Retail + Freight + Robots = land use revolution
Our land use tells us about our society...
CLEVELAND’S SMART MILE TRACK

Randall Park
The 1940s = JOBS
The 1970s = RETAIL
The 2010s = FREIGHT
The 2040s = ???
The 1940s = JOBS
The 1970s = RETAIL
The 2010s = FREIGHT
The 2040s = ???
The 1940s = JOBS
The 1970s = RETAIL
The 2010s = FREIGHT
The 2040s = ???
The 1940s = JOBS
The 1970s = RETAIL
The 2010s = FREIGHT
The 2040s = ???
Assumptions:

• Automation will be a primary driving force in shaping the immediate future

• Land use and economics will be at the center of those near-term impacts for cities
Introductions
YOUR PRESENTERS

Jason Sudy
National Lead, Transportation Technology Planning
HDR

Justin Robbins, AICP
AV/CV Transportation Planner
HDR

Rick Stein
Principal
Urban Decision Group

Here in Spirit
Retail changes = land use revolution
Questions:

• What percentage of goods do you believe are currently purchased online?

• What is the difference in land use between shopping centers and fulfillment centers?
Our definition of retail for today’s discussion:
Our definition of retail for today’s discussion:

The sale of goods to the public in relatively small quantities for use or consumption rather than for resale.
Overbuilt Retail

Changing Retail Business Model

Technology
e-commerce

A system for the buying and selling of goods and services using the Internet as the main means of exchange.
Retail e-commerce sales in the United States from 2017 to 2023 (in million U.S. dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Revenue in million U.S. dollars</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>446,811</td>
</tr>
<tr>
<td>2018</td>
<td>504,582</td>
</tr>
<tr>
<td>2019</td>
<td>560,747</td>
</tr>
<tr>
<td>2020</td>
<td>612,959</td>
</tr>
<tr>
<td>2021</td>
<td>659,779</td>
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<tr>
<td>2022</td>
<td>700,578</td>
</tr>
<tr>
<td>2023</td>
<td>735,358</td>
</tr>
</tbody>
</table>

Sources
Statista DMO; Statista
© Statista 2019

Additional Information:
United States; Statista DMO: 2017 to 2018
Total retail sales in the United States from 2012 to 2022 (in trillion U.S. dollars)

Year | Sales in trillion U.S. dollars
--- | ---
2012* | 4.35
2013* | 4.53
2014* | 4.63
2015* | 4.7
2016* | 4.82
2017 | 5.07
2018 | 5.35
2019 | 5.53
2020 | 5.7
2021 | 5.86
2022 | 6.03

Sources:
eMarketer, US Department of Commerce
© Statista 2019

Additional Information:
United States; US Department of Commerce; 2012 to 2019; excludes travel and event tickets
• Neighborhood Center
• Community Center
• Regional and Super-Regional Mall
omni-channel sales

A multichannel approach to sales that seeks to provide customers with a seamless shopping experience, whether they're shopping online from a desktop or mobile device, by telephone, or in a brick-and-mortar store.
Kohl's partnership with Amazon began in 2017.

- 1,180 stores
- Not located inside malls
- Can return and purchase Amazon goods

Aldi partnership includes as many as 300 stores.

- Most located in strip or power centers.
Walmart

- 4,700+ stores
- 775 million square feet of operating space
- Acquired Jet.com in 2016 for $3.3 billion
- Online inventory grew from 10 million in 2016 to 67 million items in 2017
- Grocery pickup service at 1,200 stores and delivery from 800 stores
Whole Foods Market • Acquired 2017 • Cost of $13.7 Billion • 504 stores and distribution centers (including Whole Foods 365)

Source: Flickr (miamism)
STORAGE/ OFFICE

FLOOR SPACE
<table>
<thead>
<tr>
<th>MARKET</th>
<th>2013</th>
<th>2018</th>
<th>$ Change</th>
<th>% Change</th>
<th>2013</th>
<th>2018</th>
<th>$ Change</th>
<th>% Change</th>
<th>2013</th>
<th>2018</th>
<th>Change</th>
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<tbody>
<tr>
<td>Oakland</td>
<td>4.82</td>
<td>10.21</td>
<td>5.39</td>
<td>111.8%</td>
<td>20.73</td>
<td>23.09</td>
<td>2.36</td>
<td>11.4%</td>
<td>0.23</td>
<td>0.44</td>
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<tr>
<td>Seattle</td>
<td>4.87</td>
<td>9.12</td>
<td>4.25</td>
<td>87.3%</td>
<td>18.15</td>
<td>20.63</td>
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<td>13.7%</td>
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<td>0.44</td>
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<td>San Francisco</td>
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<td>12.00</td>
<td>5.48</td>
<td>84.0%</td>
<td>19.90</td>
<td>25.00</td>
<td>5.10</td>
<td>25.6%</td>
<td>0.33</td>
<td>0.48</td>
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<tr>
<td>Sacramento</td>
<td>4.44</td>
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<td>54.5%</td>
<td>16.60</td>
<td>16.97</td>
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<td>2.2%</td>
<td>0.27</td>
<td>0.40</td>
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<tr>
<td>Boston</td>
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<td>8.41</td>
<td>2.88</td>
<td>52.1%</td>
<td>17.76</td>
<td>19.25</td>
<td>1.49</td>
<td>8.4%</td>
<td>0.31</td>
<td>0.44</td>
<td>0.13</td>
</tr>
<tr>
<td>Detroit</td>
<td>4.08</td>
<td>5.62</td>
<td>1.54</td>
<td>37.7%</td>
<td>12.67</td>
<td>13.04</td>
<td>0.37</td>
<td>2.9%</td>
<td>0.32</td>
<td>0.43</td>
<td>0.11</td>
</tr>
<tr>
<td>Omaha</td>
<td>4.08</td>
<td>5.62</td>
<td>1.54</td>
<td>37.7%</td>
<td>11.84</td>
<td>12.42</td>
<td>0.58</td>
<td>4.9%</td>
<td>0.34</td>
<td>0.45</td>
<td>0.11</td>
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<tr>
<td>Ft. Lauderdale</td>
<td>6.53</td>
<td>9.18</td>
<td>2.65</td>
<td>40.6%</td>
<td>18.37</td>
<td>20.26</td>
<td>1.89</td>
<td>10.3%</td>
<td>0.36</td>
<td>0.45</td>
<td>0.10</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>6.47</td>
<td>9.62</td>
<td>3.15</td>
<td>48.7%</td>
<td>23.40</td>
<td>26.27</td>
<td>2.87</td>
<td>12.3%</td>
<td>0.28</td>
<td>0.37</td>
<td>0.09</td>
</tr>
<tr>
<td>Orange County</td>
<td>7.07</td>
<td>10.47</td>
<td>3.40</td>
<td>48.1%</td>
<td>22.52</td>
<td>25.94</td>
<td>3.42</td>
<td>15.2%</td>
<td>0.31</td>
<td>0.40</td>
<td>0.09</td>
</tr>
</tbody>
</table>
LAND USE IMPACTS...
LAND USE

- CHALLENGE: Can you retrofit around a fulfillment center the same way you can retrofit obsolete retail?
- Can you even engage in land use planning for commercial and light industrial uses?
LAND USE

- OPPORTUNITY: If we are overbuilt by as much as 50% AND a significant amount of retail is moving towards omnichannel sales (and deliveries) there is likely to be a significant amount of land available for redevelopment.

- Redevelopment opportunities with lower land cost?

- Redevelopment opportunities will be more widespread than new green field development from this point forward.
Freight changes = land use revolution
Questions:

• How often do you have a package delivered to your residence?

• What is your expectation in terms of time for delivery of... basic goods, food, specialty items?
Our definition of freight for today’s discussion:
One traditional definition of freight:

Goods transported in bulk by truck, train, ship, or aircraft
Our definition of freight for today’s discussion:

Goods transported in bulk* by truck, train, ship, or aircraft devices we might have only recently seen or haven’t even thought of yet, in ways we can only hope to predict

* And we need to discuss what “bulk” means in today’s context as well
Last Mile Delivery
CITY-SCALE DISTRIBUTION

Finding Opportunities for “instant” network
- Sears
- Macy’s

IMPACTS FOR NEIGHBORHOODS:
- Impede large site redevelopment
- Place freight uses in commercial corridor

Source: maps.cuyahogacounty.us
BUILDING/SITE USAGE:
- Flip the percentage of retail floor compared to storage

IMPACTS FOR NEIGHBORHOODS:
- Impede multi-story infill
- Create “truck”-dominated site – loading areas access
POTENTIAL DELIVERY IMPACTS

MAGNITUDE OF INCREASE:
- Could be much greater than anticipated

USC METTRANS Transportation Center:
- Ongoing study – sheds light on intensity
- A 300-unit apartment complex in NJ
- In 2016 there were ??? Parcels delivered

Source: brg.com
POTENTIAL DELIVERY IMPACTS

23,613 PARCELS!

- 65 deliveries/day
- 1.5 deliveries/apartment per week
- From Jan 2015 to Jan 2017, annual growth of 17%
- Most deliveries on weekdays

CLEAR IMPACTS

- If uncontrolled, huge increase in individual trips
- Distribution network changes?

Source: geekwire.com
Freight is no longer behind the scenes in daily life
Last “Yard”
LAND USE IMPACTS...
LAND USE

CHALLENGE:

- Sites rapidly shifting to new set of uses – impacts on communities
- Intrusion of local freight into neighborhood fabric
- New set of trade-offs
LAND USE

OPPORTUNITY:

- More opportunities for mixed use environments that planners aspire to achieve
- Chance to reimagine typical approach to receiving goods
- Interrelationship to new curb management approaches with autonomy is vital
- New set of trade-offs
LAND USE IMPACTS...
What does this mean for land use and planning?

1. The direct land use correlated with these areas may change dramatically.
2. New uses may emerge that we do not yet know or understand
3. The effects on secondary uses such as housing could be large
LAND USE

- OPPORTUNITY: Potential increases in land productivity. We will need less land to do more.
LAND USE

- CHALLENGE: The location of disruption. How do we as planners use the tools at our disposal to pave the way for future industries?
- How can we ease the transition of new employment and industries into our communities?
Jobs changes = land use revolution
We should start with a few assumptions.

1. We will always be under pressure to find better ways to be more productive.

2. Technology will continue to advance, and do so at an ever-quickening pace

3. These technologies will be applied to an expanding group of tasks to increase productivity and efficiency
The history of employment in America is one of change.
In 1850, 60% of the United States workforce was employed in agriculture.
Today that number is 3%
Today that number is 3%
And productivity is 12x higher than in 1950
The geography of disruption.
Technical potential for automation of basic labor activities

- Predictable physical work (78%)
- Data processing (69%)
- Data collection (64%)
- Unpredictable physical work (25%)
- Stakeholder interactions (20%)
- Applying expertise (18%)
- Managing others (9%)
Percentage of jobs at risk for automation by state
Percentage of jobs at risk for automation by county
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What now?

04
Land Value Impacts

• **Retail** – volume, type and location (how and where we shop)

• **Freight** – long and short distance fulfillment (how and where we work and shop)
What Now?

**Impacts**
- Identify the new set of trade-offs in your community

**Advocate**
- Make the impacts of these coming changes clear

**Act**
- Consider new trade-offs in evaluating new development
- Shape regulatory and revenue opportunities
THE REVOLUTION...

• If commerce changes the way some predict... will land use even matter in the future?