

Modern Roundabouts

A Safer Intersection Choice

Scott Zehngraff, P.E.

Traffic Operations

Georgia Department of Transportation



Discussion Questions

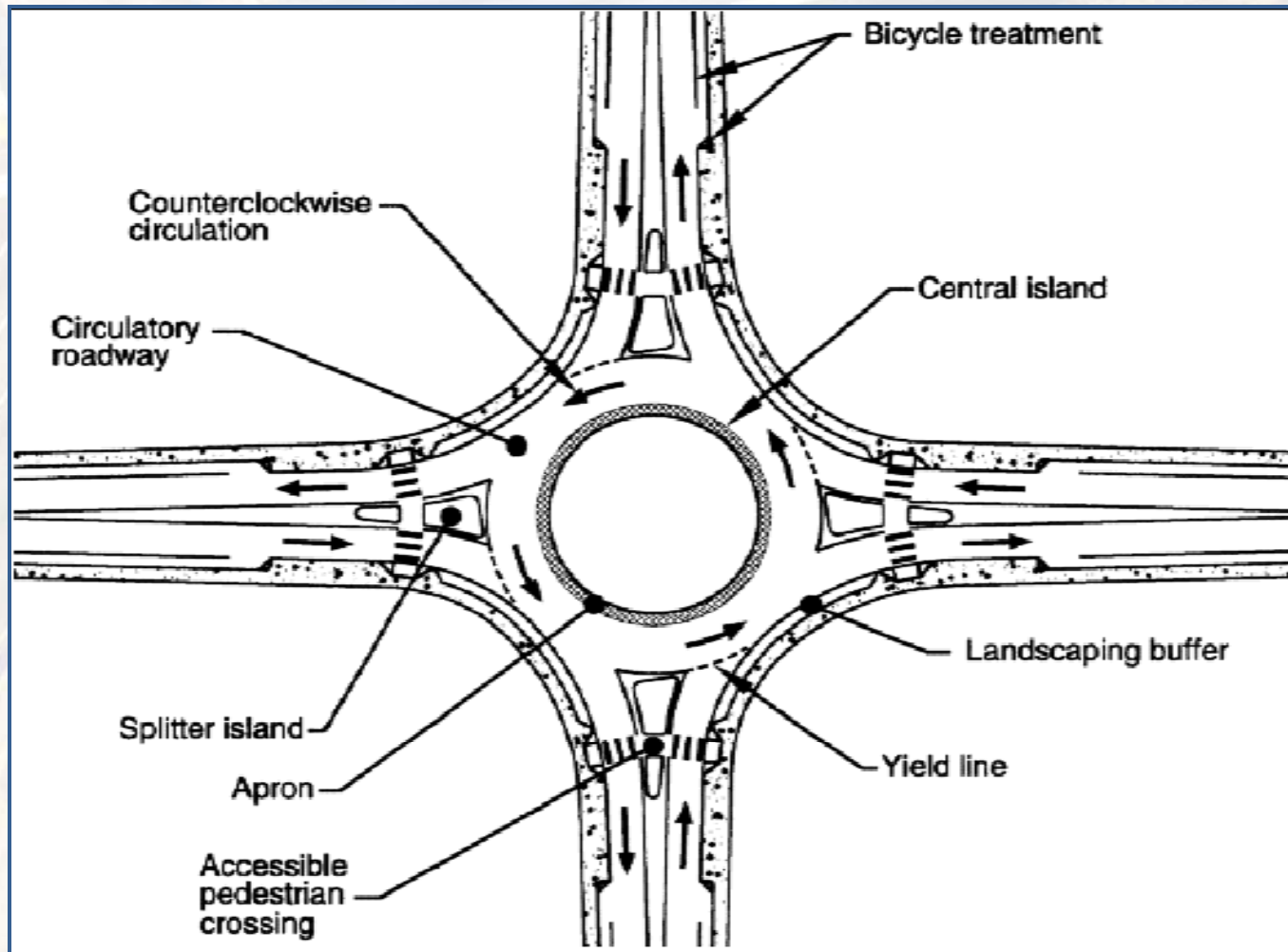
- What is a roundabout?
- Why are roundabouts safer?
- Where are roundabouts appropriate?
- What is Georgia's policy?
- Where are Georgia's roundabouts?
- What is the public response to roundabouts?

What is a Roundabout?

- Circulatory roadway
- Around a central island
- All traffic flows counter-clockwise
- Viable intersection alternative when placed appropriately
- Can be significantly safer than traffic signals
- Operate more efficiently than 4 way stops
- Can operate more efficiently than traffic signals
- Not a traffic circle



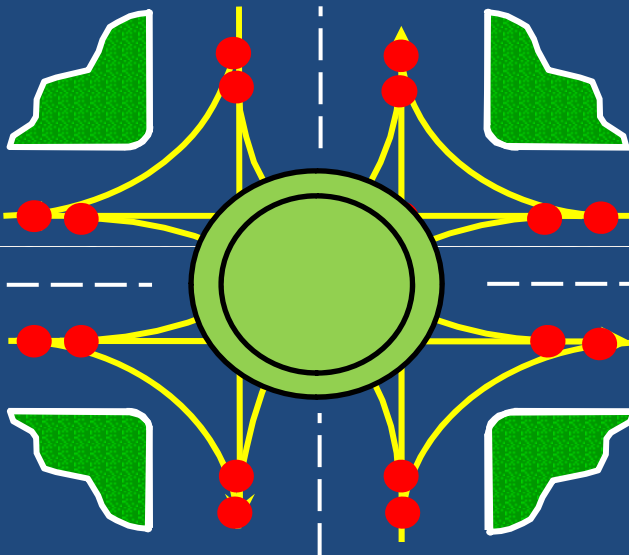
Geometric Elements



Why are roundabouts safer? The laws of physics!

Comparison of Vehicle Conflict Points

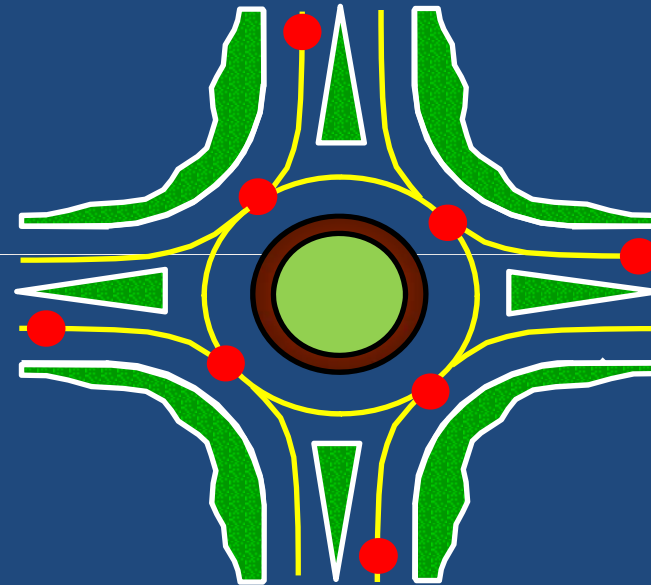
Slide Credit: Michael Wallwork, PE



32 conflict points

- High-speed
- High-angle
- **High-energy**

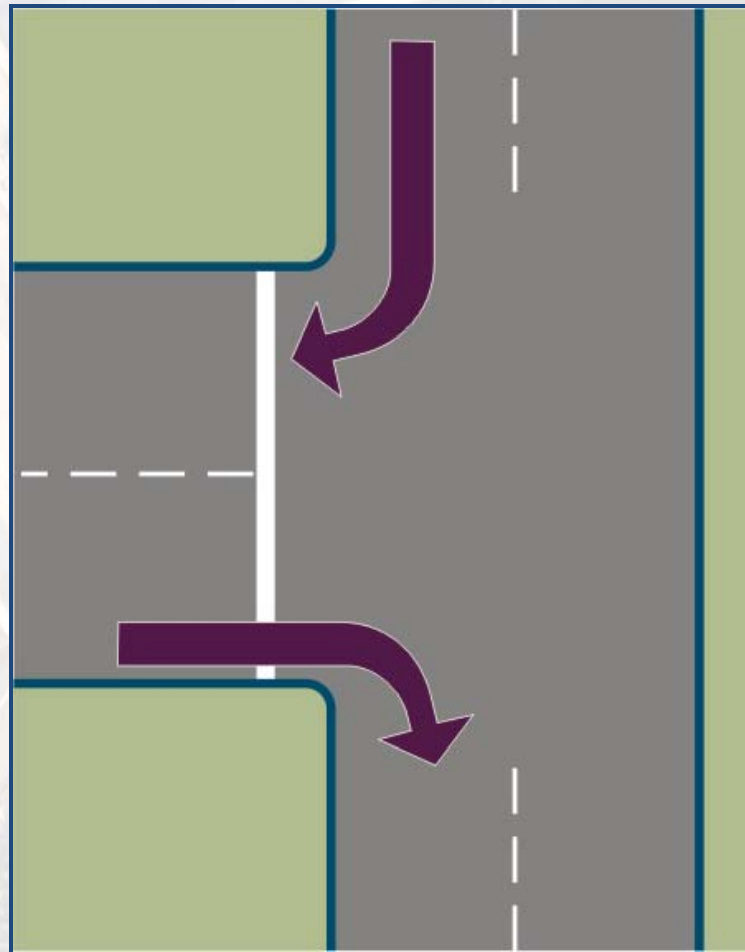
**75% fewer
conflicts**



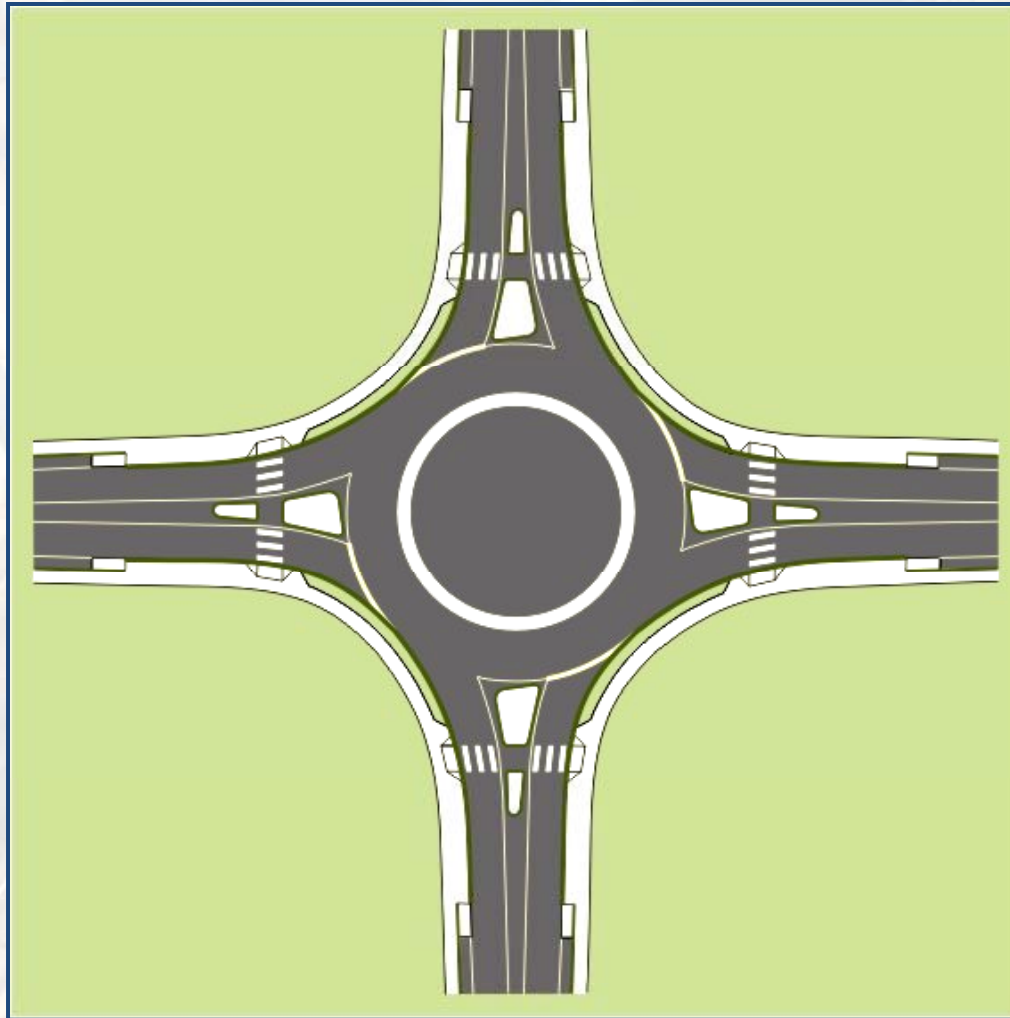
8 conflict points

- Low-speed
- Low-angle
- **Low-energy**

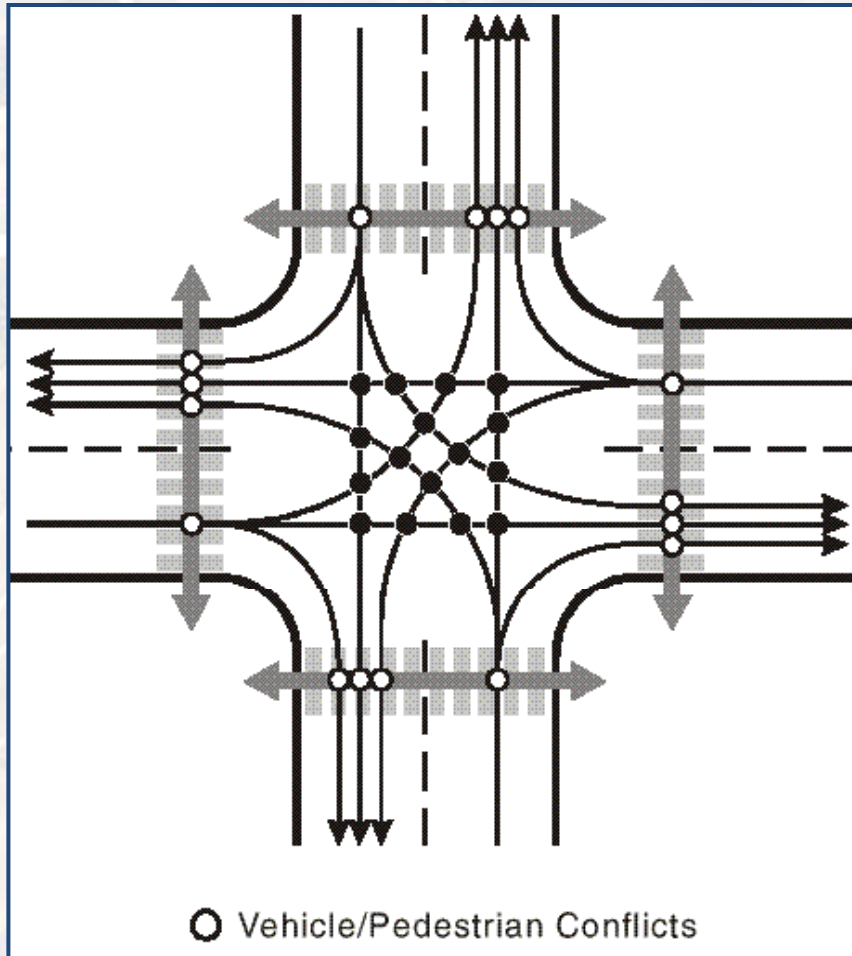
A Common Geometric Control at an Intersection: “Right-in / Right-out”



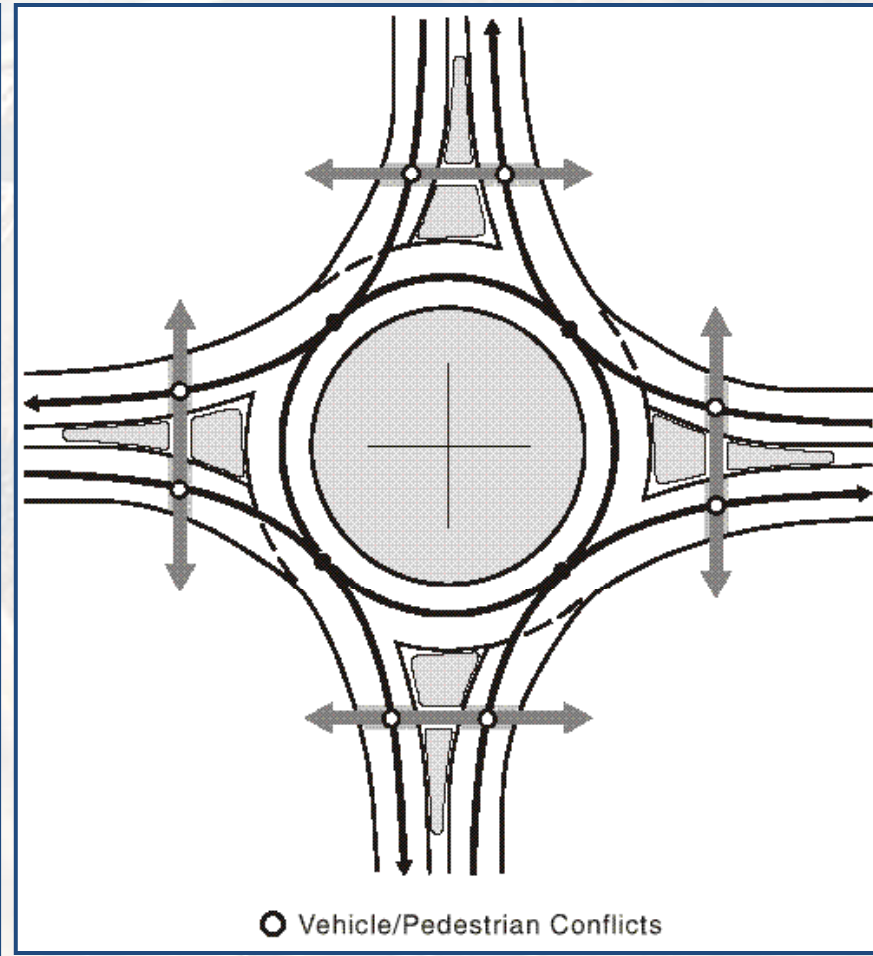
Roundabouts Operate Very Similarly – All Movements are “Right In / Right Out”



Roundabouts also reduce the number of Vehicle - Pedestrian Conflicts



16 Conflicts



8 Conflicts

What do the “numbers” show?

The Insurance Institute for Highway Safety – U.S. Roundabout Safety Report

Before-after studies at 24 intersections

- **39% overall decrease in crashes**
- **76% decrease in injury crashes**
- **89% decrease in fatal/incapacitating crashes**
- **75% reduction in traffic delays!**

Key Message: Roundabouts are SAFER !!!

NCHRP Report 572 – Roundabouts in the US

Before-after studies at 55 intersections

- **35% overall decrease in crashes**
- **76% decrease in injury crashes**
- **81% decrease in fatal/incapacitating crashes for single lane urban roundabouts**
- **71% decrease in fatal/incapacitating crashes for single lane rural roundabouts**

Where are roundabouts appropriate?

Roundabouts are being used nationally under a wide variety of conditions:

- Freeway interchanges
- High speed rural
- High volume conditions
- High pedestrians
- High truck volumes
- Awkward geometry
- Near schools
- “Gateways” into lower speed facility
- Light rail corridors



FHWA Memo – Consideration and Implementation of Proven Safety Countermeasures; July 10, 2008




U.S. Department
of Transportation
Federal Highway
Administration

Memorandum

Subject: ACTION: Consideration and Implementation of Proven Safety Countermeasures

Date: July 10, 2008

From: 
Jeffrey A. Lindley
Associate Administrator for Safety

In Reply Refer To: HSSI

To: Division Administrators
Federal Lands Highway Division Engineers

Improving safety is a top priority of the US Department of Transportation, and FHWA remains strongly committed to reducing highway fatalities and serious injuries on our Nation's highways. We know that a comprehensive mix of strategies is required—including stronger policies to support system-wide and sustainable improvements. We believe our area of greatest potential influence is how Federal funds are used and targeted to implement improvements that will have a positive impact on safety.

In our stewardship and oversight role for federally funded highway programs, we have the opportunity to strongly encourage Federal, State, local agencies, and tribal governments to include safety in their investment decision-making process. While there is still much work to do on determining the precise effectiveness of some safety countermeasures, we are highly confident that certain processes, infrastructure design techniques, and highway features are effective and should be encouraged whenever Federal funds are used. Safety should be considered at every stage of the project development process. Every investment decision should consider the impact on safety and every federally funded project should include appropriate safety enhancement features.

This guidance memorandum highlights when and where we believe certain processes, design techniques, or safety countermeasures should be used. This document also includes countermeasure descriptions and background on the proven effectiveness and benefits; a statement on when the countermeasure or process should be applied; links to reference documents; and current FHWA technical contacts for each topic. This guidance was developed based on effectiveness data for various crash types compiled from a variety of sources. It reflects the types of circumstances and situations that we are confident will yield high pay-offs and be cost beneficial for all projects.

MOVING THE
AMERICAN
ECONOMY

GUIDANCE STATEMENT:

Roundabouts are the preferred safety alternative for a wide range of intersections. Although they may not be appropriate in all circumstances, **THEY SHOULD BE CONSIDERED AS AN ALTERNATIVE FOR ALL PROPOSED NEW INTERSECTIONS ON FEDERALLY-FUNDED HIGHWAY PROJECTS**, particularly those with major road volumes less than 90 percent of the total entering volume. Roundabouts should also be considered for all existing intersections that have been identified as needing major safety or operational improvements. This would include freeway interchange ramp terminals and rural intersections.

Georgia's Roundabout Policy

Chief Engineer's policy TOPPS 4A-2

- **Encourages roundabouts as intersection alternative**
- **Only single lane roundabouts (considering multi-lane)**
- **Total ADTs no higher than 20,000 vehicles per day**
- **Balance of mainline traffic to side-street traffic**
- **Must be approved by the State Traffic Engineer**
- **Created December 2004, Modified March 2008**

Roundabouts in Georgia



Dawson County

Dawson Forrest Rd @ Lumpkin Campground Rd

Roundabouts in Georgia



Douglas County

SR 5 @ SR 166

Roundabouts in Georgia



Hall County – Gainesville College

Landrum Education Dr @ Frontage Rd / Mathis Dr

Roundabouts in Georgia

Monroe County

- SR 7/US 341 @ SR 74
- Let to Construction July 2008



Roundabouts in Georgia



- **Others installed without the Department's help**

- DeKalb County
- Gwinnett County
- Rockdale County
- Bulloch County
- St. Simons Island

Roundabouts in Georgia

69 Roundabouts Under Consideration

- **23 in District 3**
- **13 in District 6**
- **11 in District 1**
- **10 in District 4**
- **7 in District 2**
- **4 in District 7**
- **1 in District 5**

What is the public response to roundabouts?

NCHRP Synthesis 264

Attitude	Before Construction	After Construction
• Very Negative	23%	00%
• Negative	45%	00%
• Neutral	18%	27%
• Positive	14%	41%
• Very Positive	0%	32%

What is the public response to roundabouts?

Surveys in Kansas, Maryland and Nevada
ITE Journal Sept 2002

Attitude	Before Construction	After Construction
• Very Negative	41%	15%
• Negative	14%	13%
• Neutral	14%	9%
• Positive	15%	31%
• Very Positive	16%	32%

Sometimes it takes perseverance!



Photo source: NYSDOT

Project Costs for Roundabouts

Dawson County

Dawson Forrest Rd @ Lumpkin Campground Rd

PE: \$ 13,005

ROW: \$ 309,150 (local)

CST: \$ 628,285

Total: \$950,575

Douglas County

SR 5 @ SR 166

PE: \$ 146,048

ROW: \$ 261,900

CST: \$ 1,048,887

Total: \$1,456,835

Monroe County

SR 7 / US 341 @ SR 74

Let to Construction July 2008

PE: \$ 108,438

ROW: \$ 124,000

CST: \$ 2,571,941

Total: \$2,804,379

Before and After Study for 2 Roundabouts in Georgia

Before Studies performed 12-31-2003:

Dawson County

Dawson Forrest Rd @ Lumpkin Campground Rd

Douglas County

SR 5 @ SR 166

After studies can be performed now that the roundabouts have been in long enough to collect good data.

Roundabouts under consideration: by Congressional District

Congressional District	# Under Consideration	
1	1	Berrien
2	6	Brooks, Crisp, Dougherty, Fayette, Peach, Randolph
3	12	Carroll(2), Coweta(7), Fayette, Henry, Pike
4	1	Rockdale
6	3	Cherokee(3)
7	2	Gwinnett(2)
8	16	Ben Hill, Bibb(2), Butts(4), Colquitt(2), Monroe(4), Tift(2), Twiggs
9	8	Dawson(2), Fannin, Hall(2), Lumpkin, Pickens, Whitfield
10	5	Franklin, Habersham, Hart, Jackson, Richmond
11	5	Bartow(3), Paulding(2)
12	7	Baldwin, Effingham, Emanuel, Hancock, Jefferson(2) Screven
13	3	Douglas(2), Fulton (John's Creek)

Questions

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(404) 635-8127

