# Voting lines and early voting check-in times in Florida

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(Top Left) Columbus, OH during early voting in 2012 General

(Bottom Left) Miami, FL on Election Day in 2012

(Top Right) Scottsdale, AZ during primary on March 22, 2016

Most voters vote in person (75% in 2016).

The existence of voting lines is a major concern ...

1. Opportunity costs - essentially a time tax (Mukherjee 2009)
2. Downstream consequences (Pettigrew 2017)

What we want to know ...

1. Who bears the burden of this tax? Is it fairly distributed?
2. Does waiting in line discourage future participation?

## Challenge: data availability

▸ Need to identify those who waited in line AND link them to future behavior data availability.

## Researchers have relied on two sources:

1. Election Day exit polls or post-election surveys (SPAE, CCES)
   (Stewart 2013 and 2015)

   ▸ 10% of voters waited longer than 30 minutes in 2012
   ▸ Limitation: self-reporting and social desirability bias

2. Closing times of polling location and aggregate demographic data (Herron and Smith 2014; Pettigrew 2016)

   ▸ Waiting in line reduced voter turnout by 1%
   ▸ Limitation: aggregate data and ecological fallacy

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Background
**Data**
Results
Conclusion

**about the data**
2012
2016

To overcome this challenge, we turn to a unique data source produced by Electronic Voter iDentification (EViD) machines during the early voting period for Florida's general election.

▶ Voters can vote at any polling location within a county during early voting in Florida.

▶ EViD machines allow pollworkers to check-in and verify registration statuses electronically, then synchronize across locations

▶ Used to thwart double voting

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EViD data:

► Time-stamps of individual votes during early voting period in general election in 2012 and 2016

► 6 counties in Florida: Alachua, Broward, Hillsborough, Miami-Dade, Orange, Palm Beach.

► 8 days, 78 locations, and 942,194 early voters in 2012

► 14 days, 104 locations, and 1,687,304 early voters in 2016

Polls start at 7am and end at 7pm. Anyone in line before 7pm can vote.

► This is key!! We know that anyone who voted past 7pm WAITED to voted.

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Conclusion

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Conclusion

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Pros

1. We can leverage closing times to identify individuals who waited in line to vote during early voting in 2012.
2. Individual voters can be linked to the Florida voter file, including
   - demographic characteristics (voter extract).
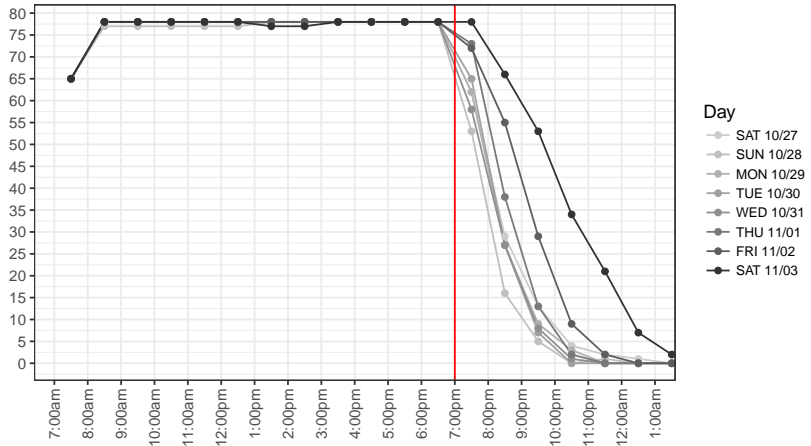   - prior and subsequent voting behavior (voter history).

Cons

1. does not identify arrival time for those who voted
2. does not identify individuals who left before voting

Background
**Data**
Results
Conclusion

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I will proceed as follows . . .

1. 2012 data
2. How things changed in 2016
3. Estimate the effect of waiting in line on future turnout

Background
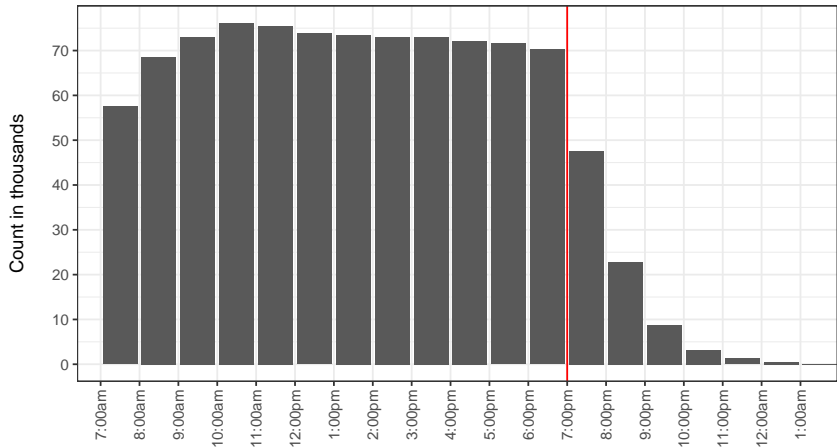Data
Results
Conclusion

about the data
2012
2016

2012

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Results
Conclusion

about the data
**2012**
2016

# Number of locations where early votes were cast



**Day**
- SAT 10/27
- SUN 10/28
- MON 10/29
- TUE 10/30
- WED 10/31
- THU 11/01
- FRI 11/02
- SAT 11/03

Background
**Data**
Results
Conclusion

about the data
**2012**
2016

Distribution of check-in times among early voters by hour

Background
**Data**
Results
Conclusion

about the data
**2012**
2016

Lines tend to affect minority voters . . .

Background
**Data**
Results
Conclusion

about the data
**2012**
2016

## Racial composition of early voters by hour

Background
**Data**
Results
Conclusion

about the data
**2012**
2016
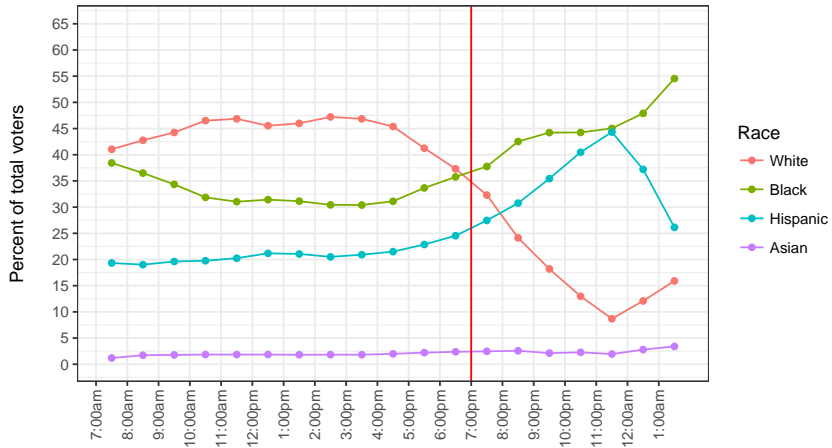
Lines tend to affect Democrats . . .

Background
**Data**
Results
Conclusion

about the data
**2012**
2016

# Partisan composition of early voters by hour and by race
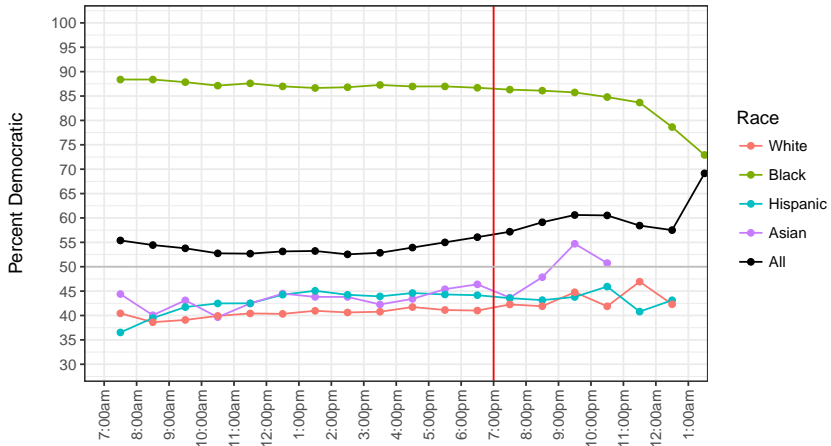
Background
Data
Results
Conclusion

about the data
2012
2016

2016

Background
**Data**
Results
Conclusion

about the data
2012
**2016**

Number of locations where early votes were cast, 2016

Background
**Data**
Results
Conclusion

about the data
2012
**2016**
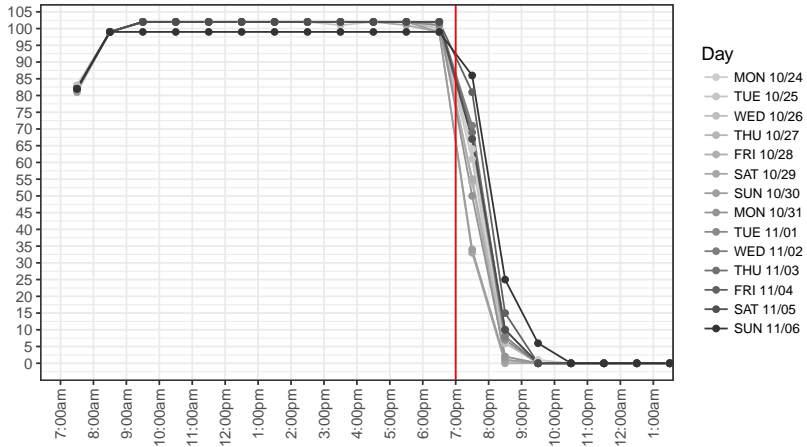
## Number of locations where early votes were cast, 2012



Day
- SAT 10/27
- SUN 10/28
- MON 10/29
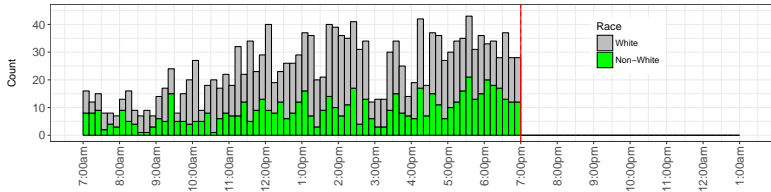- TUE 10/30
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Background
**Data**
Results
Conclusion

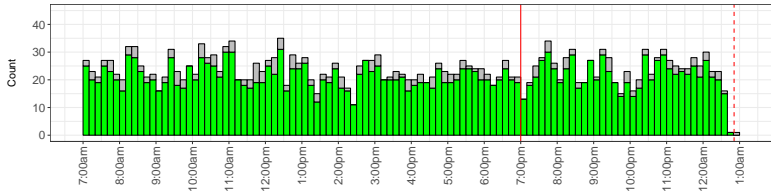about the data
2012
**2016**

Distribution of voter check-ins
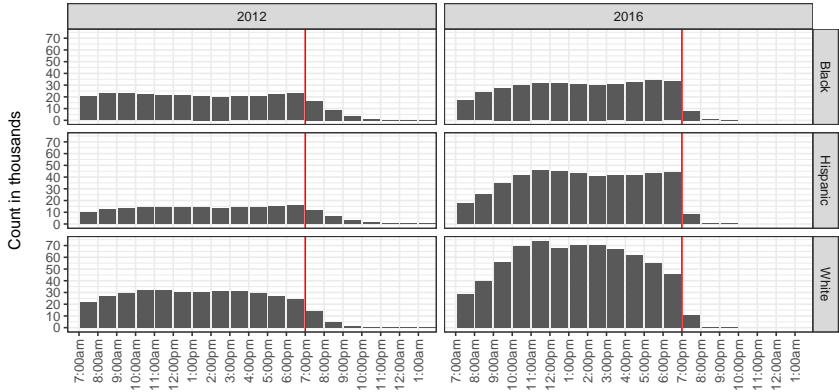
Does waiting in line to vote in the current election reduce one's
propensity to vote in the future?
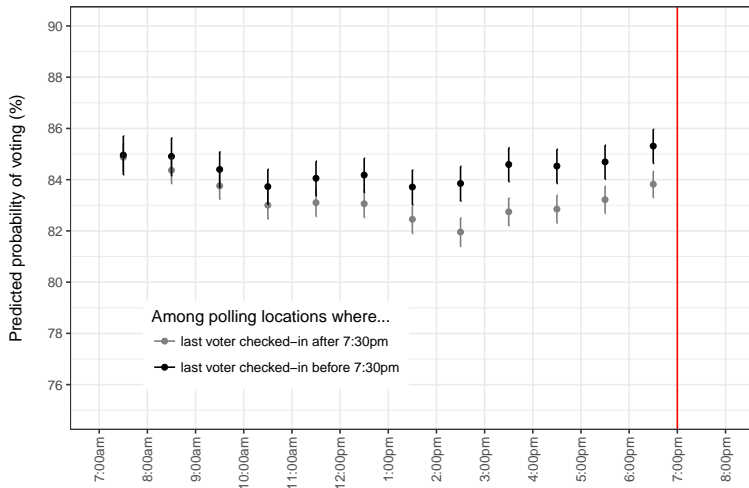
Fred B. Karl County Center, Hillsborough County

West Kendall Regional Library, Miami Dade County

$$\text{Pr}\left(\text{Voted16}_i = yes\right) = \text{logit}^{-1}(\beta + \alpha_{Over} + \gamma_{Hour} + \sigma_{Over \times Hour} + \upsilon_{Gender} +$$

$$\rho_{Race} + \tau_{AgeGroup} + \psi_{Party} + \pi_{Voted08})$$

Probability of voting in 2016, given 2012 check-in time

Conclusion

1. Voting lines were in some location in Florida were severe in 2012. Line length improved in 2016.

2. Certain voters (specifically minorities and Democrats) are more likely to be affected by long wait times.

3. Holding all else constant, waiting in line results in about a 1% decrease in turnout.

|  | Dependent variable: |
|---|---|
|  | Voted in 2016 |
| 8:00am | −0.004 (0.039) |
| 9:00am | −0.043 (0.037) |
| 10:00am | −0.093*** (0.036) |
| 11:00am | −0.069* (0.036) |
| 12:00pm | −0.060* (0.036) |
| 1:00pm | −0.095*** (0.036) |
| 2:00pm | −0.084** (0.036) |
| 3:00pm | −0.029 (0.036) |
| 4:00pm | −0.033 (0.036) |
| 5:00pm | −0.021 (0.036) |
| 6:00pm | 0.028 (0.037) |
| Over | −0.007 (0.033) |
| 8:00am & Over | −0.035 (0.045) |
| 9:00am & Over | −0.041 (0.044) |
| 10:00am & Over | −0.045 (0.043) |
| 11:00am & Over | −0.062 (0.043) |
| 12:00pm & Over | −0.075* (0.043) |
| 1:00pm & Over | −0.083* (0.043) |
| 2:00pm & Over | −0.127*** (0.043) |
| 3:00pm & Over | −0.128*** (0.043) |
| 4:00pm & Over | −0.116*** (0.043) |
| 5:00pm & Over | −0.102** (0.043) |
| 6:00pm & Over | −0.107** (0.044) |
| Gender: male | −0.141*** (0.007) |
| Race: Black | −0.252*** (0.010) |
| Race: Hispanic | −0.048*** (0.010) |
| Race: Asian | −0.145*** (0.026) |
| Age group: 30-39 | 0.326*** (0.012) |
| Age group: 40-49 | 0.823*** (0.013) |
| Age group: 50-59 | 1.085*** (0.013) |
| Age group: 60-69 | 1.208*** (0.014) |
| Age group: 70+ | 0.854*** (0.014) |
| Party: independent | −0.440*** (0.067) |
| Party: none | −0.277*** (0.010) |
| Party: Republican | 0.064*** (0.011) |
| Voted08: yes | 0.793*** (0.008) |
| Constant | 1.040*** (0.030) |
| Observations | 758,266 |
| Akaike Inf. Crit. | 510,133.200 |

Note:                               *p<0.1; **p<0.05; ***p<0.01