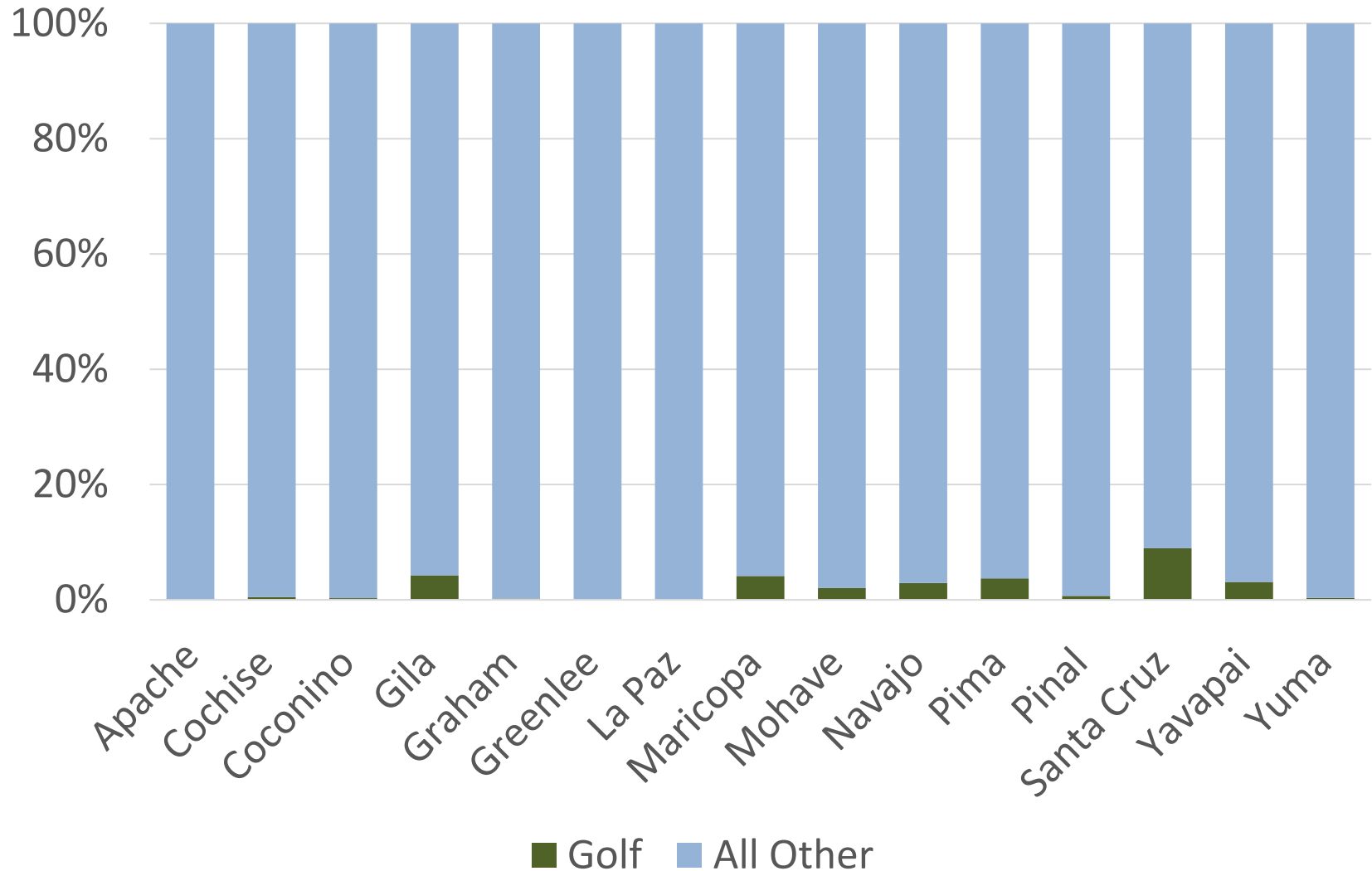
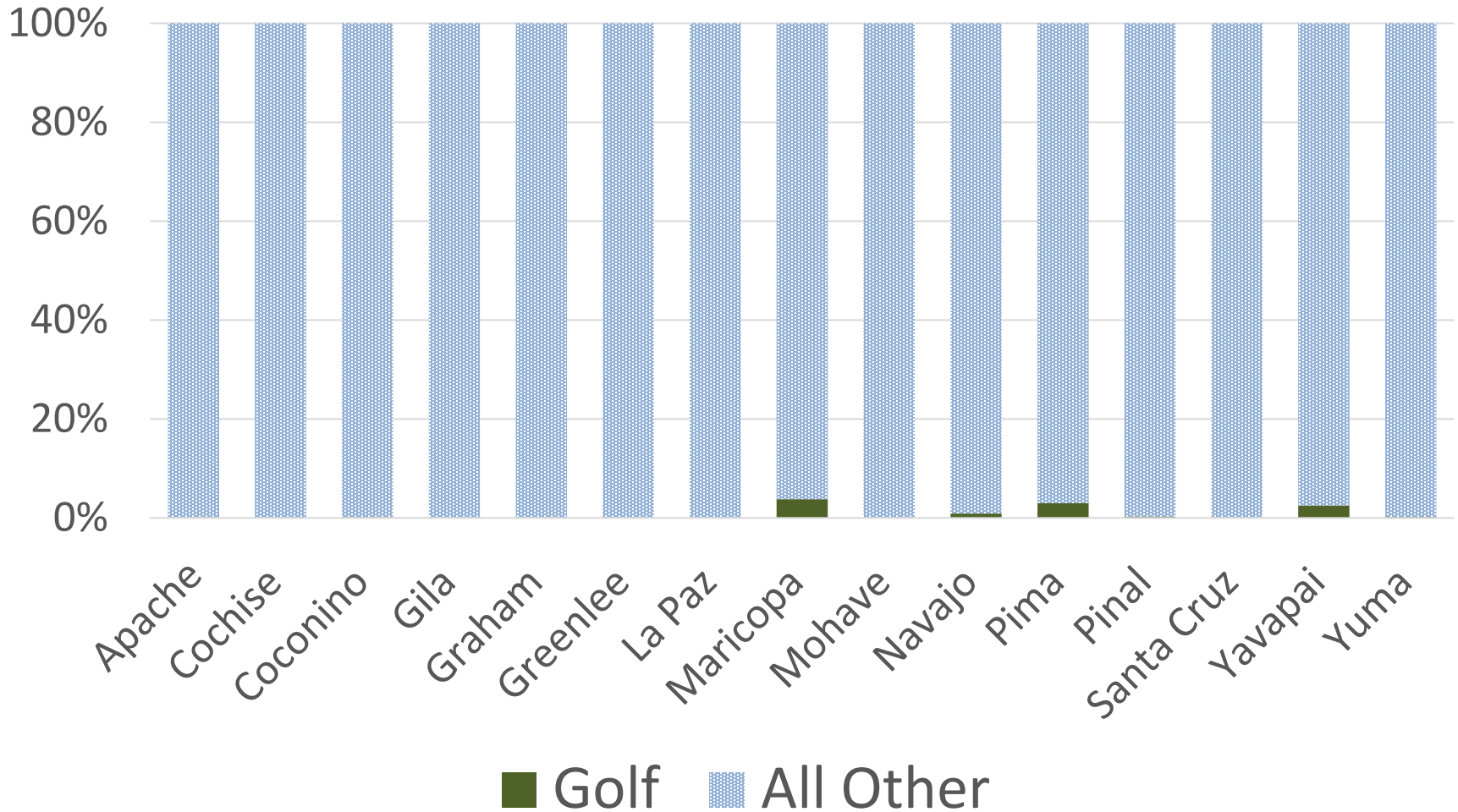


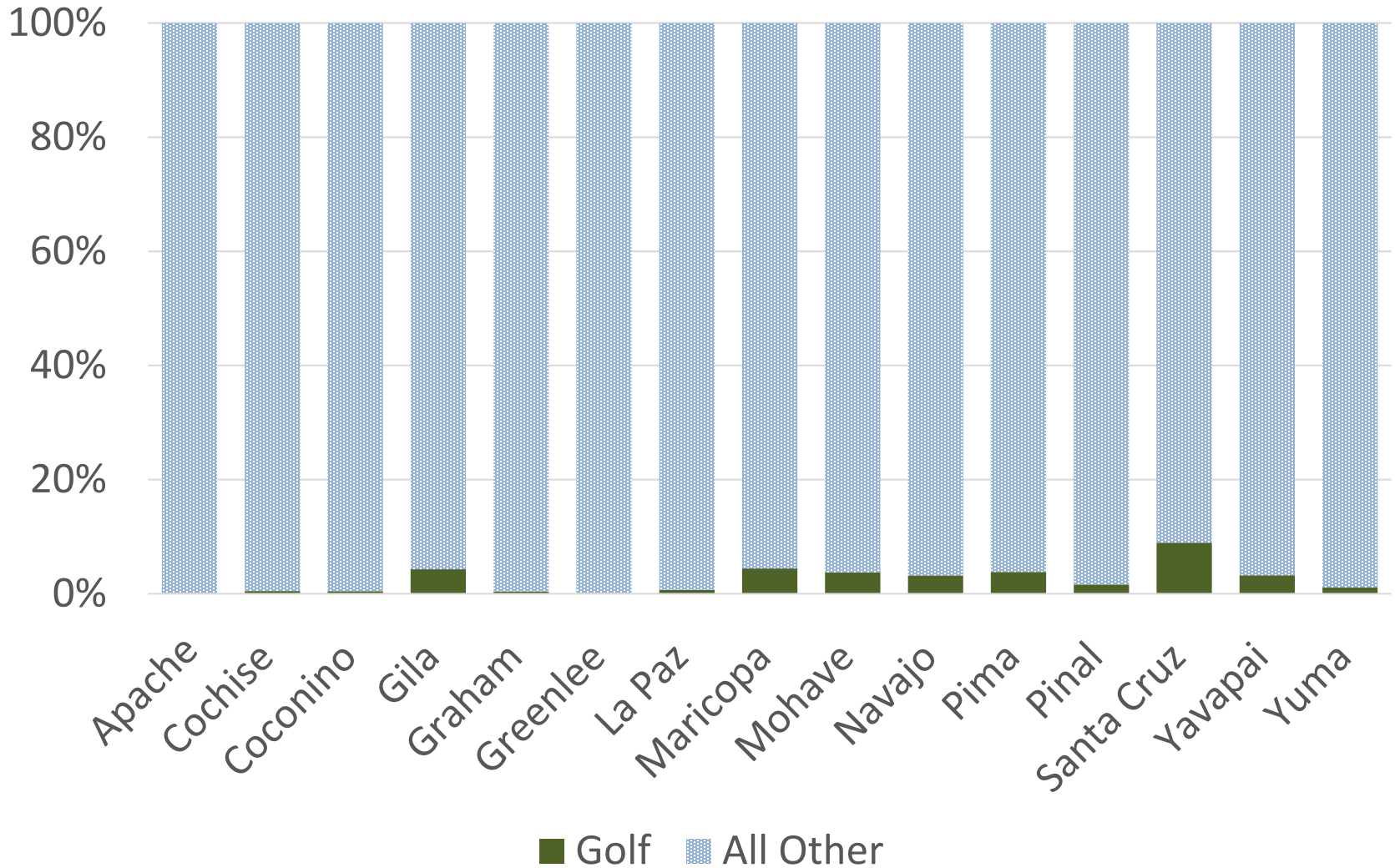
# AZ Total Freshwater Withdrawals: Golf Vs. All Other Uses



# AZ Surface Water Withdrawals: Golf Vs. All Other Uses



# AZ Groundwater Withdrawals: Golf Vs. All Other Uses



# New CE Golf Study Due in December

- Study will estimate ***economic contribution of golf industry to Arizona***, including:
  - Golf course facilities
  - Golf-related tourism
  - Golf retail establishments
  - Home price premiums
- Estimates ***direct and indirect*** economic contribution of golf industry to
  - Sales
  - Jobs
  - Employee Compensate
  - Value Added (contribution to GDP)
  - State & Local Tax Revenues



# Golf Facility Survey

- Major component of economic contribution study is ***online survey*** collecting information from 300+ golf course facilities in state
- Presents questions on golf course facility operations in ***calendar year 2014***
- Specific questions in survey for ***key personnel***
  - Lead Superintendent
  - General Manager
  - Lead Golf Professional
- Superintendent section includes questions on:
  - General course information
  - Course maintenance expenses
  - Water use and conservation practices



# Why a Golf Survey?

- Department of Commerce (& other government sources) undercount the economic contribution of the golf industry
  - Commerce reports only 231 golf establishments in 2014
  - Commerce: 11,000 jobs; BLS: 9,000 jobs in 2014
  - Golf operations “hidden” in economic accounts covering hotels and casinos (>300 facilities in AZ)
  - Relying of government statistics alone will significantly underestimate economic contribution of the golf industry
- Last AZ golf survey 10 years old
- USGS county-level data on golf course water use
  - Last survey 2010; expected release of 2015 data is 2019
  - Measures withdrawals but not adoption of conservation practices
  - Does not consider reclaimed water use



# AZ Golf: 2012 Economic Census Data

- Figures below do **not** include courses at resorts or municipal courses
- 226 Establishments
- \$601 million in cash receipts
- > 11 thousand jobs
- \$235 million in annual payroll



# Home Price Premiums

- Premiums
  - Past research has shown premiums are proportional to baseline home values
  - Dollar value of premium fluctuates with underlying property values
- Preliminary “Back of the Envelope” estimates
  - Premiums on order of \$1.8 billion in AZ
  - About 12% lower than 2006 (before housing bubble burst)
  - Have recovered significantly since 2009





# Golf Study Questions & Contact

## **George Frisvold**

Extension Economist

frisvold@ag.arizona.edu

## **Kai Umeda**

Area Extension Agent,

Turfgrass Science

kumeda@cals.arizona.edu

## **Ashley Kerna**

Economic Impact Analyst


akerna@email.arizona.edu

## **Dari Duval**

Economic Impact Analyst

duval@email.arizona.edu


# Additional Water-Related Publications

 COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES  
COOPERATIVE EXTENSION

AZ1194 Revised 01/14

**BASICS OF EVAPORATION AND EVAPOTRANSPIRATION**


*Paul Brown*

 ARIZONA COOPERATIVE  
EXTENSION

THE UNIVERSITY OF ARIZONA,  
College of Agriculture and Life Sciences


AZ1381 06/06

**EVALUATION OF ADWR WATER DUTIES  
FOR LARGE TURF FACILITIES**

 THE UNIVERSITY OF ARIZONA,  
Cooperative Extension

**STANDARDIZED REFERENCE  
EVAPOTRANSPIRATION**

A NEW PROCEDURE FOR ESTIMATING REFERENCE EVAPOTRANSPIRATION IN ARIZONA


 ARIZONA COOPERATIVE  
EXTENSION

THE UNIVERSITY OF ARIZONA,  
College of Agriculture and Life Sciences

AZ1527 August 2010

**FACTORS CONTRIBUTING TO DEVELOPMENT OF  
SALINITY PROBLEMS IN TURF**


*Paul Brown, Jim Walworth*

 COLLEGE OF AGRICULTURE  
AND LIFE SCIENCES  
COOPERATIVE EXTENSION

AZ1195 Revised 02/14

**CONVERTING REFERENCE EVAPOTRANSPIRATION  
INTO TURF WATER USE**

*Paul Brown and Dave Kopec*

 ARIZONA COLLEGE OF AGRICULTURE  
& LIFE SCIENCES  
COOPERATIVE EXTENSION

AZ1413 Revised 08/12

**USING GYPSUM AND OTHER CALCIUM AMENDMENTS  
IN SOUTHWESTERN SOILS**

*Dr. James Walworth*