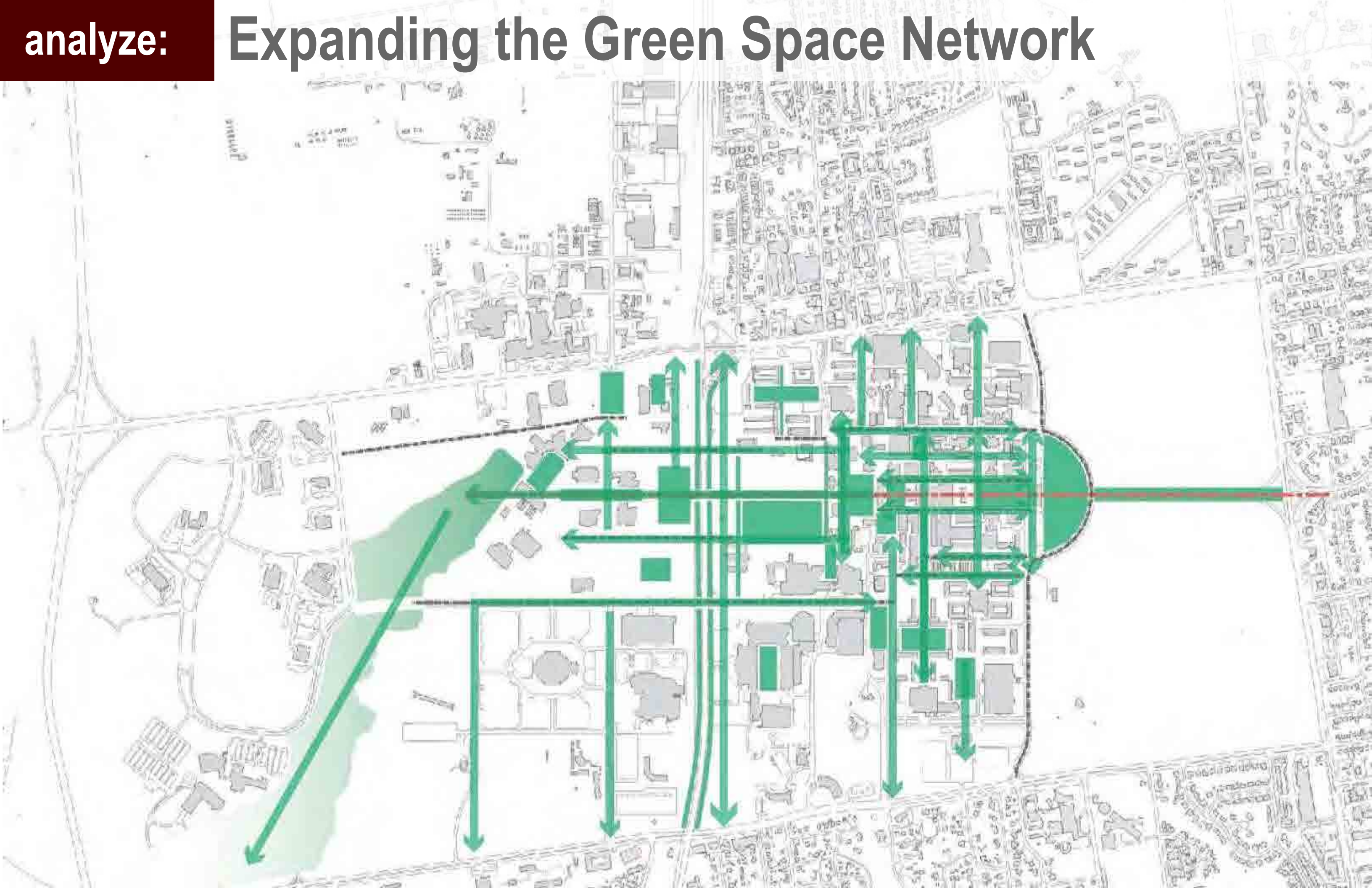
analyze:

Expanding the Green Space Network



analyze:

Expanding the Green Space Network



analyze:

Sustainability at TAMU

Texas A&M University defines “sustainability” as the efficient, deliberate and responsible preservation of environmental, social and economic resources to protect our earth for future generations of Texas Aggies, the Texas A&M community and beyond. The university defines “stewardship” as the act of conserving precious resources for a better future.

How does the Campus Master Plan Update connect with this definition?



analyze:

2011-2015 Energy Action Plan

EAP 2015 has a goal to continue improving services while reducing energy consumption per square foot by 16 percent for the five year period of FY11 through FY15.

What happens in FY2016 and beyond?



Energy Action Plan 2015

Purpose:

In support of the Texas A&M University Vision 2020: Creating a Culture of Excellence and Action 2015: Education First Strategic Plan, the Energy Action Plan (EAP) 2015 has been established to continue improving the efficiency and effectiveness of mission-critical utilities and energy services. Building on an annual energy efficiency improvement of 42 percent per square foot achieved since 2002, EAP 2015 has a goal to continue improving services while reducing energy consumption per square foot by 16 percent for the five year period of FY11 through FY15. This goal is challenging but can be accomplished through implementation and management of the following comprehensive plan.

Strategy Title	Initiative 1: Energy Stewardship Program (ESP)
Strategy Owner	UES with entire Campus Community
Strategy Description	Energy Stewards work closely with students, faculty, staff, building occupants, departmental representatives, facility managers, building proctors, and technical staff to educate, inform and raise awareness about opportunities for improving energy efficiency and conservation, obtaining feedback to ensure customer needs are met while improving building operating conditions, eliminating waste, and effectively stewarding the responsible use of energy.
Implementation Plan / Schedule	
Target	Tactic Description
Ongoing	<u>Objective 1.1:</u> Educate and raise awareness about the cost and environmental impact of energy and water consumption at Texas A&M University.
Ongoing	<u>Objective 1.2:</u> Establish and maintain trusting relationships with customers, ensuring both customer needs and goals to reduce cost and environmental impact are met.
Ongoing	<u>Objective 1.3:</u> Educate users on campus building space temperature standards and help ensure standards are properly maintained.
Ongoing	<u>Objective 1.4:</u> Identify, report, and correct problems with HVAC, mechanical, electrical, and plumbing systems to improve service, optimize performance, and eliminate waste.
Ongoing	<u>Objective 1.5:</u> Promote energy conservation and efficiency and enroll all members of the campus community to be effective stewards of these essential resources, through programs such as the Green Office Campaign, Energy Action Team, Sustainability Pledge, etc.
Ongoing	<u>Objective 1.6:</u> Educate and inform the campus community on plans, programs, initiatives, and accomplishments in the areas of energy efficiency and conservation.
Ongoing	<u>Objective 1.7:</u> Maintain ongoing communication and dialogue with building occupants, facility managers, building proctors, and departmental representatives. Obtain feedback and coordinate to ensure energy requirements for cooling, heating, electrical power, water supply, steam, etc. are efficiently and cost-effectively achieved.
Ongoing	<u>Objective 1.8:</u> Coordinate with departmental representatives, facility managers, and users to establish HVAC run time and setback schedules to meet customer needs while reducing unnecessary energy consumption.

1. Management of Climate Change

Greenhouse gas emissions, typically caused from the burning of fossil fuels such as coal, natural gas, and oil, is generally recognized as contributing to climate change. United States EPA has promulgated regulations associated with greenhouse gas emissions. Texas A&M University progress in this area is dependent on many of the other core components and will be interwoven throughout the Plan.

2. Purchasing of Sustainable Goods and Services

The University is committed to encouraging the purchase of renewable, reusable, recycled, locally produced and purchased and environmental preferable materials. These purchases help to prevent waste and pollution while stimulating the manufacture of more environmentally and socially sound products. Due to its size, Texas A&M University's green purchases can have a significant environmental benefit.

3. Optimization of Energy Use

The great majority of energy is produced using non-renewable fossil fuels which emit greenhouse gases along with other pollutants. Increasing electricity conservation and efficiency and using sustainable sources for electricity generation are important steps to reducing pollution, increasing cost savings and promoting sustainable technologies for the future.

4. Sustainable Food and Dining

Food production and food transportation can have significant impacts to surface and groundwater, wildlife, atmosphere and human health. Additionally, dining services operations consume resources, generate waste and produce wastewater. Purchasing food from local producers reduces the transportation impacts while bolstering the local economy. Third-party certified food products, such as Certified Organic and Fair Trade, have environmental as well as social and economic benefits. Texas A&M University can help promote a sustainable food system and reduce waste through its dining services operation.

5. Management of Water Resources

Clean water is a limited and essential resource, especially in Texas. Managing water supply, wastewater treatment and surface water pollution is a growing concern. Many steps are available to Texas A&M University to conserve water, reduce wastewater treatment and protect surface water while reducing operational costs and satisfactorily meeting the demands of a growing campus.

6. Waste Management

Landfills consume a large area and land is a finite resource. According to U.S. EPA, over half of the waste stream in the United States is comprised of recyclable or compostable materials which can be diverted from landfills, protecting land and conserving natural resources.

7. Sustainable Land Use

Texas A&M University is a land-grant university with a 5,000-acre campus, containing a variety of open spaces, water resources, plant life and wildlife habitat. Sustainable stewardship over these resources will help protect the character of the campus as well as the ecological system in which it exists. In its implementation of the Campus Master Plan, the Design Review Board (DRB) should continue to serve as a key consultative body for ensuring the physical form of campus meets sustainability standards.

8. Use of Green Building Practices

According to the U.S. Green Building Council, buildings in the United States account for:

- 72% of electricity consumption,
- 38% of all carbon emissions,
- 40% of raw materials use,
- 30% of waste output (136 million tons annually), and
- 14% of potable water consumption.

Green building techniques reduce these environmental impacts as well as lower total cost of ownership. Furthermore, Green buildings promote a healthier environment for the building occupants. The Texas A&M University campus has over 21.5 million square feet of building space, therefore promoting sustainable building and renovation practices has the potential for significant cost savings and environmental benefits. To further our efforts in green building practices, the DRB website offers many resources about buildings, landscapes and site furnishings.

9. Utilization of Alternative Transportation and Fuels

Traditional transportation relies on non-renewable fossil fuels which emit air pollutants and consume natural resources. Developing alternative methods of transportation and increasing the use of zero-emission and low-emission vehicles reduces these environmental impacts. Additional social benefits are found in the reduction of traffic congestion, increased exercise from biking and walking, and decreased noise pollution.

10. Improving Social and Economic Factors

Social and economic aspects of sustainability have a broad scope, including public service, economic justice, diversity and cultural resources. Sustainability efforts in this area lead an organization to continually evaluate and incorporate, where feasible and practical, individual and societal needs including health and well-being, nutrition, education and cultural expression. As an example, Texas A&M University holds the “Big Event”, the largest, one-day, student-run service project in the nation where students of Texas A&M University come together to volunteer on community service projects such as yard work, window washing, and painting for community members. Texas A&M University recognizes this importance by naming “Service” in its mission. Other aspects are interwoven into campus life and operations and are recognized in the Plan.

11. Education and Research

Education is one of the most effective tools for changing behavior, while research advances knowledge and discovery. Both are important to increasing sustainability. Texas A&M University has an important opportunity to align its vision of sustainability with the University's mission of teaching and research. Allowing students to apply sustainability in coursework and research can deepen their understanding and position Texas A&M University to meet a growing demand.

12. Management and Funding Support

The Office of Sustainability cannot implement the Plan without the necessary resources, staff and funding. Sufficient infrastructure in the sustainability program must be maintained in order to carry out its duties of promoting sustainability at Texas A&M University.

Action Items:

Management of Climate Change

- Develop a Climate Action Plan with associated greenhouse gas reduction targets

Purchasing of Sustainable Good and Services

- Increase the use of renewable, reusable, recycled, locally produced and purchased, and environmental preferable products

Optimization of Energy Use

- Reduce energy consumption per GSF by 5% per year
- Increase campus energy consumption efficiency by 20%
- Advocate for the increased usage of renewable energy by 5% of the University's current energy supply

Sustainable Food & Dining

- Increase the use of locally grown and third party certified foods in Campus operated cafeterias to 20% of food purchases
- Reduce waste to landfills at Campus-operated cafeterias by 20%
- Increase the offering of diverse, healthy food options

Management of Water Resources

- Reduce Potable Water Consumption by 15% by 2015
- Manage storm water in a proactive and ecologically sensitive manner by integrating storm water management in campus planning and development

Waste Management

- Reduce waste to landfills by 20%
- Increase electronic waste recycling by 25%

Sustainable Land Use

- Promote sustainable land use practices through establishing policies and planning

Action Items:

Use of Green Building Practices

- Implement green building maintenance practices
- Integrate Sustainability Plan component green building goals for new campus buildings

Utilization of Alternative Transportation and Fuels

- Reduce emissions and/or fossil fuel use in fleet by 10%
- Increase the number of faculty, staff and students using alternative transportation methods by 25%

Improving Social and Economic Factors

- Be an invaluable asset in the community through economic and social sustainability programs
- Accountability: Establish structures, processes, and policies that hold all units accountable, and reward units and individuals for demonstrating their current standing, plans and progress in creating an environment where the diversity of individual identities and ideas are treated equitably in a climate *that fosters success and achievement by all.*

- Climate: Promote a positive and supportive climate by identifying aspects in the climate of individual units and the University which foster and/or impede a working and learning environment that fully recognizes, values, and integrates diversity in the pursuit of academic excellence.
- Equity: Integrate into the mission and goals for the University and units assurance that students, staff, and faculty (tenure and non-tenure track), regardless of identity, are all treated equitably.

Education and Research

- Demonstrate leadership in University sustainability through environmentally responsible education and research
- Raise students participation in and level of awareness of sustainability

Management and Funding Support

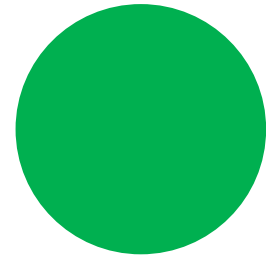
- Develop and cultivate the sustainability program to successfully implement University priorities and establish national recognition
- Promote Texas A&M sustainability programs



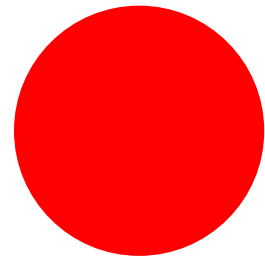
SWOT EXERCISE



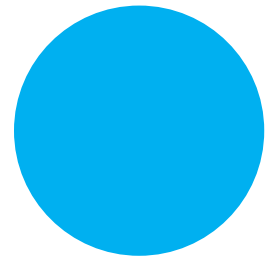
Exercise



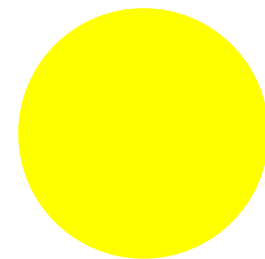
Strength: Characteristics of the campus that provide an advantage over others.



Weakness: Characteristics that place the campus at a disadvantage relative to others.



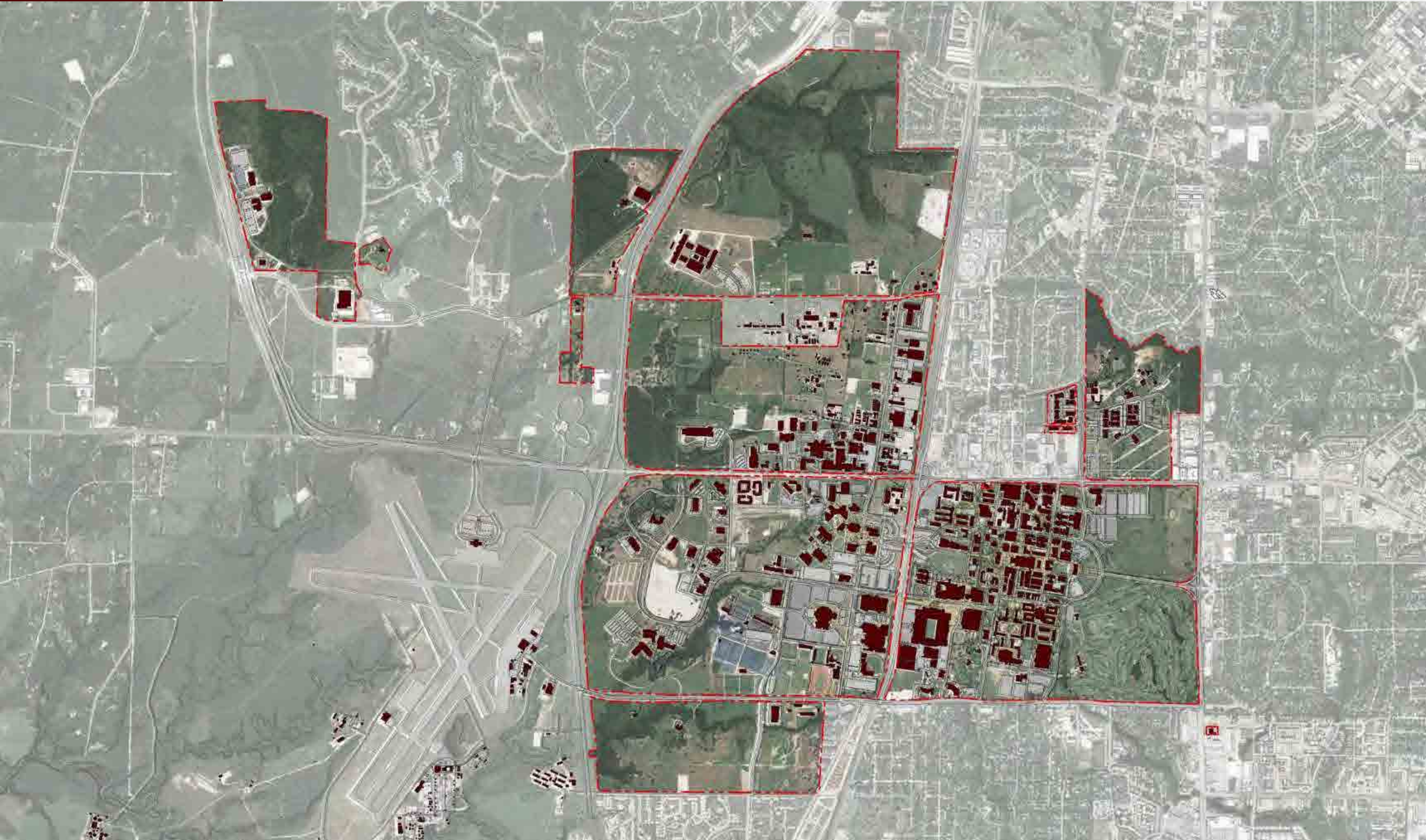
Opportunity: Elements that the campus could exploit to its advantage.



Threat: Elements in the environment that could cause trouble for the campus.

swot:

Campus





PRECEDENT INSTITUTIONS



University of Colorado, Colorado Springs 2012 Campus Master Plan

Smart Growth

- As the university grows, they plan to reduce their space needs by increasing the utilization of their classrooms.
- When new facilities are necessary, disturbed landscapes are identified as priority development sites in order to preserve native, undisturbed landscapes
- If the campus clusters facilities together along the pedestrian spine, transportation can function most effectively.

Transportation

- Supporting alternative transportation
- Improvement of connections from bus stops to campus core by establishing more university used programs along the route
- Tap into proposed street car system
- Increase bicycles lanes and trails for greater mobility
- Reduce the number of vehicles travelled between campus destinations.
- Establish a transit spine and restrict daily traffic in this area

Buildings

- All new buildings must meet LEED GOLD Standards and target 40% greater energy efficiency than ASHRAE 90.1.
- Emphasize energy efficiency retrofits in renovations as well.
- Choose transit-accessible building sites that avoid disturbing national resources and support optimal solar orientation.
- Reduce the demand for water
- Minimize Construction waste

Social

- Accommodating enrollment growth to continue to allow all Coloradoans access to higher education
- Encouraging community engagement through development of public facilities
- Establishing a network of communal indoor and outdoor spaces that allow a diverse body of students, faculty, and staff to interact.
- Planning for shared facilities and partnership models that offer additional funding opportunities

Northern Arizona University 2010 Campus Master Plan

Operations, Energy and Carbon Offsets

- Expanding the existing reclaimed water system for irrigation;
- Recommending strategies for additional renewable energy such as expanding the south campus solar array and adding PV solar shades on future parking structures;

Smart Growth

- Increasing the density of the campus core;

Transportation

- Incorporating the transit spine and improved pedestrian paths and bikeways to reduce demand for parking;
- Replacing surface parking with perimeter parking structures;

Buildings

- Incorporating the campus standards requiring new buildings to achieve USGBC certification at LEED Silver or above

Landscape

- Reducing impermeable surfaces by replacing asphalt parking lots with landscaped open space and providing for storm water retention and management;

University of North Texas 2013 Campus Master Plan Update

Operations, Energy and Carbon Offsets

- Sustainable efforts including solar panels, wind turbines, rainwater harvesting, etc.
- Conduct an energy audit of all buildings every 5 years and follow up with necessary repairs and upgrades
- Encourage behavioral change in students, faculty and staff with regard to air-conditioning and heating requirements
- Analyze life-cycle costs and energy usage when selecting building materials and Systems
- Consider cost-benefit of investment in cutting-edge “green” design strategies

Smart Growth

- Compact development for increased building density, with more substantial buildings located on central campus sites
- Mixed-use and housing developments near campus edges, or along existing or proposed transit routes
- Student housing to be placed adjacent to student services, recreation, and other amenities
- Consolidated and shared resources and facilities
- Increased on-campus housing

Transportation

- Encourage increased transit infrastructure and operational efficiency
- Create more bicycle infrastructure (lanes and paths)
- Pedestrian connectivity and elimination of internal campus streets and surface parking lots
- Strategies to reduce surface lots and increased use of alternative transportation modalities

Buildings

- LEED Silver Requirement, and other “On-Campus” certificate programs
- Proposal to create a similar certificate for major renovations
- Guidelines and standards promoting better designed, properly-oriented, more efficient buildings
- Preservation and appropriate adaptive reuse of existing buildingsFund

University of North Texas 2013 Campus Master Plan Update

Landscape/Site

- Improvements to the pedestrian realm with more streets trees, improved sidewalks, and pedestrian scaled lighting
- Placemaking to encourage student to stay on campus
- Removing streets and surface parking lots to reduce impervious surfaces and stormwater runoff
- Storm water management emphasizing water retention and recycling water for irrigation use
- Landscape standards to reduce water consumption, need for pesticide/herbicides and support localized retention and filtration

Education/Outreach

- Improved education and awareness of sustainable practices
- We Mean Green Fund – similar to the AggieGreen Fund



GOALS & ADVICE



- **Create guidelines that address building material choices and performance criteria to support better thermal characteristics thereby reducing energy demands.**
- **Consider utilization of alternative energy particularly for specialty programs or exhibition opportunities (engineering, agriculture and research park could/should have cool applications)**
- **The landscape guidelines that develop more plant based solutions as well as planting guidance to reduce water consumption, etc.**
- **Identify zones of campus that may have distinct plant palettes.**
- **Building transitional elements like arcades for defining exterior spaces to augment interior spaces.**
- **Stormwater mitigation through less paved/more permeable site development.**
- **Devices for measuring energy and water resources integrated into key projects - like housing to demonstrate use profiles and long term reductions.**
- **Benchmark current campus usages now for future comparison to help determine long-term impacts after initiatives are in place. How existing infrastructure can be better utilized versus capacity increases.**



QUESTIONS & DISCUSSION





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Thank You