Craft Brewing and Hop Usage

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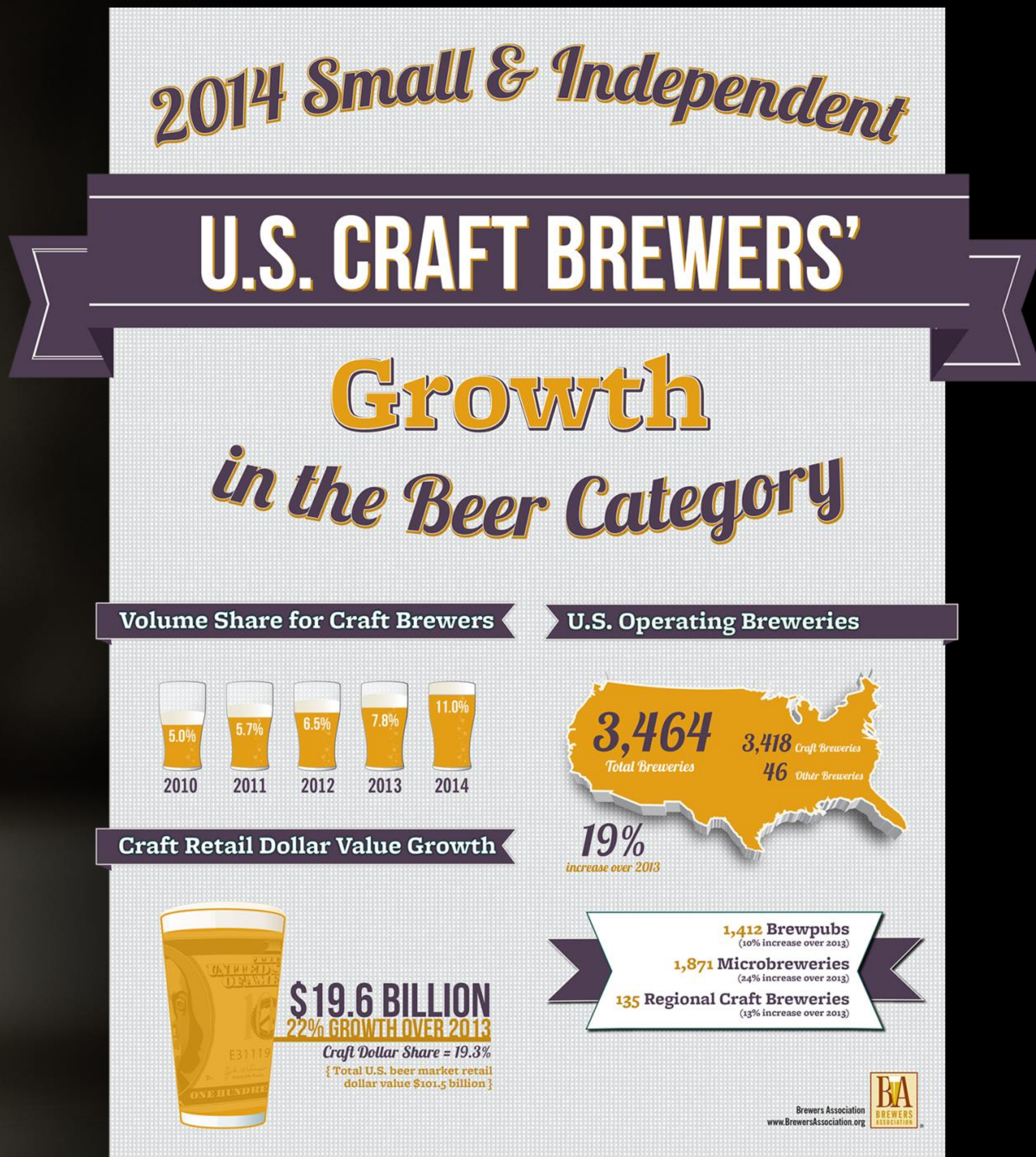
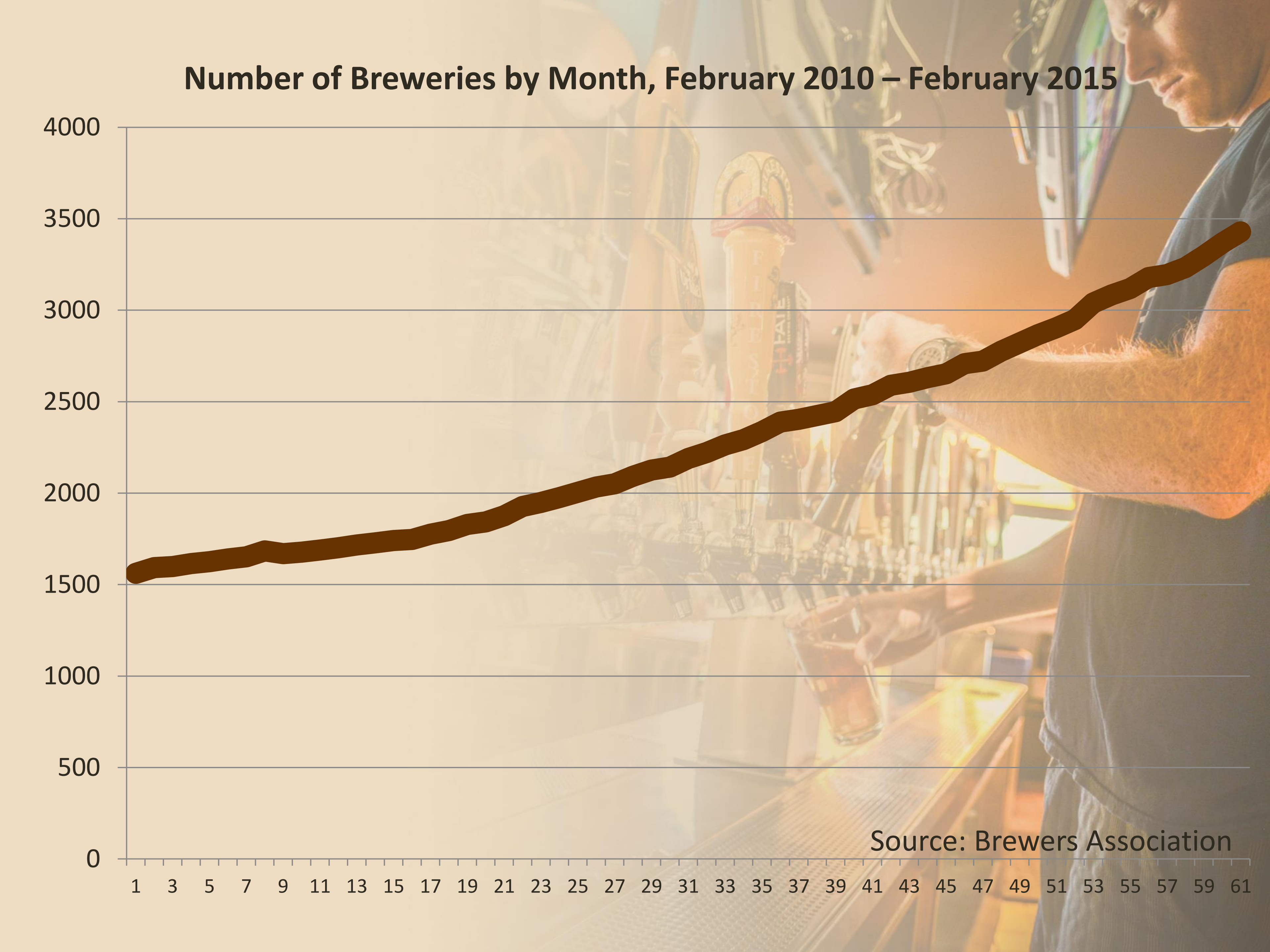
Agenda

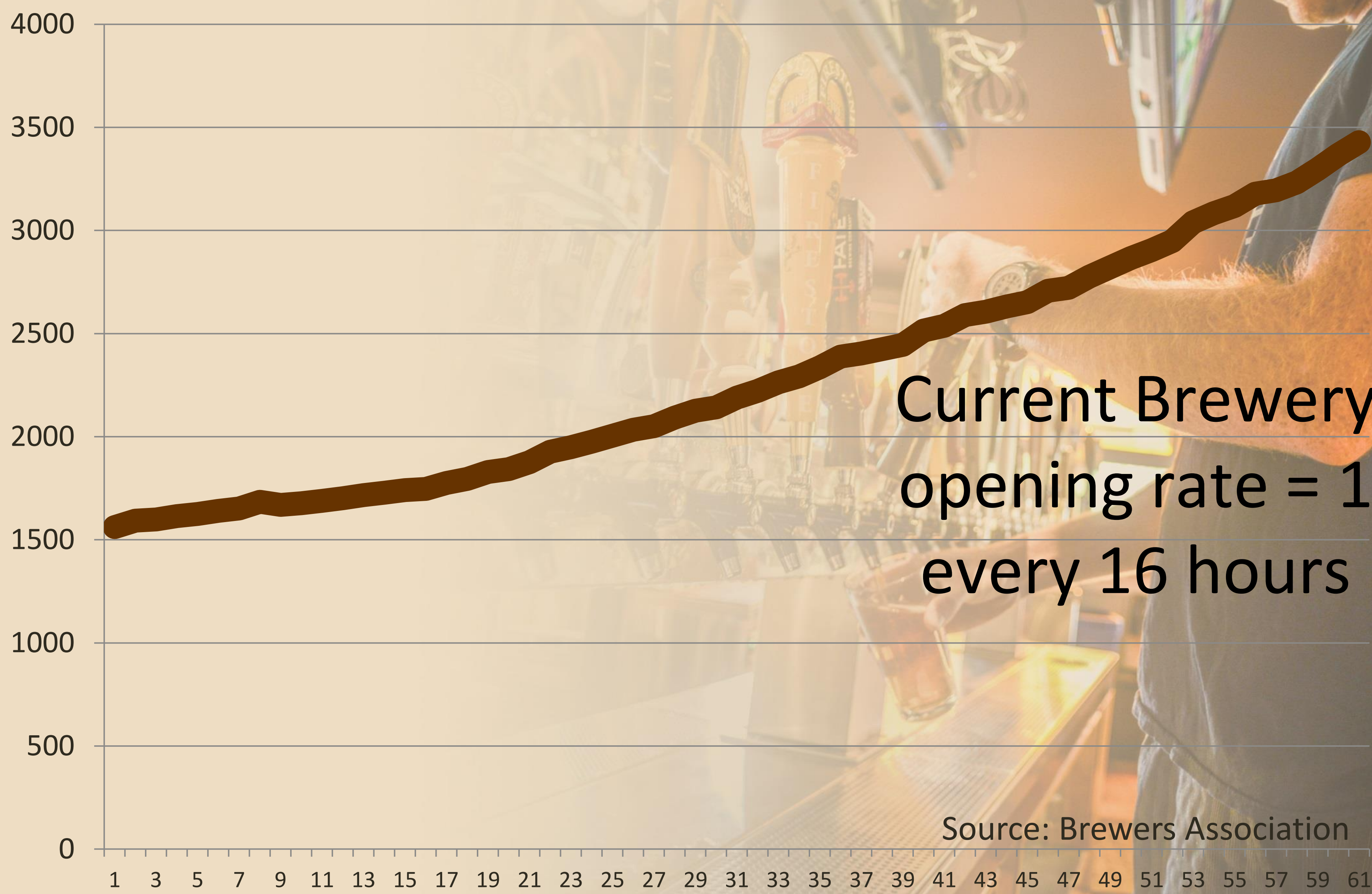
- National Craft Picture
- Shifts within Craft
- Challenges
  - Total demand
  - Varieties
  - Fractured market

National Statistics



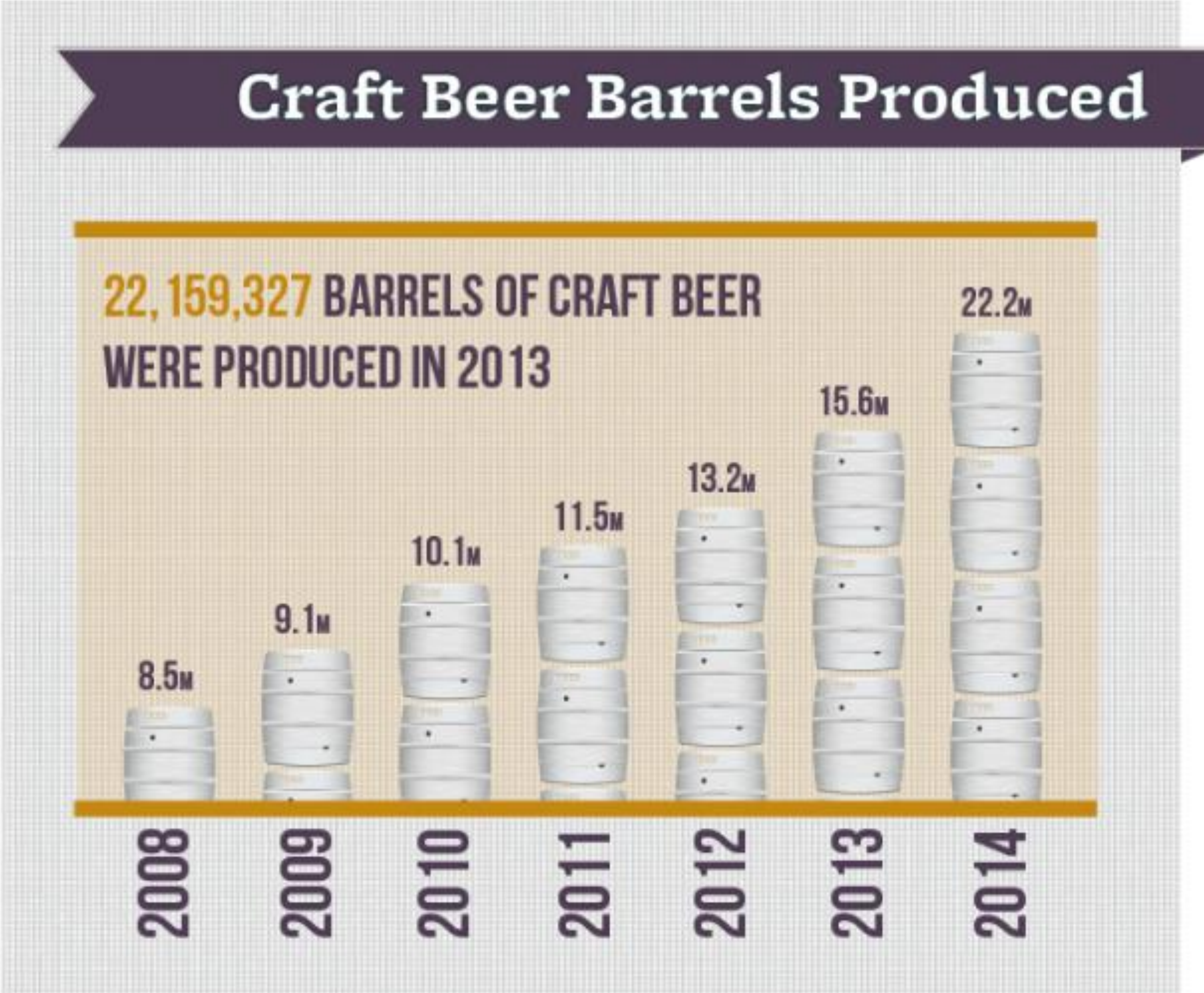

Number of Breweries by Month, February 2010 – February 2015
4000
3500
3000
2500
2000
1500
1000
500
0
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61
Source: Brewers Association

Number of Breweries by Month, February 2010 – February 2015



Current Brewery opening rate = 1 every 16 hours

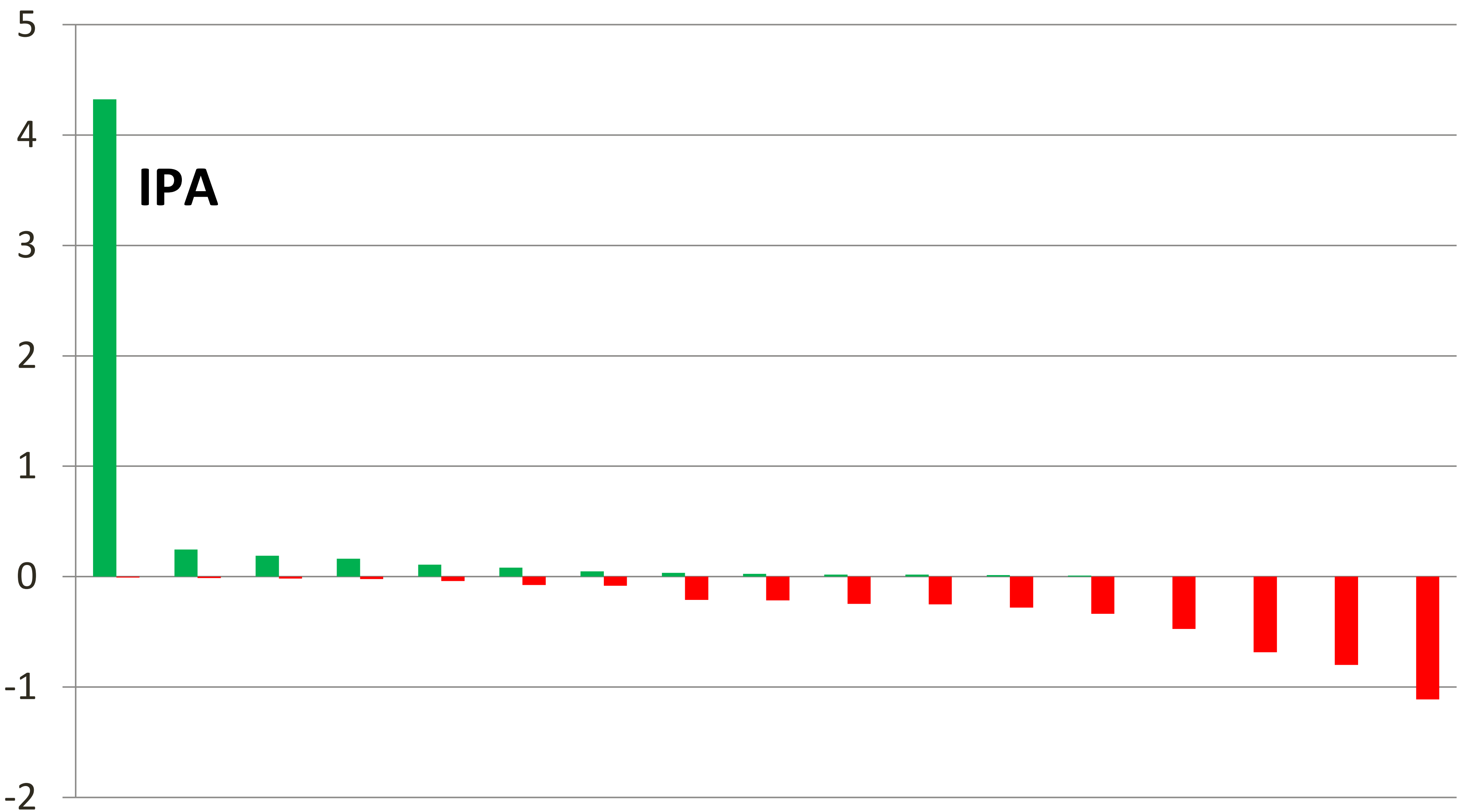
Source: Brewers Association


Craft Beer Barrels Produced
22,159,327 BARRELS OF CRAFT BEER WERE PRODUCED IN 2013
8.5M
9.1M
10.1M
11.5M
13.2M
15.6M
22.2M
2008
2009
2010
2011
2012
2013
2014

2015 Early Trends

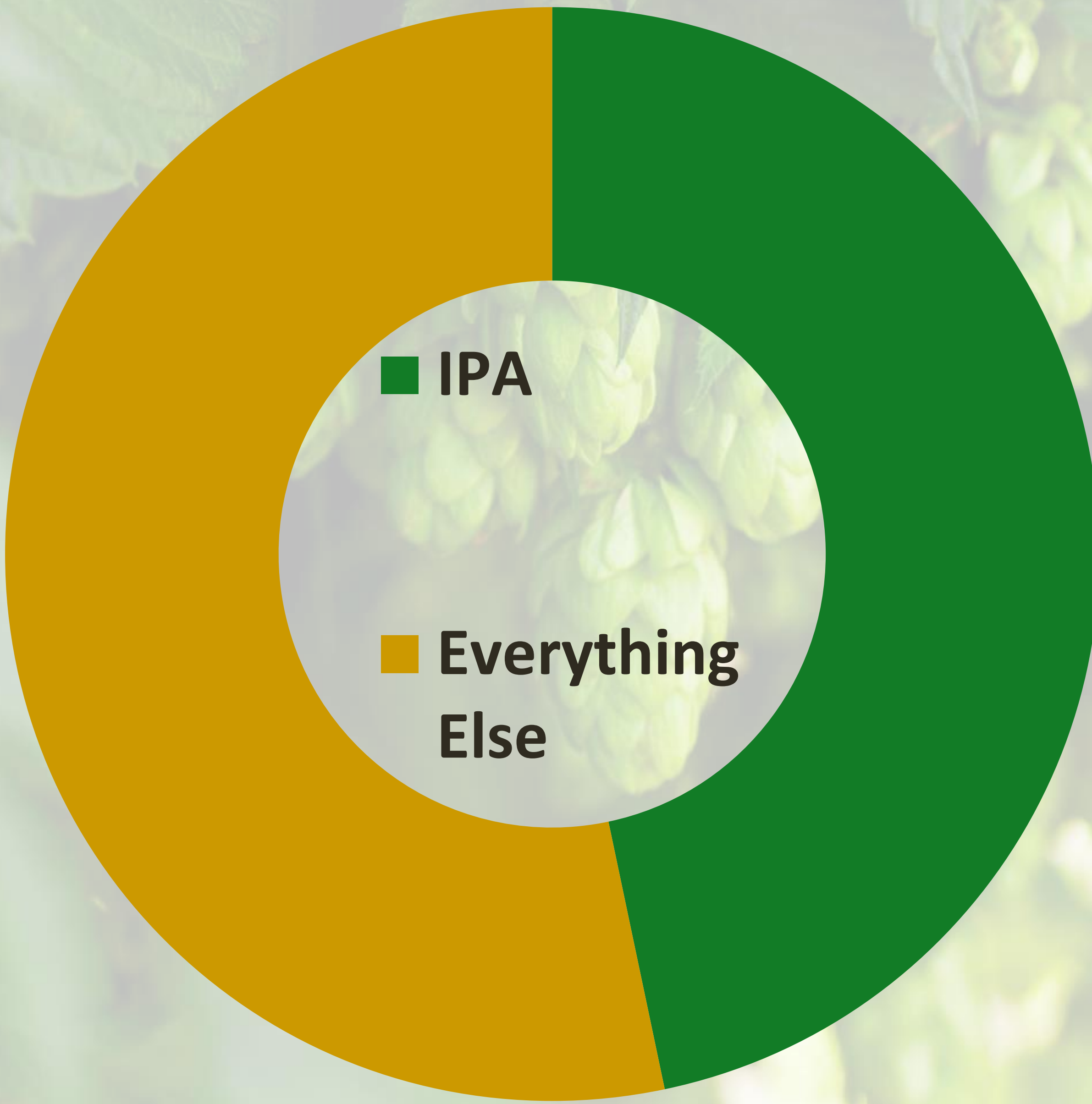
- **Continued Growth**
  - 17% YTD in scan data
    - Micros becoming a volume force
    - “All other” is now 18^{th} largest vendor
    - Growing at 198% YTD
- **Moving into mainstream**
- **Lots of capacity coming online to match production**
  - Ratio not statistically different from last year

Craft – Volume Share Change, 2014

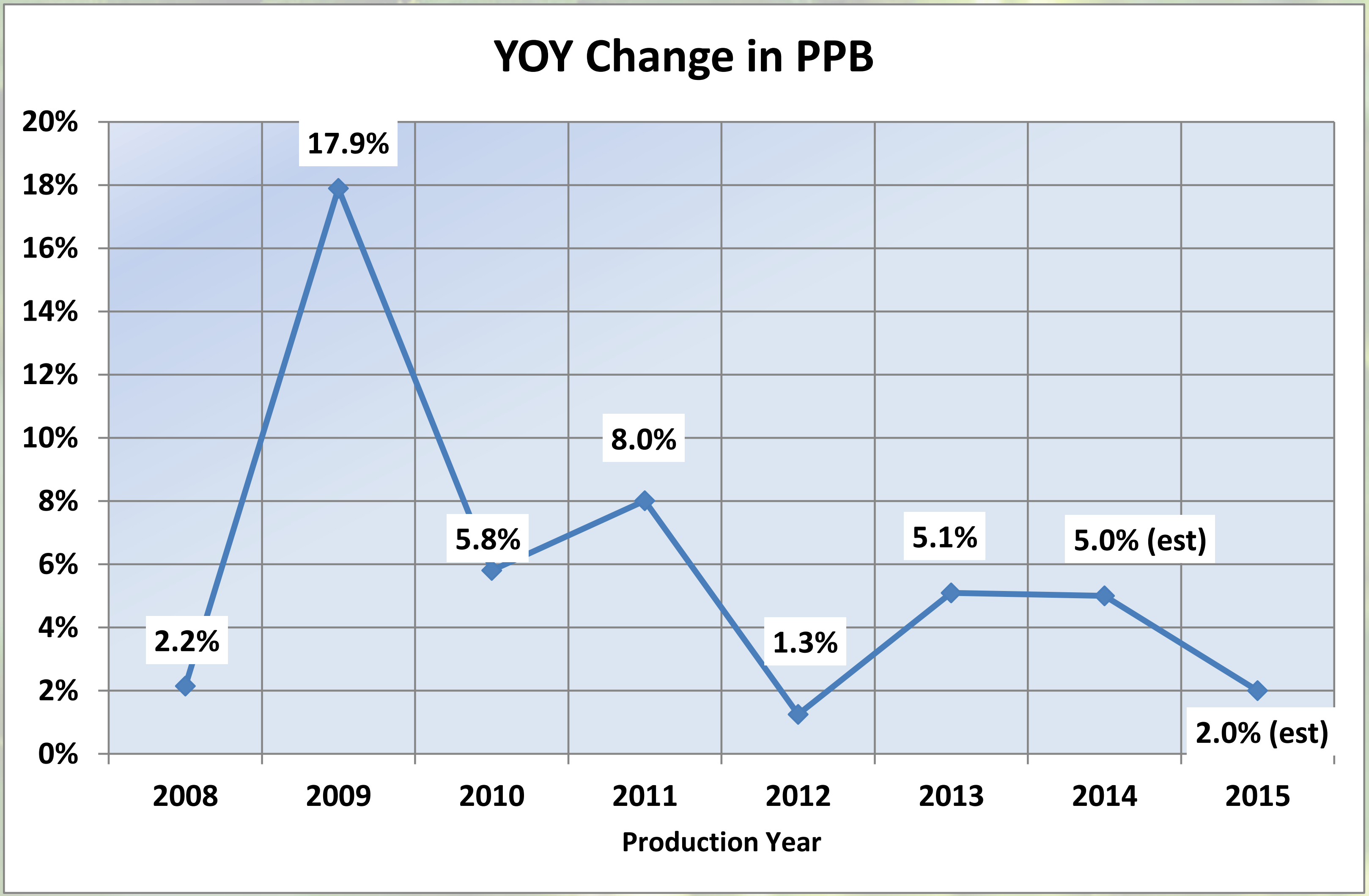


Source: IRI (2015)

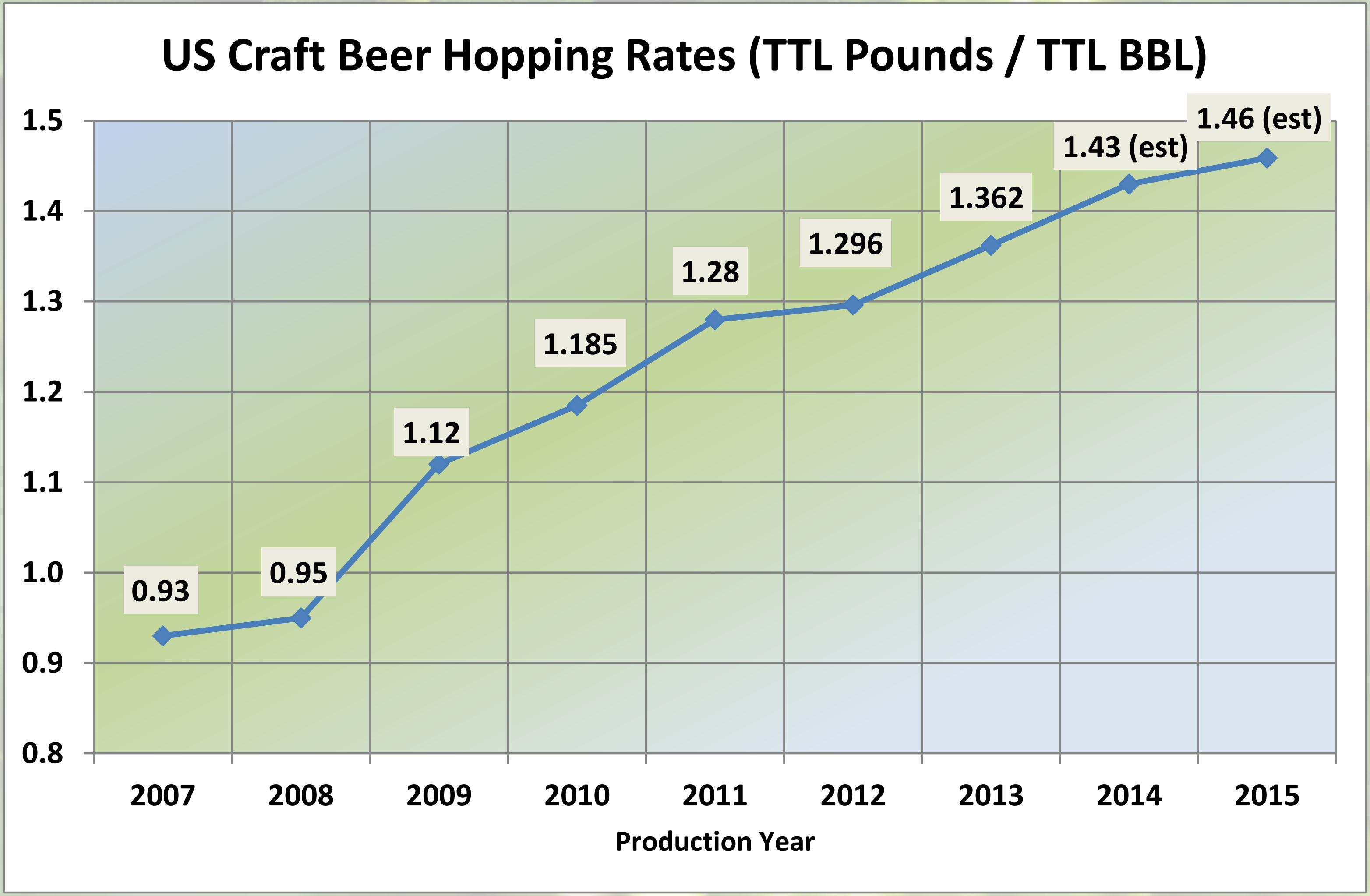
Craft Volume Change vs YA, YTD by Style
IRI MULO+C Scan Data, through 12/28/14



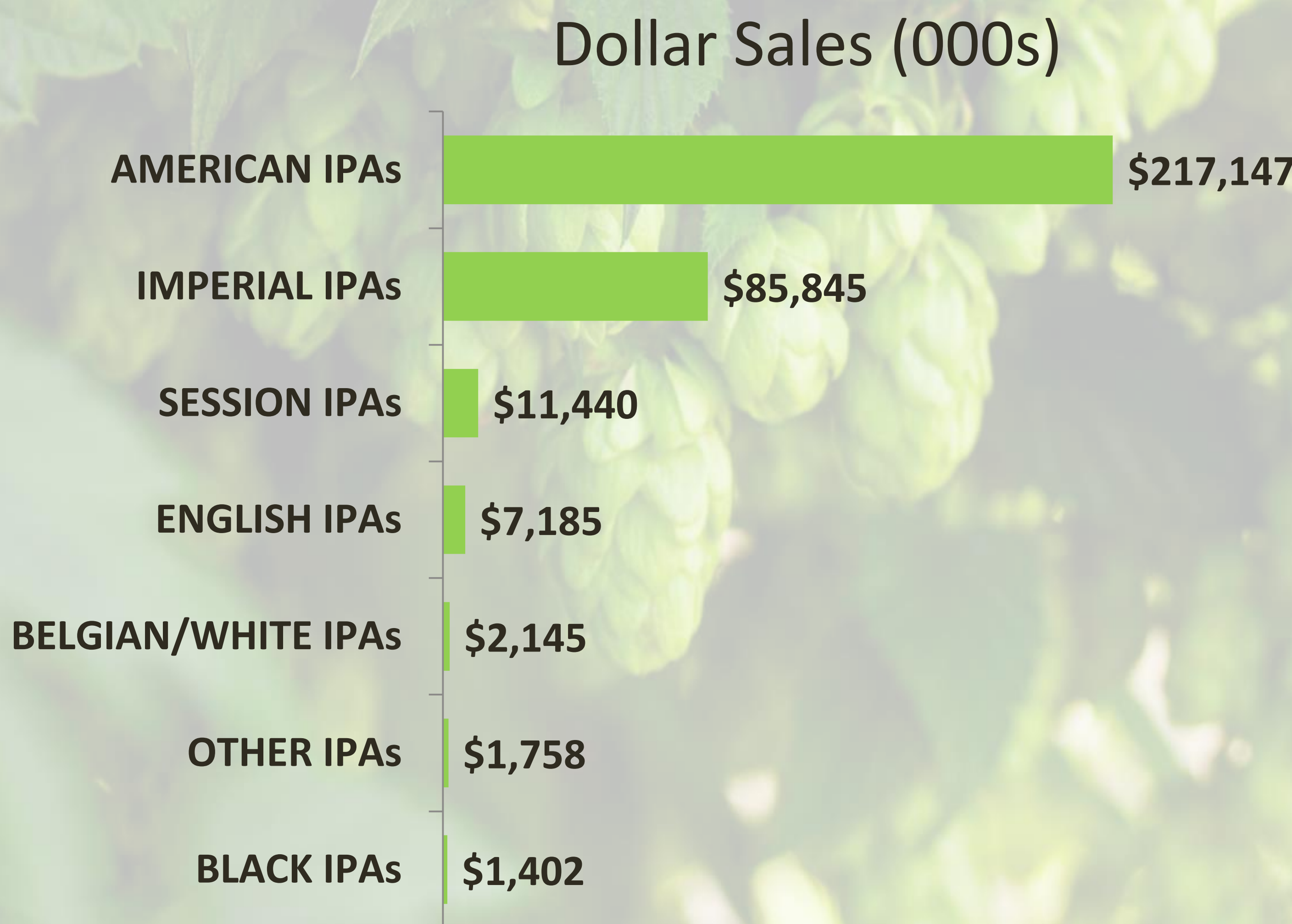
Drives Per Barrel Hoping Rate



Hops/Barrel


US Craft Beer Hopping Rates (TTL Pounds / TTL BBL)
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.93
0.95
1.12
1.185
1.28
1.296
1.362
1.43 (est)
1.46 (est)
2007
2008
2009
2010
2011
2012
2013
2014
2015
Production Year

IPA Styles Supermarket Dollar Sales
Source: IRI Group



% Chg vs YA
42.3%
20.9%
338.8%
22.5%
-21.5%
-12.2%
6.3%

Imperial IPA Hopping Rates

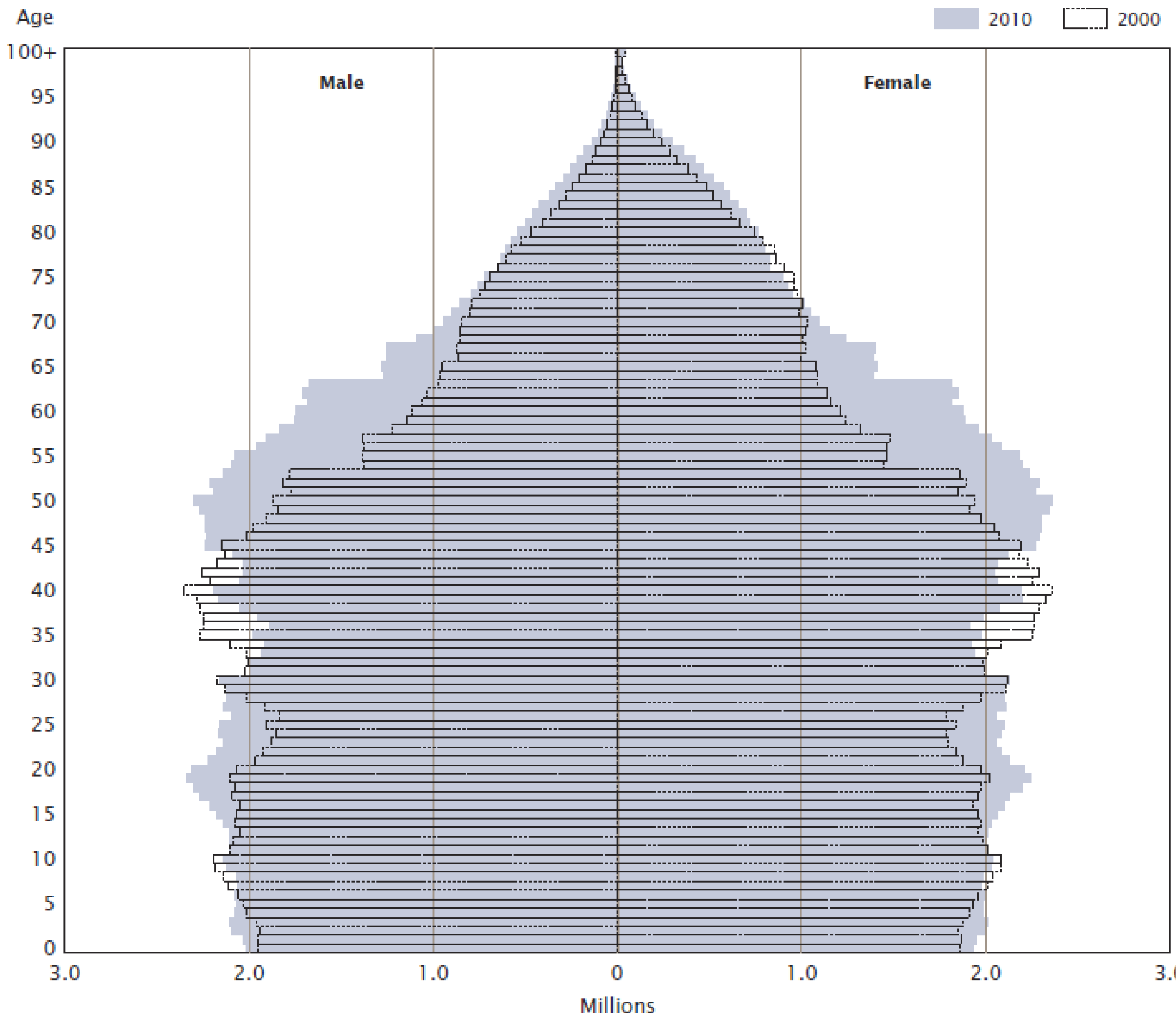
- Surveyed producers of top 10 craft Imperial IPAs
- 6 responses
  - Represent about 2/3 of imperial sales in scans
  - Market weighted average usage 2.3 lbs/barrel
  - Half using more than 3 lbs/barrel

Future Hop Usage

Future Craft Segment Growth

- **Demographics**
  - Good and bad news, mostly good
- **Market Trends**
  - Blue oceans (Southeast)
  - Current Growth
  - Premiumization
- **Brewery Trends**
  - When does the exponential curve stop?

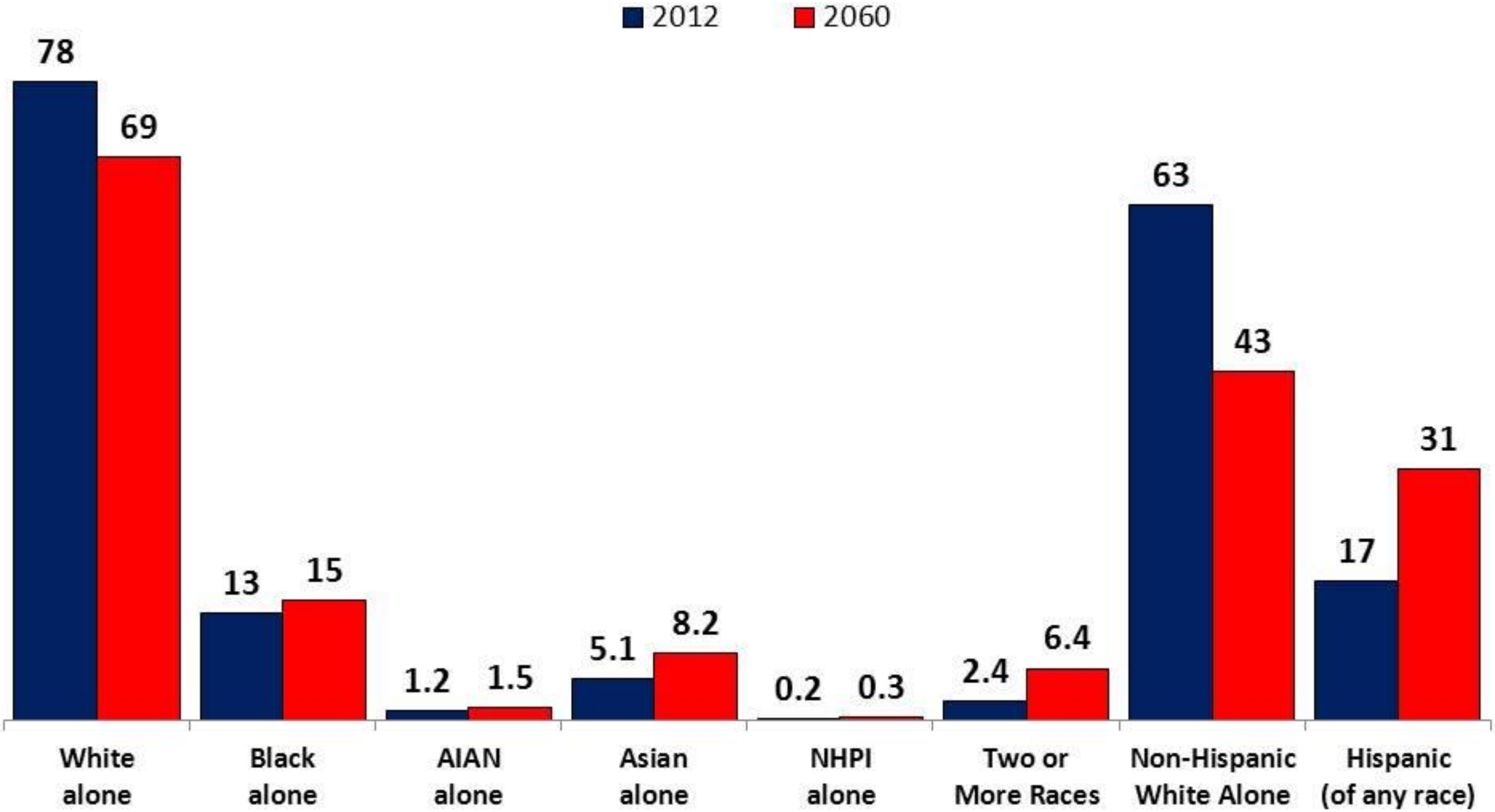
The Millennials



Sources: U.S. Census Bureau, *Census 2000 Summary File 1* and *2010 Census Summary File 1*.

Population by Race and Hispanic Origin: 2012 and 2060

(Percent of total population)



AIAN=American Indian and Alaska Native; NHPI=Native Hawaiian and Other Pacific Islander

United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU

Blue Oceans

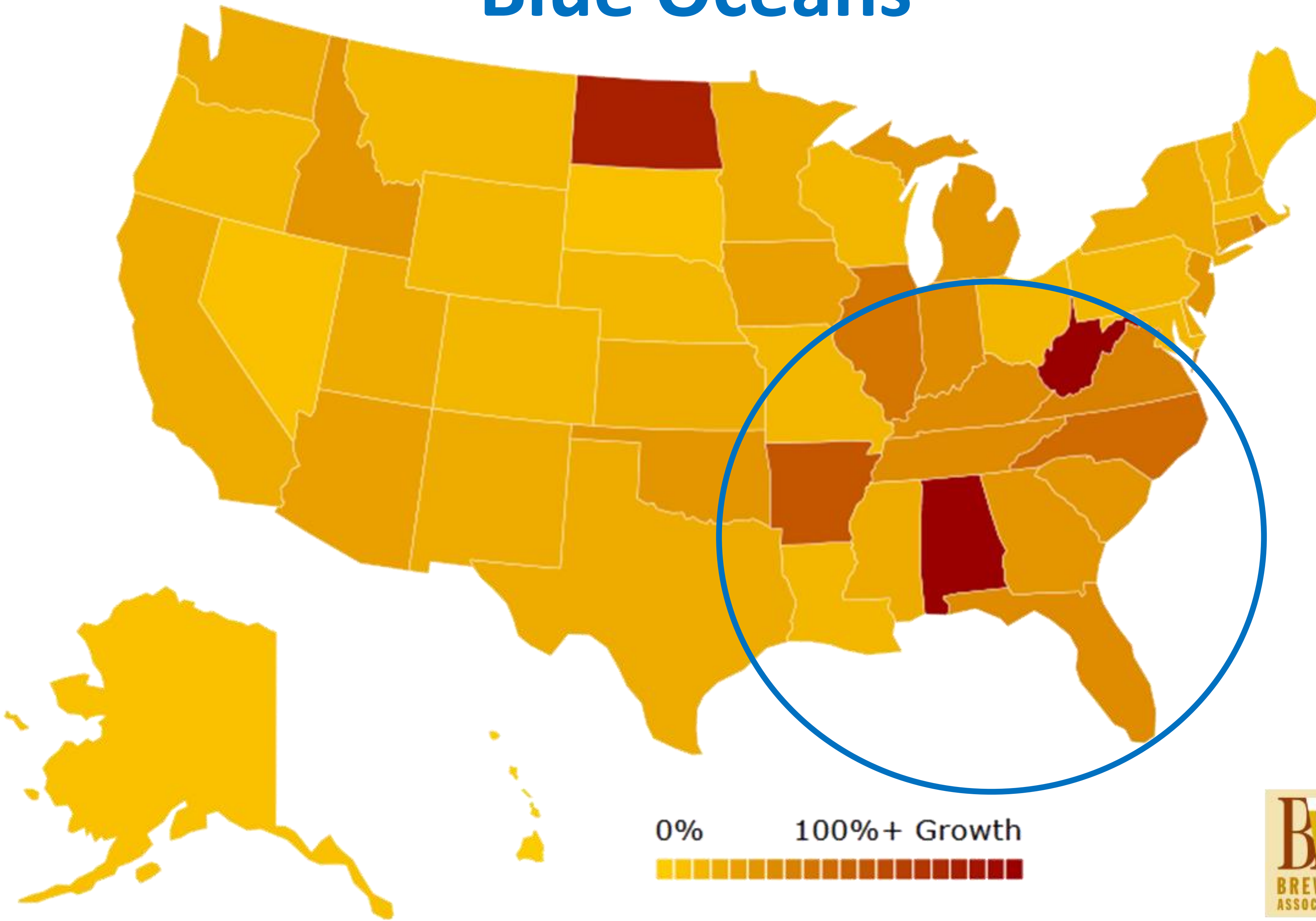


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Figure 1. Historical Craft Production Growth Rate vs. 11% Growth and 2005-2014 Average

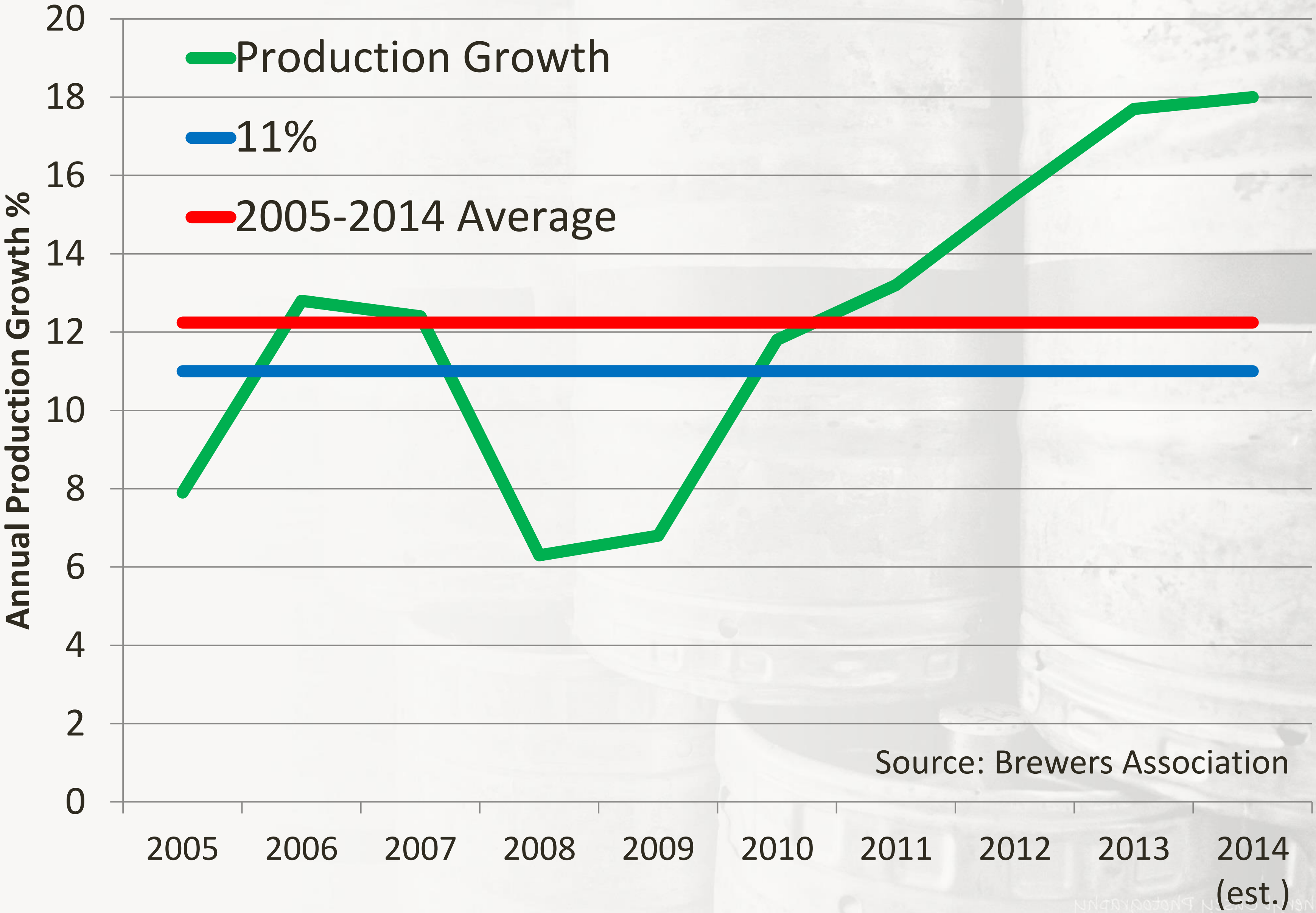
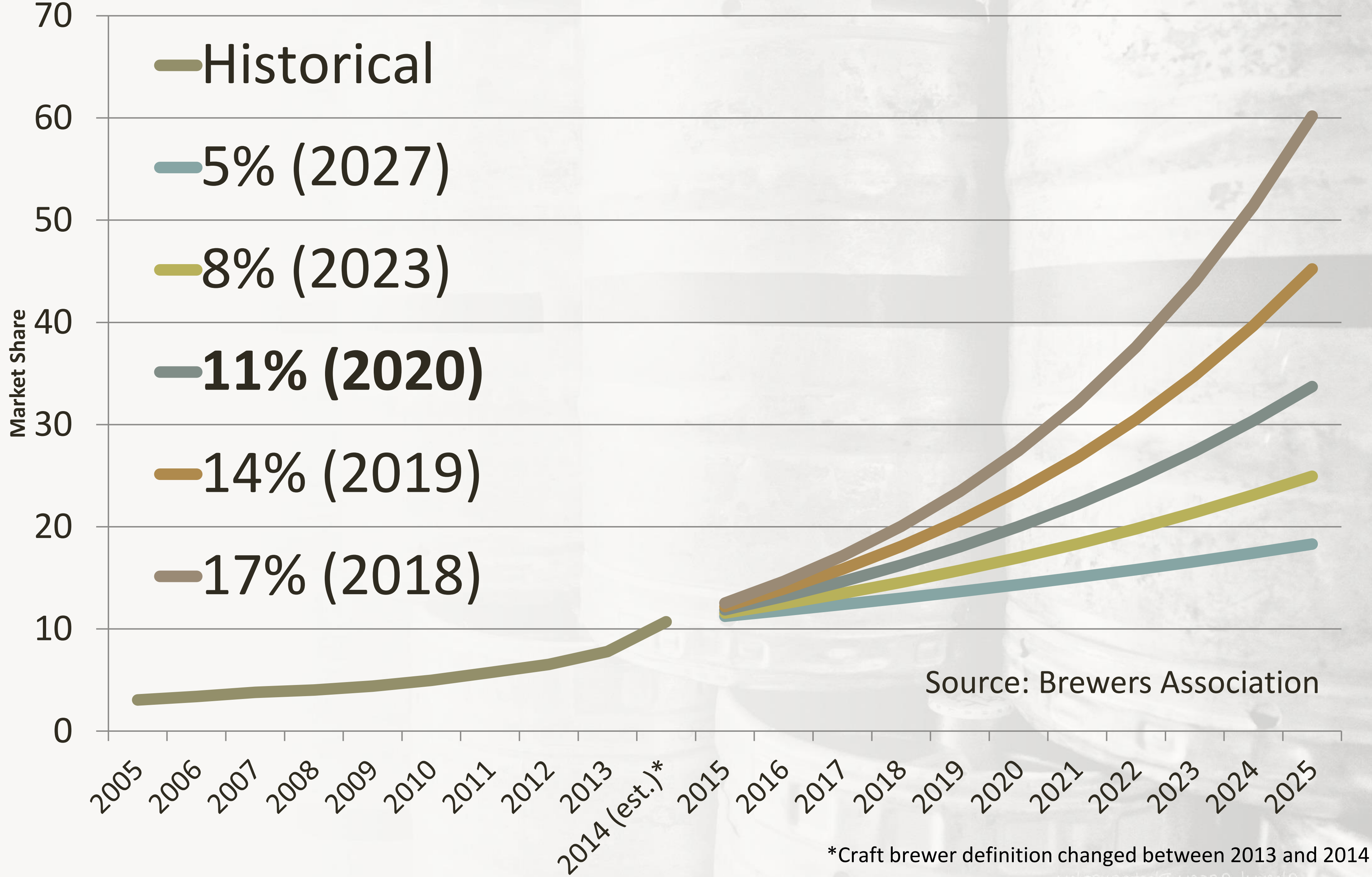
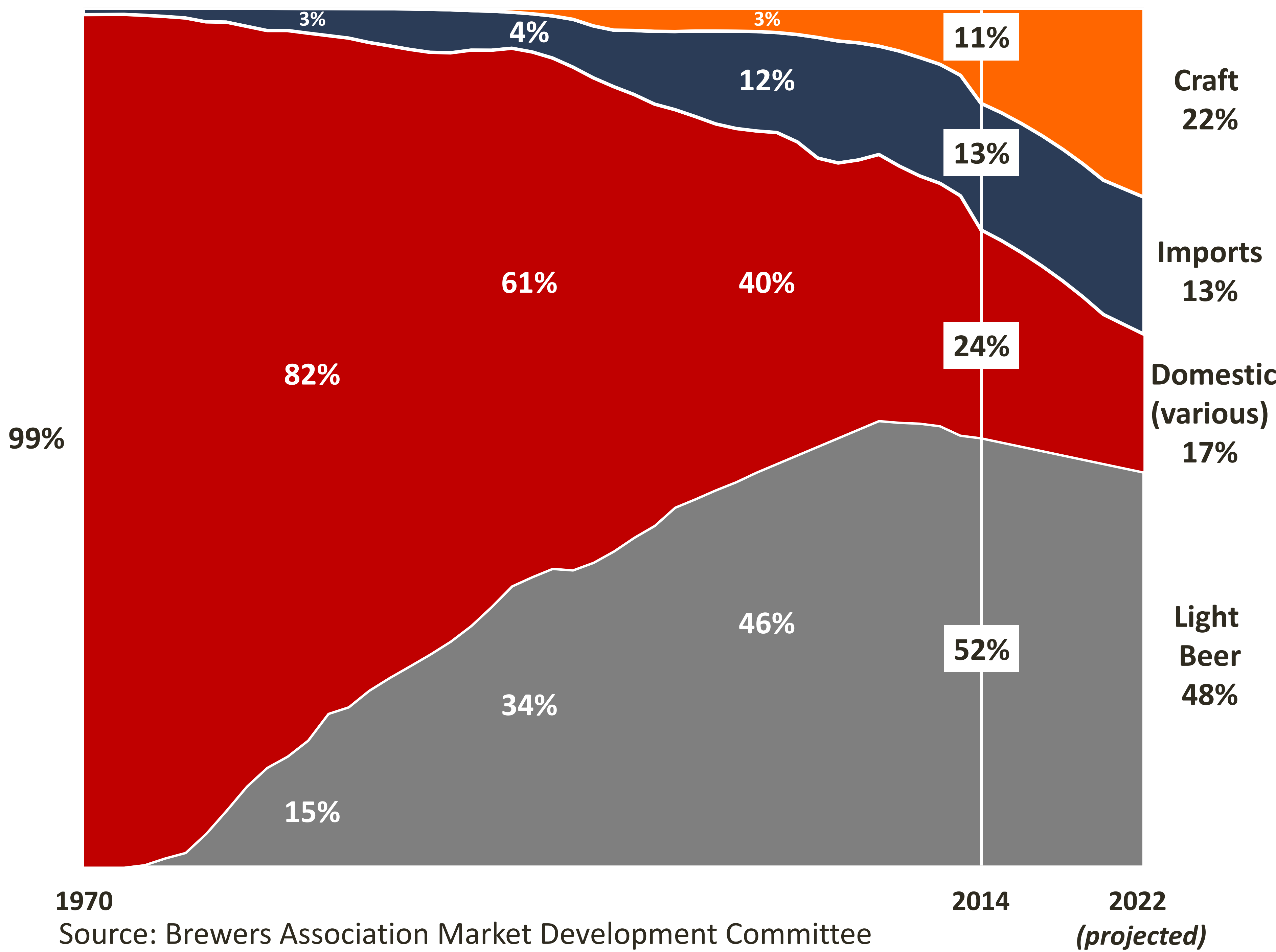


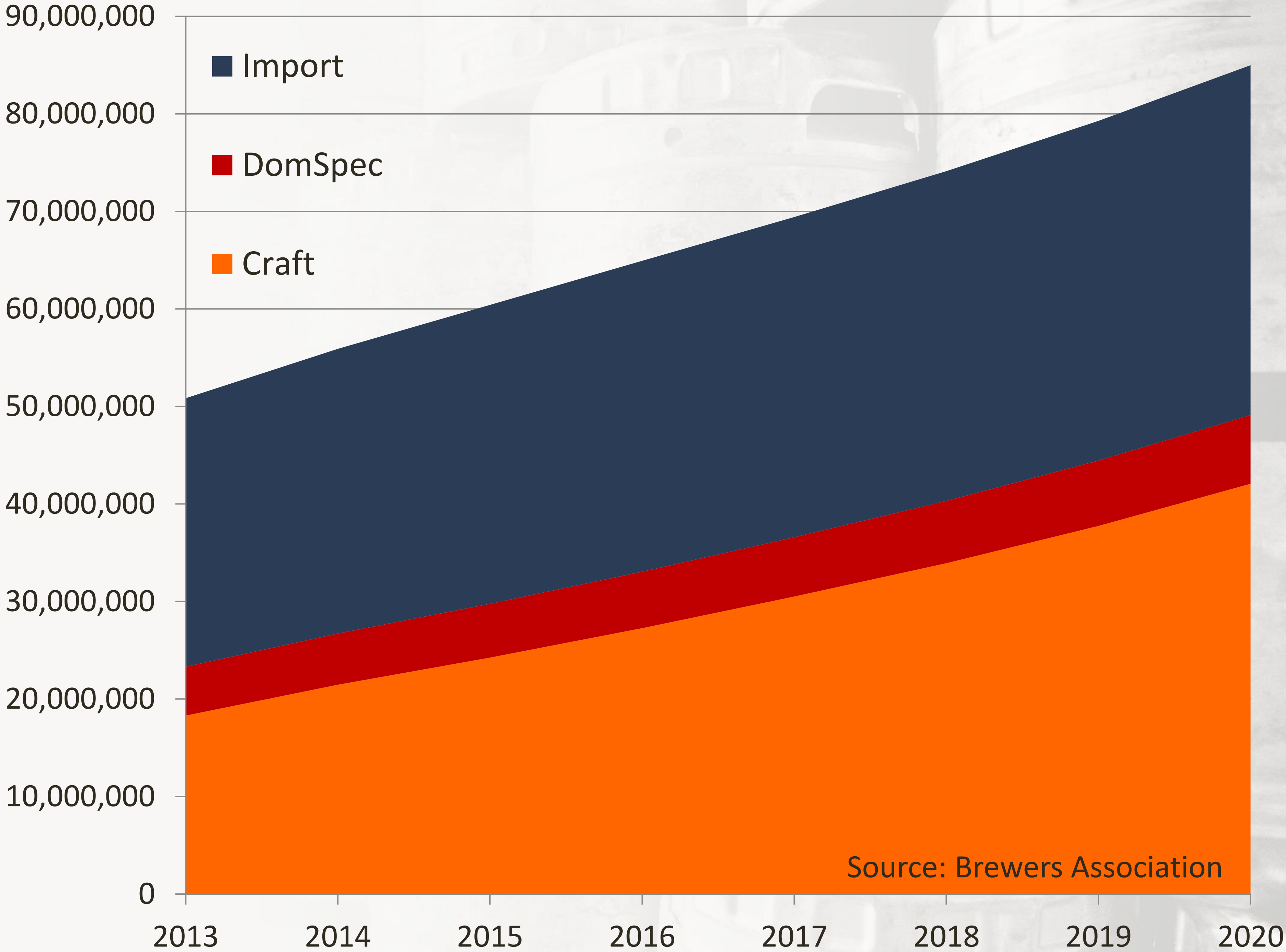
Figure 2. Paths to Craft 20 Share by Share Growth Rate; Year 20 Share achieved in Parantheses



*Craft brewer definition changed between 2013 and 2014

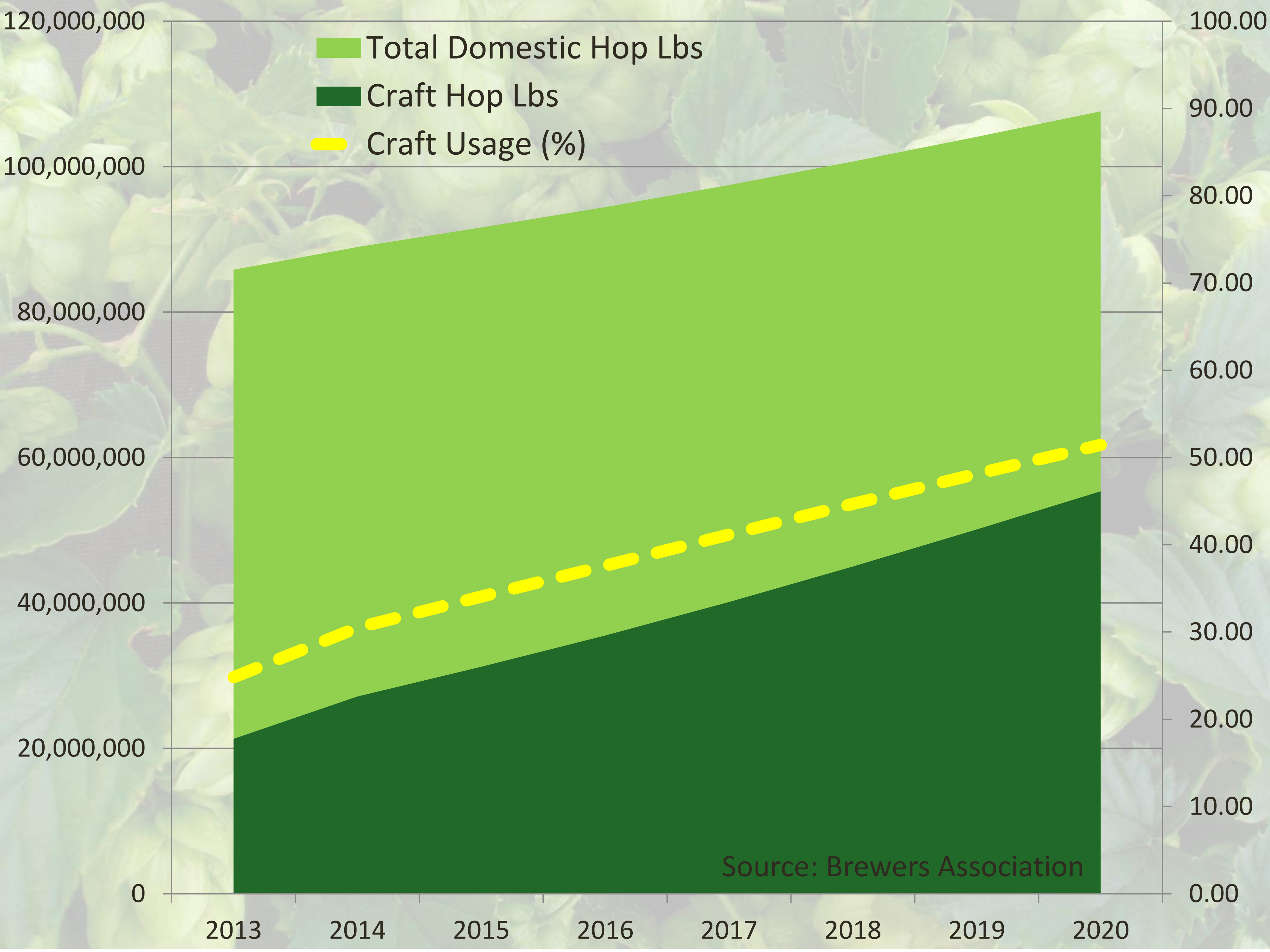


Source: Brewers Association Market Development Committee

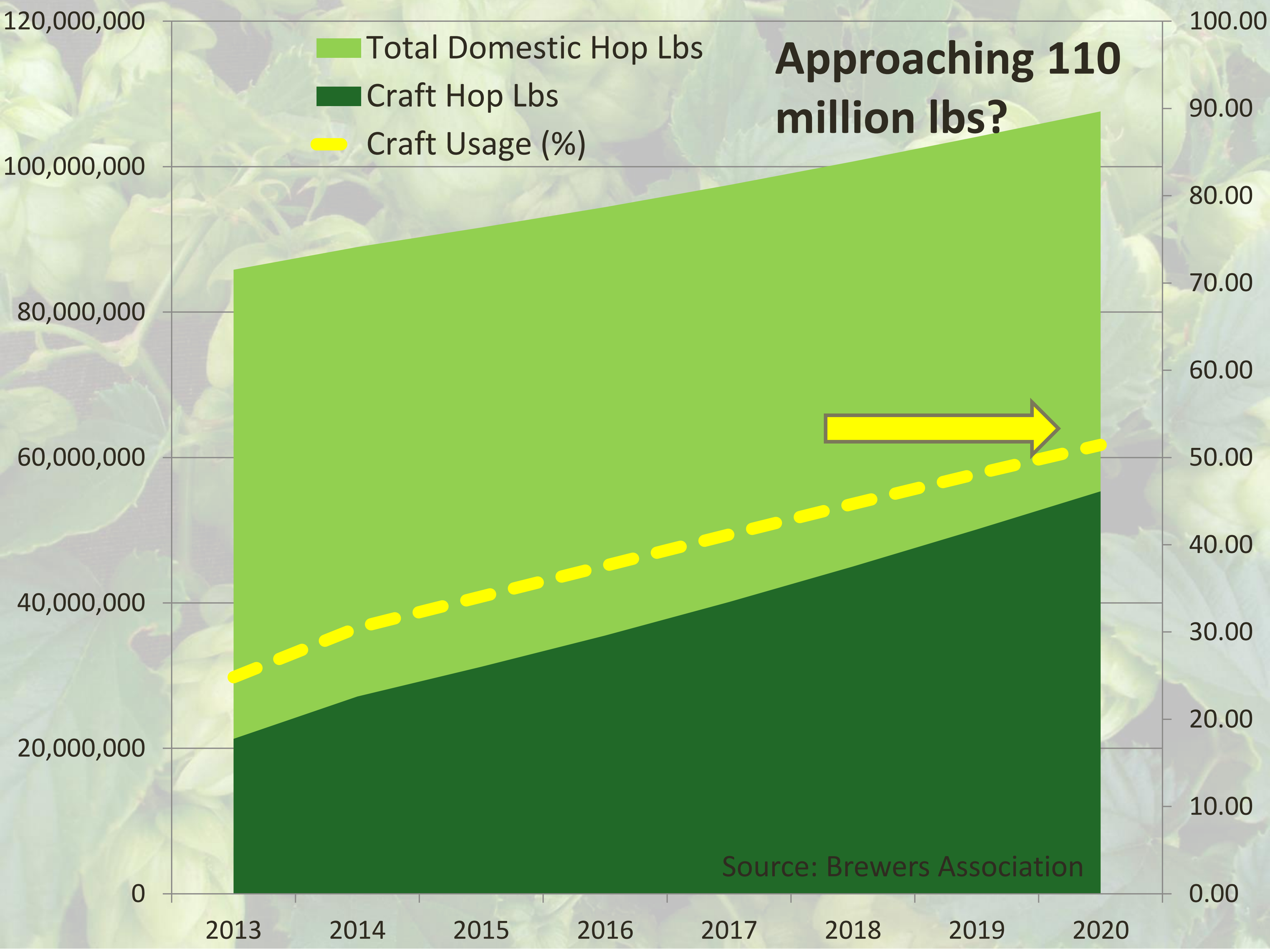

90,000,000
80,000,000
70,000,000
60,000,000
50,000,000
40,000,000
30,000,000
20,000,000
10,000,000
0
Import
DomSpec
Craft
Source: Brewers Association
2013
2014
2015
2016
2017
2018
2019
2020

Concerns on the Horizon?

- **Hop Usage**
  - At 20% share, craft hop usage is 2/3 of current national production – even without increase in usage/bbl
- **Hop Varieties**
  - Larger scale only part of the challenge
  - Issues like growing windows necessitate further investment



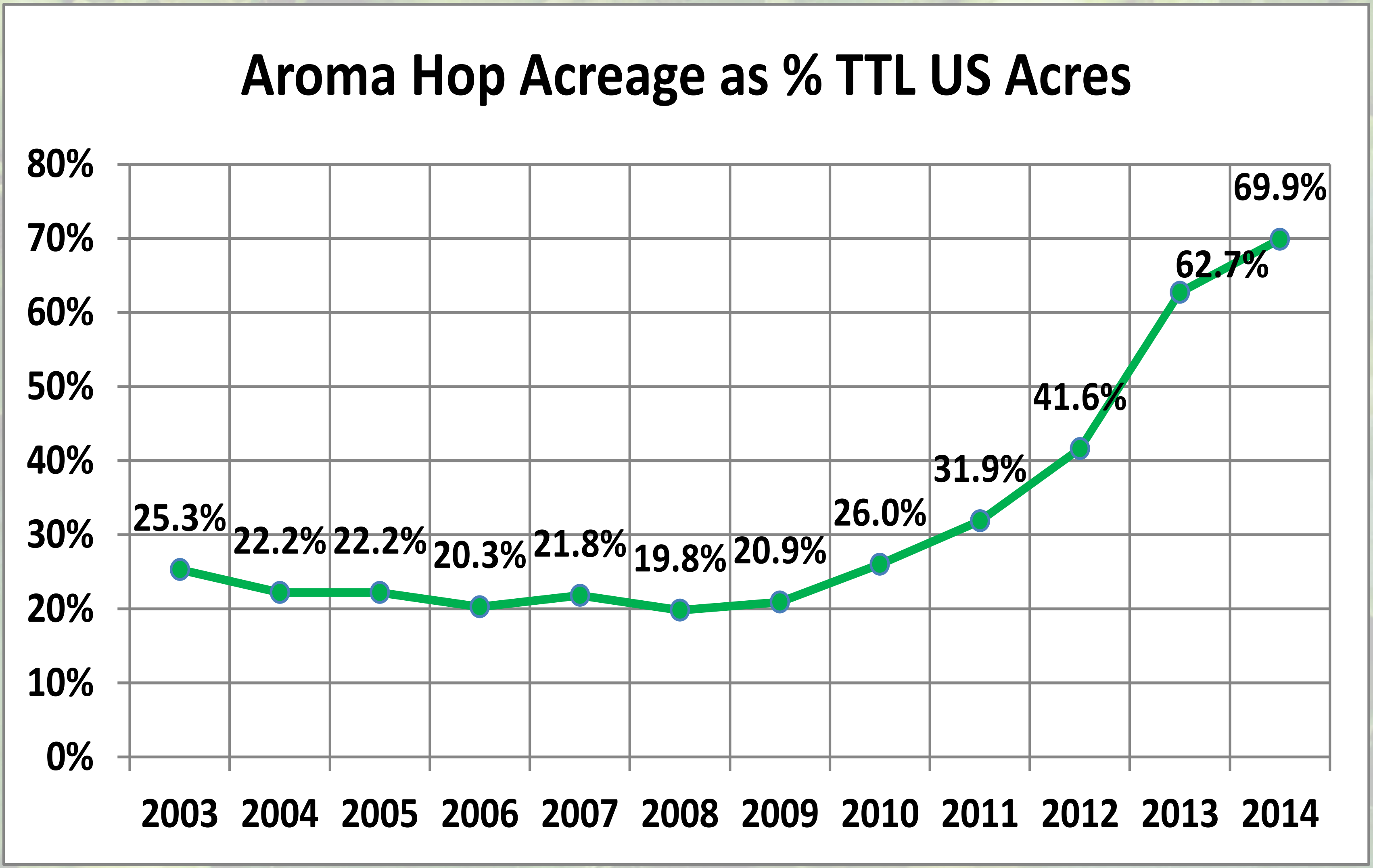
Total Domestic Hop Lbs
Craft Hop Lbs
Craft Usage (%)
120,000,000
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2013
2014
2015
2016
2017
2018
2019
2020
Source: Brewers Association


Total Domestic Hop Lbs
Craft Hop Lbs
Craft Usage (%)
Approaching 110 million lbs?
Source: Brewers Association
120,000,000
100,000,000
80,000,000
60,000,000
40,000,000
20,000,000
0
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
2013
2014
2015
2016
2017
2018
2019
2020

Getting to 20/20 - Hops

- 25% increase in hop volume
- Greater increase in acreage/resources
  - 30% increase in acres
  - Acreage needed greater than hop increase
    - Aroma vs Alpha
    - Starting to run out of acres to switch
    - More resource intensive
  - $10K an acre + processing ($5K)
    - Capacity is fine – but harvest windows tightening
    - “New” acres cost more

Aroma Hop Acreage



Getting to 20/20 - Hops

- 12,000 new acres? + Export growth?
- $180 million *minimum* in acreage investments?
- Growers get it, but more work
- 25 million more pounds of hops
  - Pelletizing infrastructure
  - Storage (even 25 cents a pound adds up)
  - New technologies/products
    - Hop Hunter anyone?

Getting to 20/20 - Hops

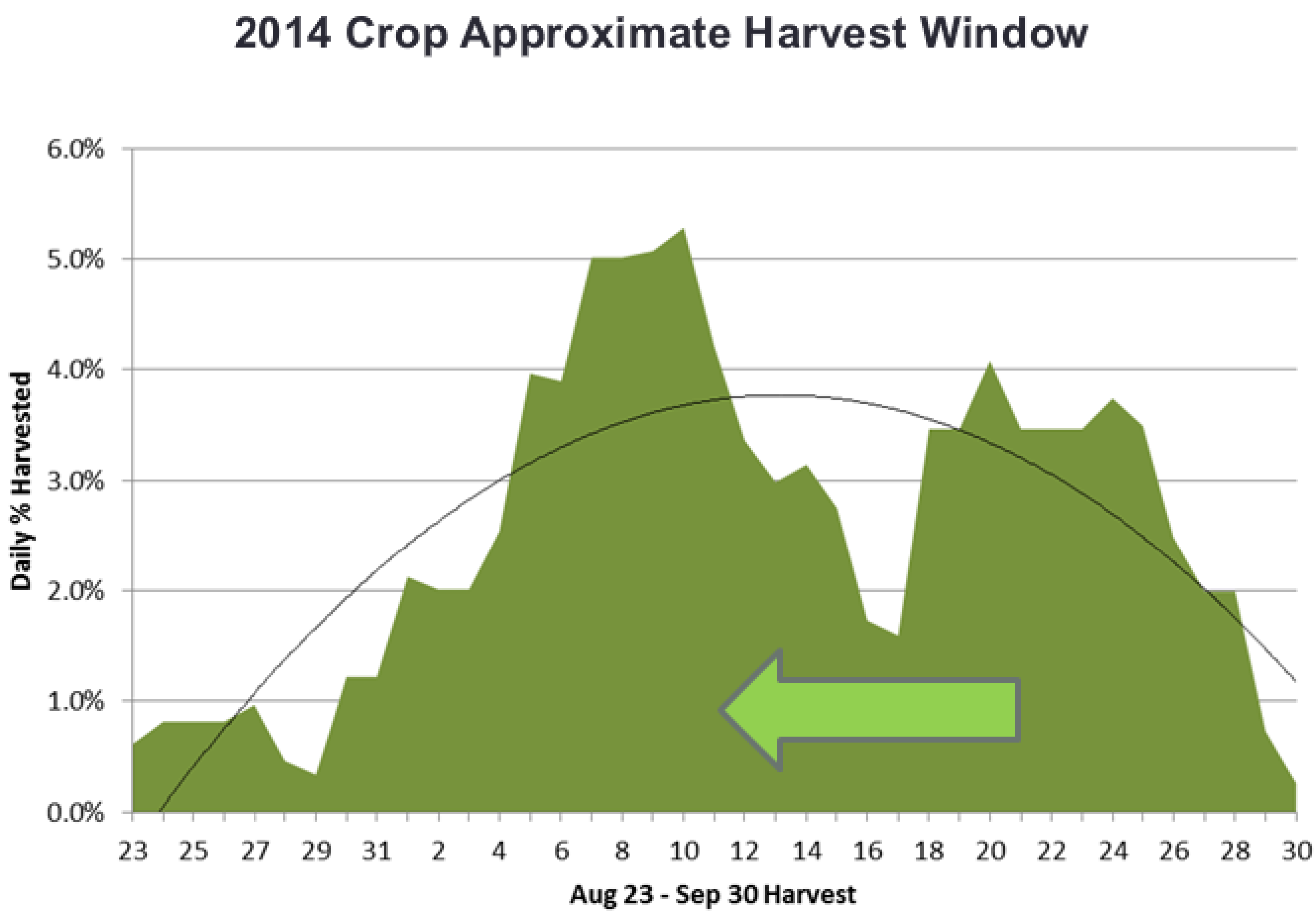
- Other investments may double cost
  - Collective half a billion $'s not out of the picture
- Will new areas help?
- Yes, but right now at the margins
  - Lack of scale
  - Higher cost
  - Uncertain demand
  - More fragmented

Craft Brewer Hop Usage
Top Ten Varieties

2010 2011	2011 2012	2012 2013	2013 2014
Cascade	Cascade	Cascade	Cascade
Centennial	Centennial	Centennial	Centennial
Chinook	Chinook	Chinook	Simcoe
Amarillo	Willamette	CTZ	Chinook
Willamette	Simcoe	Simcoe	CTZ
CTZ	CTZ	Amarillo	Amarillo
Crystal	US Golding	Crystal	Crystal
Simcoe	Crystal	Willamette	Willamette
US Golding	Amarillo	Saaz (CZ)	Citra
Ahtanum	Ahtanum	US Golding	Saaz (CZ)

Varieties Drive Volume Growth

Varieties Create Challenges



- ✓ Approx. 38,000 acres grown in 2014, closer to 40/60 mix of high alpha to aroma hops
- ✓ Fewer early and late maturing varieties, many of the aroma/flavor varieties clustering into mid-Sep

Malt Imports as a % of Domestic Malt Usage, 1990-2012

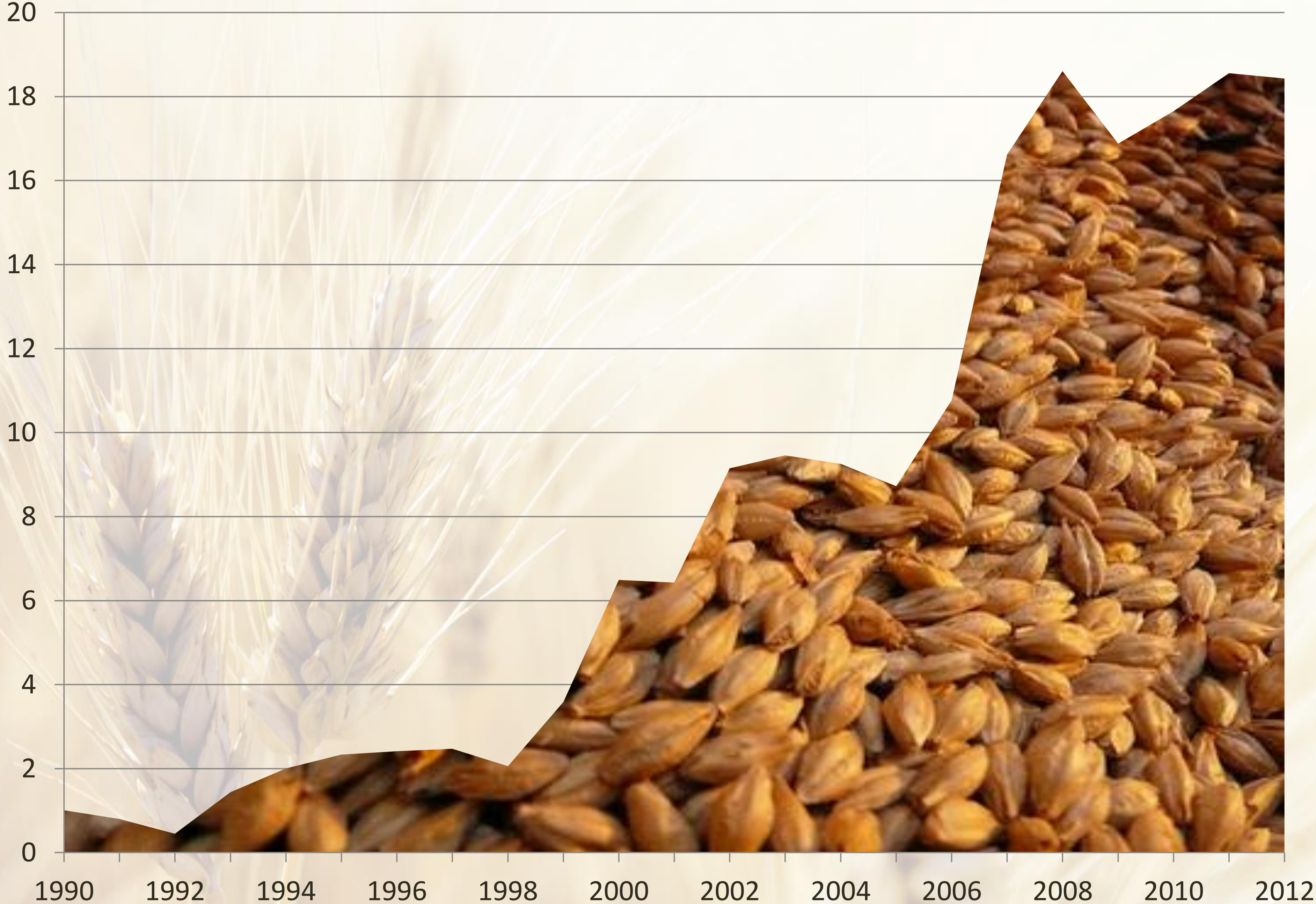
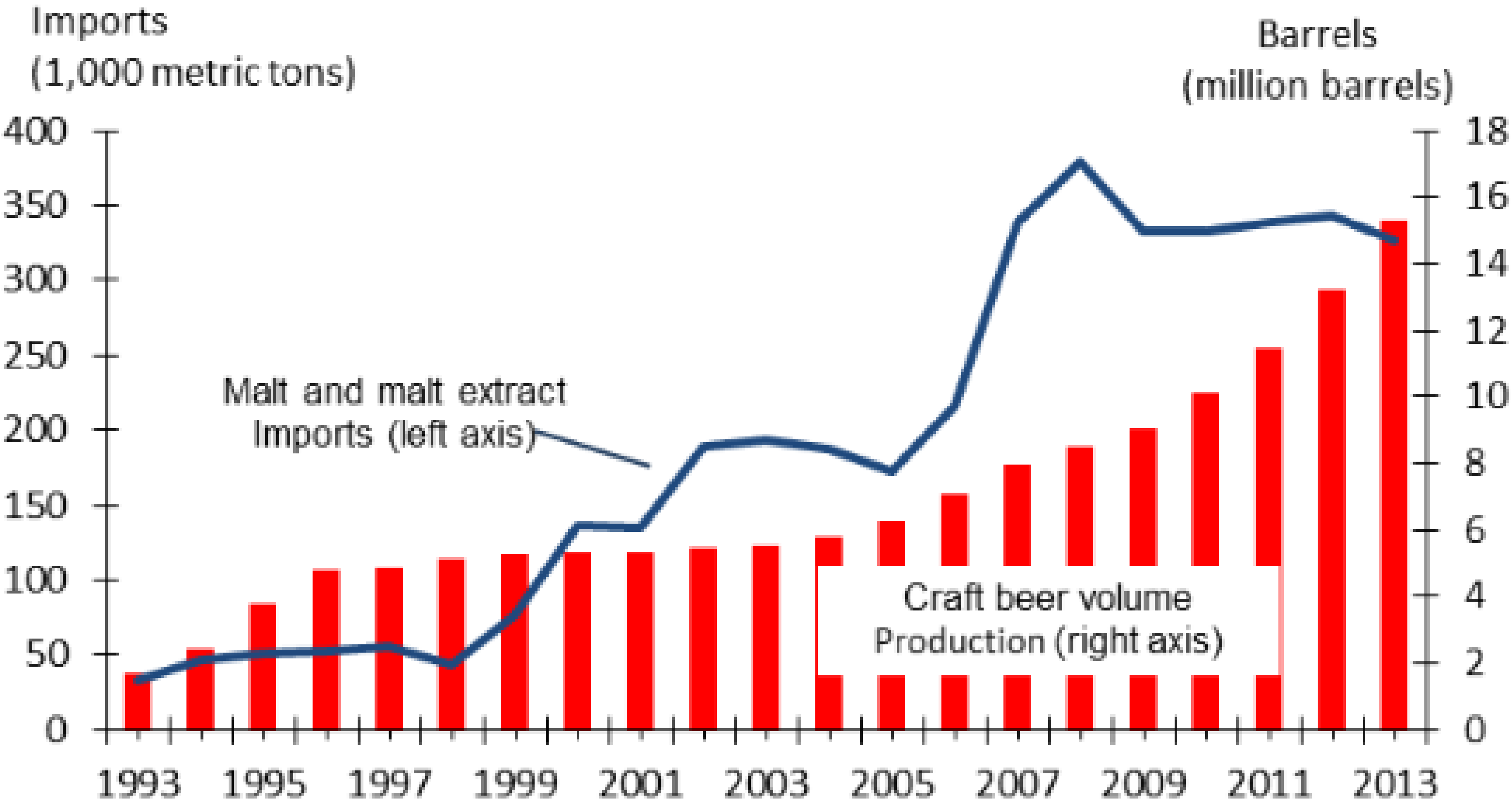


Figure 2: Domestic craft beer volume production and malt imports



Sources: U.S. Census Trade Data and Brewers Association.

Questions?

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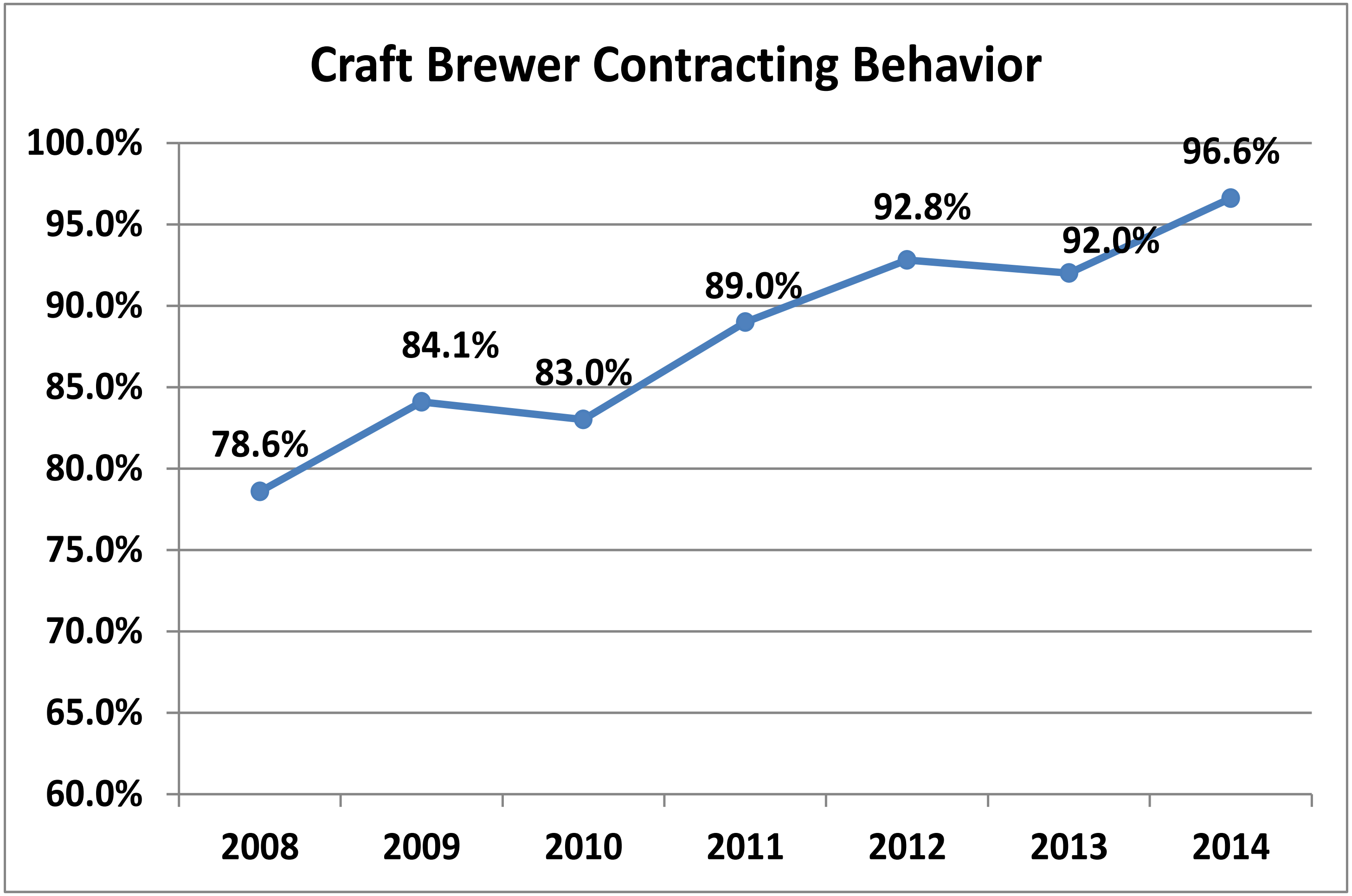
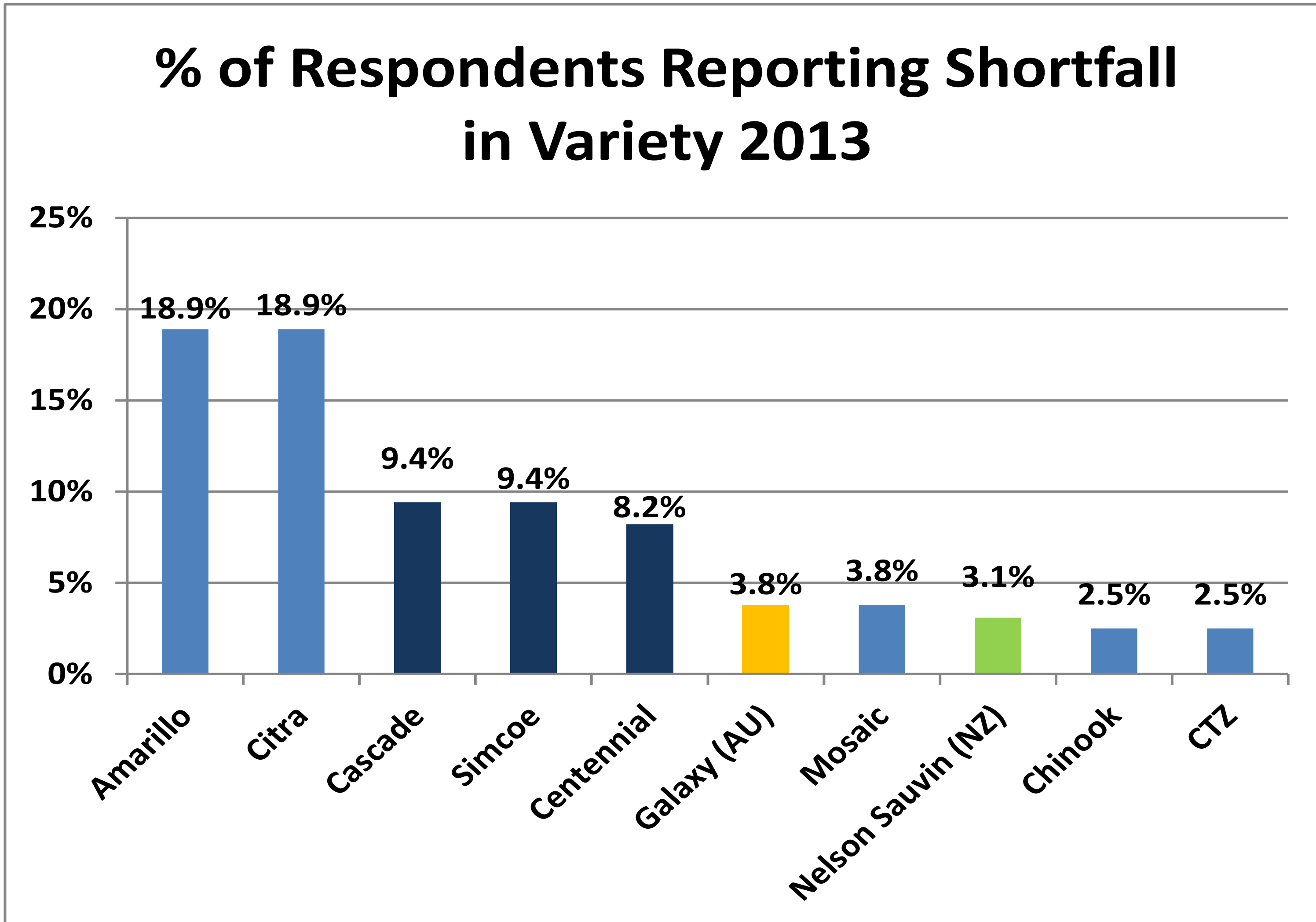
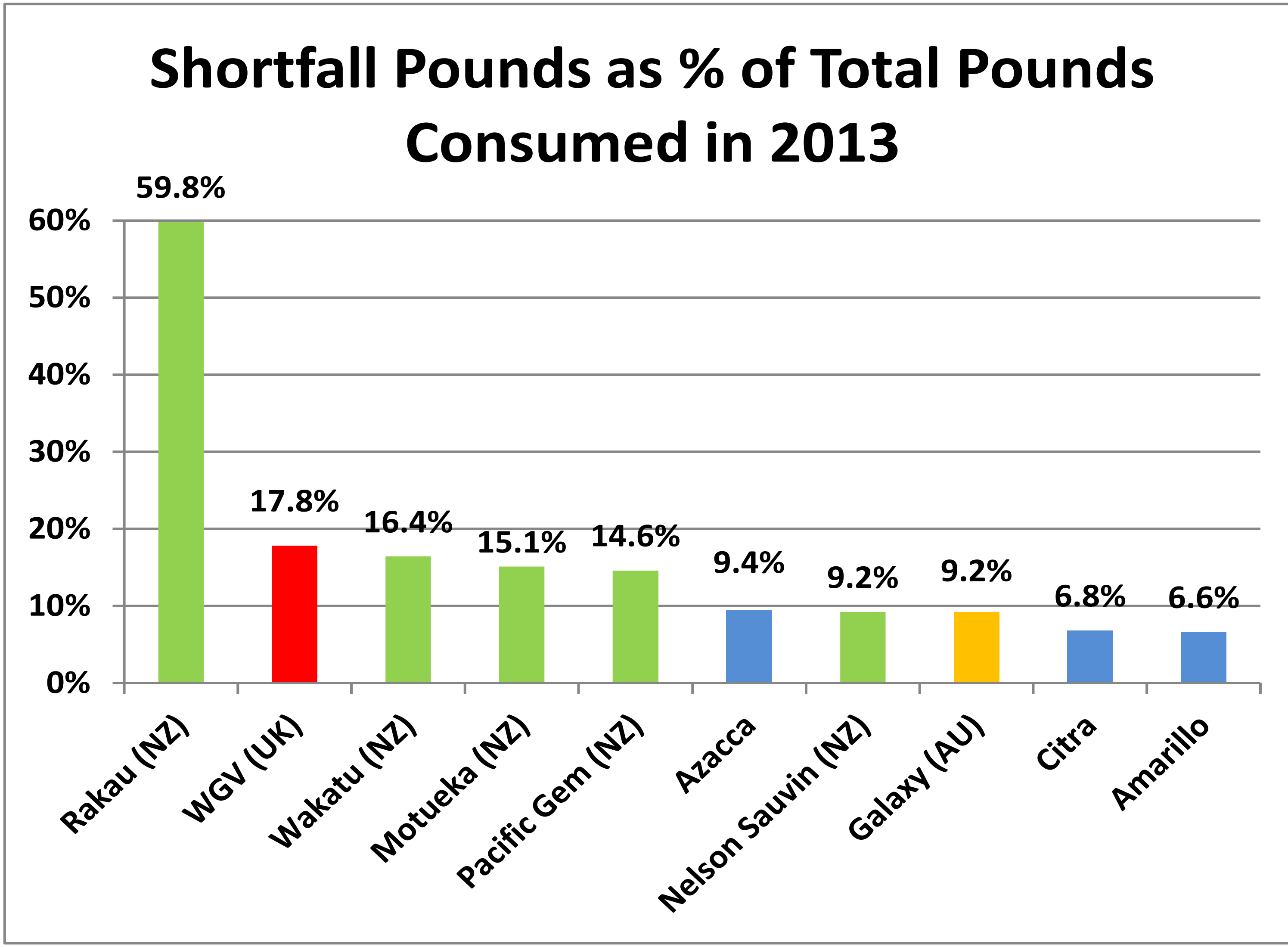
Contract Or Die



Shortfall


% of Respondents Reporting Shortfall in Variety 2013
25%
20%
15%
10%
5%
0%
18.9%
18.9%
9.4%
9.4%
8.2%
3.8%
3.8%
3.1%
2.5%
2.5%
Amarillo
Citra
Cascade
Simcoe
Centennial
Galaxy (AU)
Mosaic
Nelson Sauvin (NZ)
Chinook
CTZ

Shortfall



Shortfall Pounds as % of Total Pounds Consumed in 2013
59.8%
17.8%
16.4%
15.1%
14.6%
9.4%
9.2%
9.2%
6.8%
6.6%
60%
50%
40%
30%
20%
10%
0%
Rakau (NZ)
WGV (UK)
Wakatu (NZ)
Motueka (NZ)
Pacific Gem (NZ)
Azacca
Nelson Sauvin (NZ)
Galaxy (AU)
Citra
Amarillo