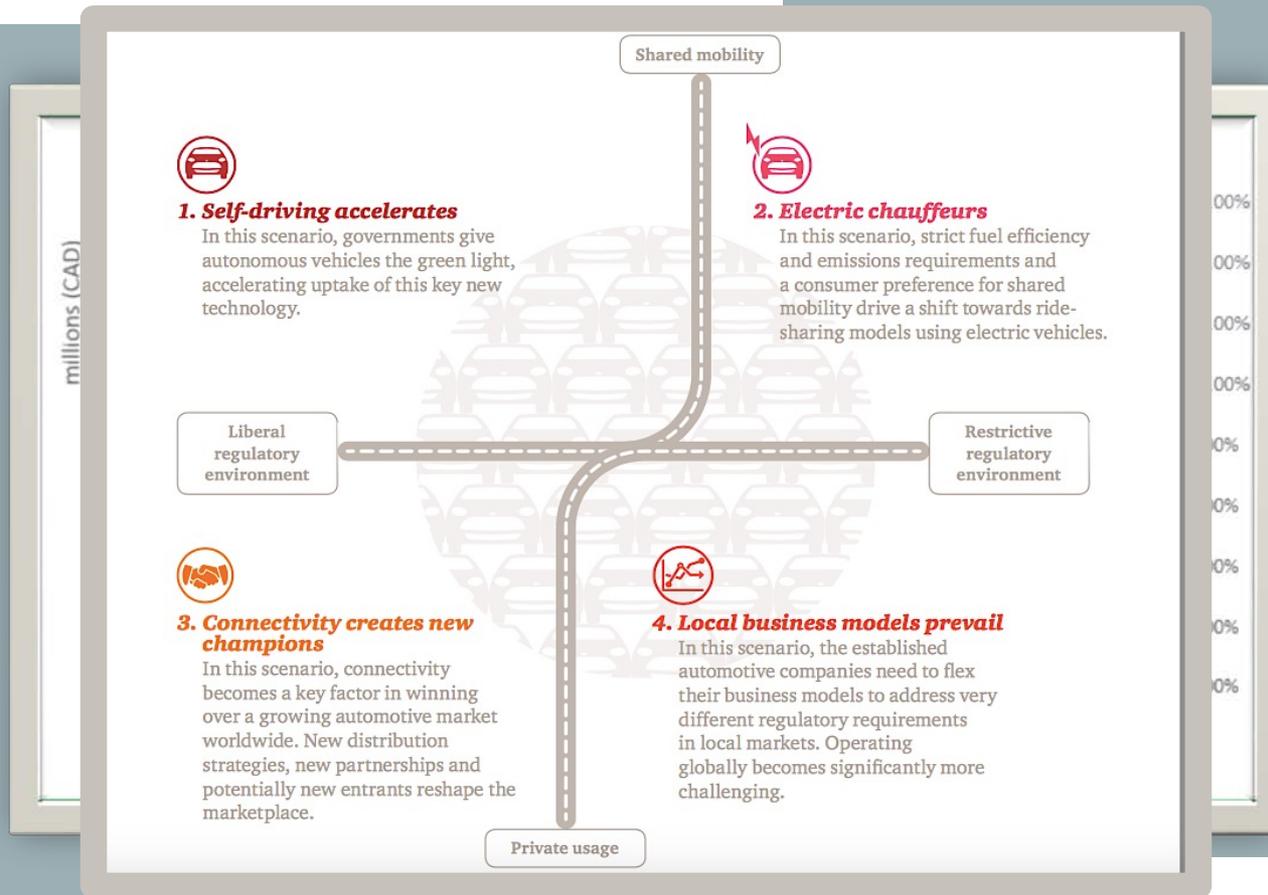


# REGIONAL RESILIENCE AND ONTARIO'S AUTOMOTIVE CLUSTER: ITS FUTURE IN THE DIGITAL AGE

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# Auto makers rev up Canadian R&D



**Ford to invest \$1.2-billion in Canada, create Ottawa R&D centre**

Source: Data compiled by Statistics Canada

# AGENDA

- ❖ Why the increase in multinational enterprise (MNE) automotive R&D outside of traditional locations?
- ❖ Use EEG theory to identify factors behind why Ontario is chosen as a source of scientific/technical expertise. What is driving change in the Ontario automotive cluster?
- ❖ Case studies
- ❖ Data

# I. MNE'S & REGIONAL DEVELOPMENT

- ❖ Relations between parent MNE's & subsidiaries in host locations are changing
- ❖ MNE's becoming mechanism for creating new technologies in discrete regional contexts

Cantwell and Mudambi (2011)

# Framework for linkages of MNE R&D units

Degree of linkages	Type of linkages	
high	Wholly owned R&D unit	Closely in contact with the MNCs HQs, report to parent unit/ can signal long term commitment to local economy
	Joint research	Collaborative projects with local organizations/ require high degrees of trust
	Human resource recruitment, education, training	Recruitment of human resources and education
low	Arm's length	Informal or one off interactions

Patra and Krishna (2015)

# GROWING DETROIT-SOUTHWEST ONTARIO CLUSTER LINKAGES



Figure 1. Detroit automakers and geographical dispersion of patent connections

Harvard Patent Network Dataverse;  
Hannigan et al. 2015

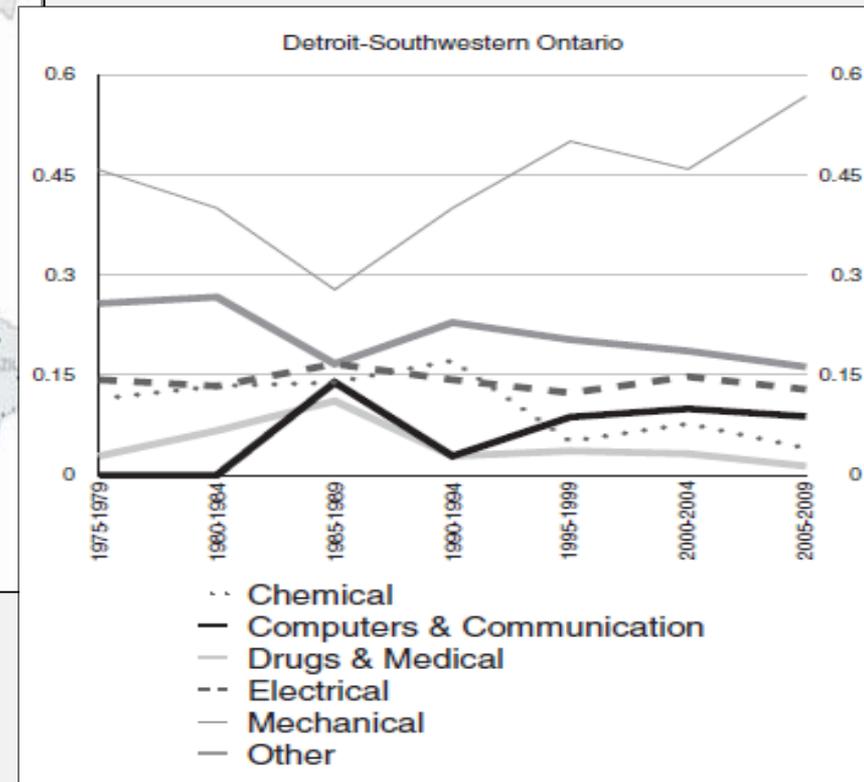


Figure 2. Technological composition of Detroit patents connected to SW Ontario

## II. PATH DEPENDENCY & REGIONAL RESILIENCE

“New paths do not emerge in a vacuum, but always in the contexts of existing structures and paths of technology, industry and institutional arrangements” (Martin & Simmie 2008, 186)

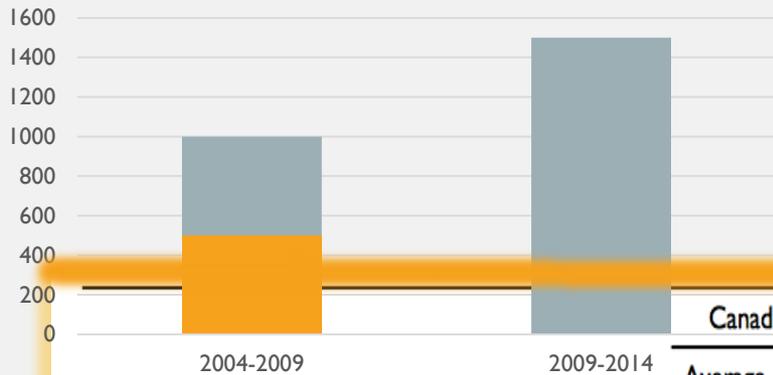
**A. Path Dependence?**

**B. Ontario's  
knowledge  
infrastructure/  
skilled labor**

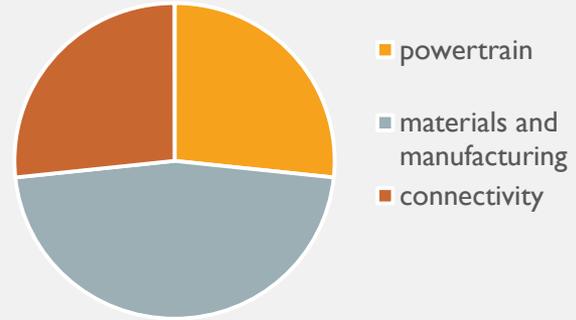
**C. Supply chain  
strengths**

A.

### Provincial automotive R&D Spending

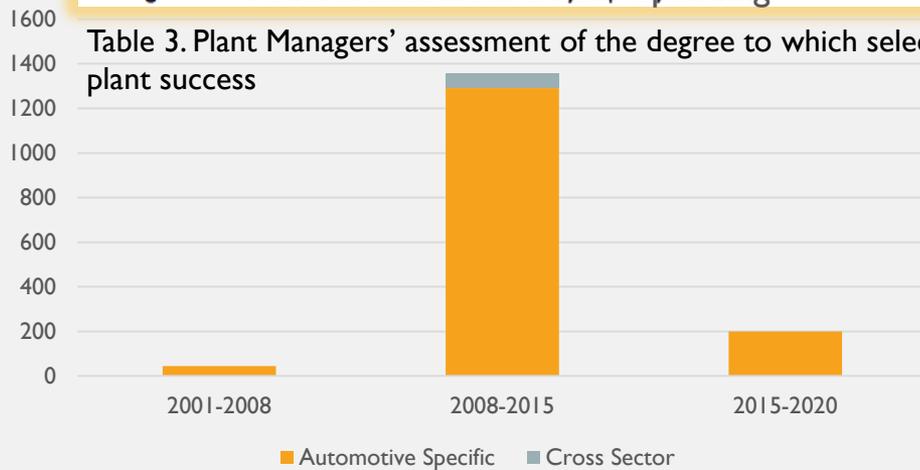


### ASIP

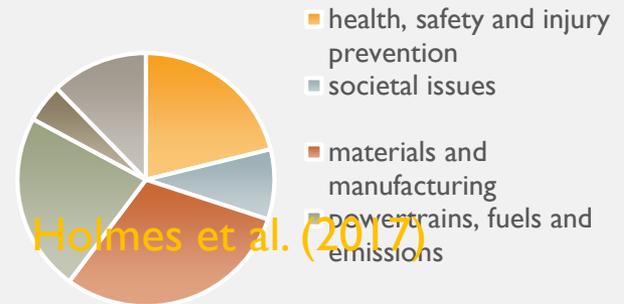


Public Policy Measure	Canadian-Owned Plants (n = 72)			Foreign-Owned Plants (n = 43)		
	Average (Out of 5)	% Contributes (>3)	% Inhibits (<3)	Average (Out of 5)	% Contributes (>3)	% Inhibits (<3)
Subsidies and/or tax credits for R&D	3.8	72.2	4.2	3.7	58.1	4.7
Programs to fund or attract vehicle assembly capacity	3.8	63.9	9.7	3.7	58.1	7.0

Table 3. Plant Managers' assessment of the degree to which selected public policies inhibit or contribute to plant success

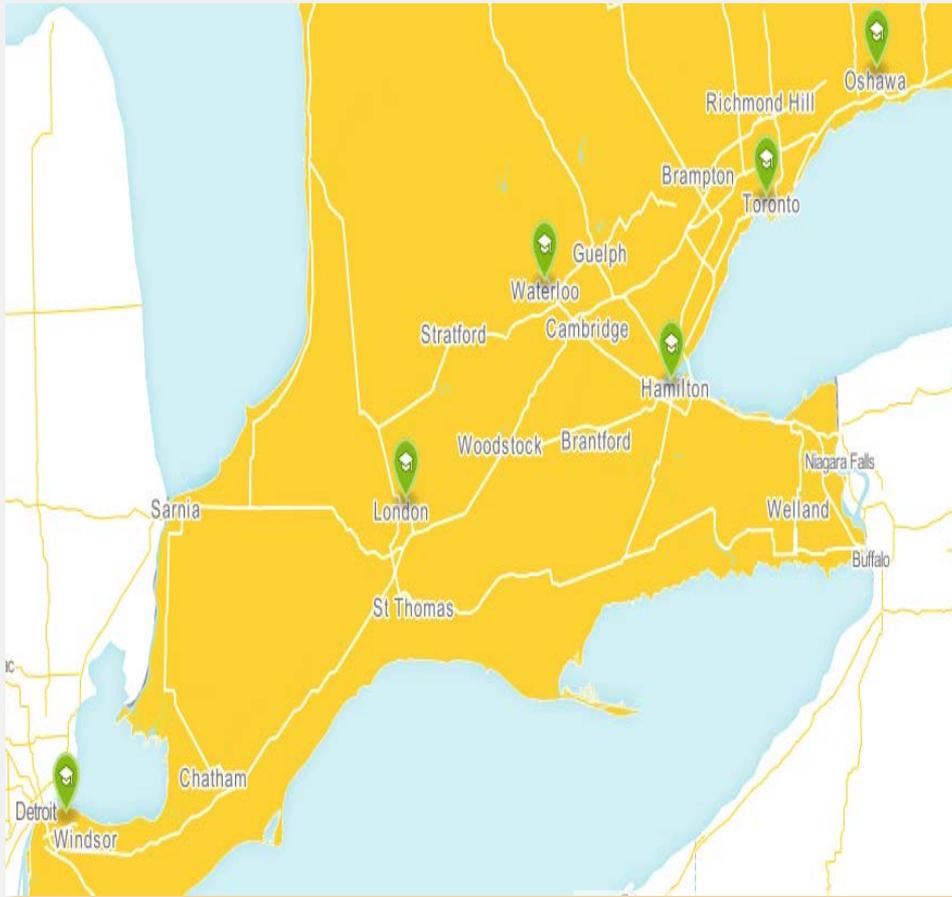


### AUTO21

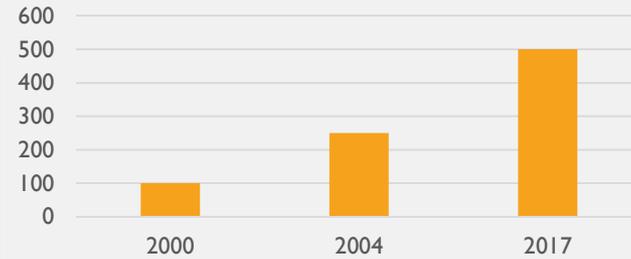


Holmes et al. (2017)

B.



Number of automotive researchers



capabilities

Basic research

Contract services



- U of Ottawa
- U of Windsor
- Toronto

- U of Waterloo
- McMaster U
- Western U

C.

Source: Statistics Canada, 2014; CANSIM Table 379-0030.



## III. CASE STUDIES

GM

Partnered with 9 research institutions in Ontario

R&D



Supply chain



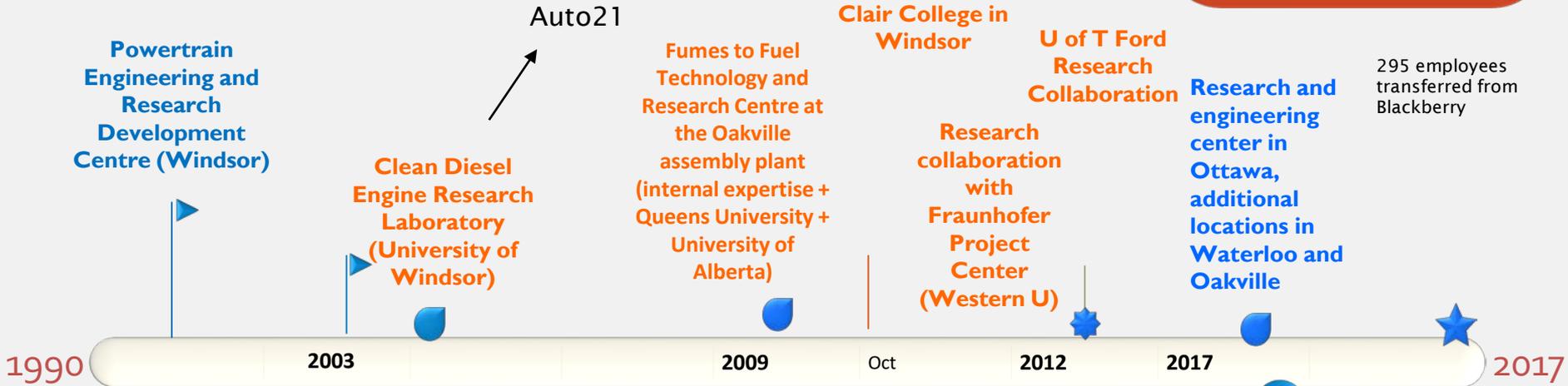
Project Beacon (2.5 billion, more than 400 million in gov. money)

Joins Automotive Partnership Industry Task Force/ PACE Partner

# FORD

Partnered with 7 research institutions in Ontario

295 employees transferred from Blackberry



## Supply chain

Ontario BioCar Initiative (U of Waterloo, U of Guelph, U of Windsor, U of Toronto)

ANAC/FORD research partnership  
 Eyrac/FORD research partnership  
 Nemak

Renaissance project 730 million (80 million from AIF)

Automotive Innovation Fund (102,4 million)

UNIFOR secured 713 million in investment

# OTHER MNE PRESENCE



University of Windsor/Chrysler Canada Automotive Research and Development Centre (600 million)

**Automotive Partnership  
Canada/NSERC**

**Relevance of global knowledge pipelines**

# IN CONCLUSION

Increased automotive R&D integration in the Great Lakes not only driven by the presence of technological expertise, but by historical relationships and activist policy.

*Future research:*

- ❖ Unpack the creation of R&D partnerships in more detail
- ❖ Quantify types of MNE R&D linkages in Canada
- ❖ Trace US patents back to innovators in Canada and their affiliations
- ❖ Introduce a comparator case