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The Role of Clusters in the Performance of the Mexican Economy*

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Abstract: This paper follows an algorithm that considers different dimensions of linkages across service and manufacturing industries to identify a cluster configuration of the Mexican economy and analyze their role in the economic performance of regions. It identifies 24 clusters and analyzes their geographical distribution, their role in regional growth, the evolution of their employment concentration, and their spillover effects. The main findings suggest that manufacturing-oriented clusters have a strong presence in the Northern states of the country, while services-oriented clusters in the Central ones. Finally, clusters such as plastic products manufacturing; retail and eating services; food and beverage manufacturing; and, automotive show relatively high direct and indirect spillover effects on the economy.

Keywords: Clusters, Agglomeration economies, Employment concentration, Economic spillovers effects

JEL Classification: L60, L80, O54

Resumen: Este documento sigue un algoritmo que considera diferentes dimensiones de los vínculos entre las industrias de servicios y manufactura para identificar una configuración de clúster para la economía mexicana y analizar su papel en el desempeño económico de las regiones. Se identifican 24 clústeres y se analiza su distribución geográfica, su papel en el crecimiento regional, la evolución de su concentración del empleo y sus efectos indirectos. Los principales hallazgos sugieren que los clústeres orientados a la manufactura tienen una fuerte presencia en los estados del norte del país, mientras que los clústeres orientados a servicios en las entidades del centro. Finalmente, clústeres tales como la fabricación de productos plásticos; servicios de comida y venta al por menor; fabricación de alimentos y bebidas; y la industria automotriz muestran efectos directos e indirectos relativamente altos en la economía.

Palabras Clave: Clústeres, Economías de aglomeración, Concentración del empleo, Efectos de derrama económica

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Annex B.2. Cluster classification

C1-oil and gas extraction

Number of industries: 6

4-digit NAICS	Oil and gas extraction	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
2111	Oil and Gas Extraction	2.64		5.53	50.55	95.97	93.67
3366	Ship and Boat Building	2.41		16.60	12.39	0.47	1.21
4831	Deep Sea, Coastal, and Great Lakes Water Transportation	2.27		8.30	10.60	1.33	1.69
4862	Pipeline Transportation of Natural Gas	3.17		6.17	5.57	0.87	1.27
4869	Other Pipeline Transportation	2.51		1.28	1.62	0.41	0.65
4883	Support Activities for Water Transportation	2.47		62.13	19.27	0.95	1.51

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This is the original configuration of the cluster.

C2-metal mining

Number of industries: 6

4-digit NAICS	Metal mining	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
2122	Metal Ore Mining	3.52	**	9.54	42.35	59.01	43.36
3311	Iron and Steel Mills and Ferroalloy Manufacturing	3.27		0.79	14.26	24.54	37.28
3365	Railroad Rolling Stock Manufacturing	3.25		1.39	10.69	6.48	8.19
2123	Nonmetallic Mineral Mining and Quarrying	3.36		80.95	16.28	4.95	4.66
2131	Support Activities for Mining	3.33	**	5.27	11.89	3.26	4.62
2121	Coal Mining	2.86		2.05	4.53	1.75	1.89

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration.

C3-footwear manufacturing

Number of industries: 2

4-digit NAICS	Footwear manufacturing	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
3162	Footwear Manufacturing	1.86		90.32	85.22	68.91	70.21
3161	Leather and Hide Tanning and Finishing	1.86		9.68	14.78	31.09	29.79

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This is the original configuration of the cluster.

C4-sawmills and wood preservation

Number of industries: 2

4-digit NAICS	Sawmills and wood preservation	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
3212	Veneer, Plywood, and Engineered Wood Product Manufacturir	3.38		9.11	34.71	38.78	55.70
3211	Sawmills and Wood Preservation	3.38		90.89	65.29	61.22	44.30

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This is the original configuration of the cluster.

C5-medical equipment and supplies manufacturing

Number of industries: 5

4-digit NAICS	Medical equipment and supplies manufacturing	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
3352	Household Appliance Manufacturing	3.79	**	8.41	16.82	25.02	46.40
3391	Medical Equipment and Supplies Manufacturing	3.25		79.43	44.09	33.69	22.65
3364	Aerospace Product and Parts Manufacturing	4.23		4.34	10.53	16.38	12.37
3342	Communications Equipment Manufacturing	3.02	**	4.55	13.43	13.26	10.33
3343	Audio and Video Equipment Manufacturing	3.24		3.28	15.12	11.65	8.26

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration.

C6-semiconductors and other electronic components manufacturing

Number of industries: 4

4-digit NAICS	Semiconductor and other electronic component manufacturi	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
3344	Semiconductor and Other Electronic Component Manufacturin	3.23		59.04	75.00	70.81	63.82
3341	Computer and Peripheral Equipment Manufacturing	3.08		7.05	15.64	15.00	17.45
3325	Hardware Manufacturing	3.64		32.05	7.03	11.72	14.51
3346	Manufacturing and Reproducing Magnetic and Optical Media	3.18		1.86	2.33	2.47	4.22

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This is the original configuration of the cluster.

C7-food and beverage manufacturing

Number of industries: 10

4-digit NAICS	Food and beverage manufacturing	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
3121	Beverage Manufacturing	3.87	**	10.96	14.51	28.06	21.06
3112	Grain and Oilseed Milling	3.80		0.63	3.88	8.29	12.28
3116	Animal Slaughtering and Processing	4.43	*	1.79	9.22	10.55	11.56
3118	Bakeries and Tortilla Manufacturing	4.09	**	73.80	39.79	13.40	10.94
3115	Dairy Product Manufacturing	3.68		6.85	8.31	8.04	10.81
3119	Other Food Manufacturing	3.89	**	3.06	7.05	12.86	10.49
3111	Animal Food Manufacturing	3.91		0.30	2.46	6.49	8.75
3113	Sugar and Confectionery Product Manufacturing	3.78		1.63	7.26	6.53	7.89
3114	Fruit and Vegetable Preserving and Specialty Food Manufactur	3.84	**	0.88	6.27	5.06	5.14
3117	Seafood Product Preparation and Packaging	6.03		0.09	1.25	0.71	1.09

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These four systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.

C8-automotive

Number of industries: 7

4-digit NAICS	Automotive	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
3361	Motor Vehicle Manufacturing	4.63	*	0.65	8.11	45.08	50.78
3363	Motor Vehicle Parts Manufacturing	5.31	**	23.03	80.96	49.04	44.16
3262	Rubber Product Manufacturing	3.84		11.13	5.00	2.60	2.47
3362	Motor Vehicle Body and Trailer Manufacturing	4.30		10.29	2.45	1.72	1.27
3336	Engine, Turbine, and Power Transmission Equipment Manufac	4.50	**	0.72	1.83	1.26	1.12
3169	Other Leather and Allied Product Manufacturing	4.25		35.03	1.10	0.16	0.12
3159	Apparel Accessories and Other Apparel Manufacturing	4.25		19.15	0.56	0.13	0.07

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.

C9-petroleum and coal products manufacturing

Number of industries: 4

4-digit NAICS	Petroleum and coal products manufacturing	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
3241	Petroleum and Coal Products Manufacturing	5.44		21.64	36.03	62.42	70.59
3251	Basic Chemical Manufacturing	4.67		44.72	44.24	18.12	24.07
3253	Pesticide, Fertilizer, and Other Agricultural Chemical Manufact	4.47		29.92	16.14	12.44	4.23
3122	Tobacco Manufacturing	5.26		3.72	3.58	7.03	1.11

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This is the original configuration of the cluster.

C10-apparel manufacturing

Number of industries: 7

4-digit NAICS	Apparel manufacturing	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
3152	Cut and Sew Apparel Manufacturing	3.91		38.69	55.04	50.07	43.09
3132	Fabric Mills	3.58		1.33	9.52	14.34	20.06
3131	Fiber, Yarn, and Thread Mills	4.32		16.48	7.78	8.92	8.28
3133	Textile and Fabric Finishing and Fabric Coating Mills	3.75	**	0.61	3.80	8.19	7.74
3149	Other Textile Product Mills	4.56	**	37.17	14.09	6.43	7.53
3151	Apparel Knitting Mills	4.04		2.57	5.34	6.59	7.52
3141	Textile Furnishings Mills	3.67		3.15	4.43	5.45	5.78

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration.

C11-tourism and hospitality services

Number of industries: 13

4-digit NAICS	Tourism and hospitality services	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
7211	Traveler Accommodation	4.77		40.40	72.04	69.56	71.23
5615	Travel Arrangement and Reservation Services	5.22		14.96	8.71	14.95	13.94
5321	Automotive Equipment Rental and Leasing	4.88		3.87	2.59	4.83	5.52
7131	Amusement Parks and Arcades	5.06		23.83	5.88	5.42	4.18
7121	Museums, Historical Sites, and Similar Institutions	4.97		1.33	1.65	1.24	1.42
4871	Scenic and Sightseeing Transportation, Land	4.51		0.81	1.27	0.95	0.94
4859	Other Transit and Ground Passenger Transportation	5.28		0.62	1.64	0.84	0.77
7213	Rooming and Boarding Houses, Dormitories, and Workers' Car	4.59		6.75	1.91	0.84	0.76
7111	Performing Arts Companies	4.63		5.58	2.98	0.62	0.51
4872	Scenic and Sightseeing Transportation, Water	5.23		0.97	0.70	0.32	0.33
4832	Inland Water Transportation	5.11		0.58	0.33	0.28	0.25
7212	RV (Recreational Vehicle) Parks and Recreational Camps	5.06	**	0.29	0.28	0.13	0.15
4879	Scenic and Sightseeing Transportation, Other	5.03	**	0.01	0.03	0.02	0.01

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration, and this cluster is the result of merging three different clusters.

C12-office administrative services

Number of industries: 14

4-digit NAICS	Office administrative services	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
5611	Office Administrative Services	3.96		4.83	29.58	36.18	33.63
5416	Management, Scientific, and Technical Consulting Services	3.58		17.37	19.67	19.50	19.07
5415	Computer Systems Design and Related Services	3.64		7.59	11.07	10.79	11.91
5412	Accounting, Tax Preparation, Bookkeeping, and Payroll Service	3.86		39.19	14.26	11.24	10.09
5418	Advertising, Public Relations, and Related Services	3.62		17.48	9.27	8.05	8.87
5617	Services to Buildings and Dwellings	3.69		5.09	9.99	5.77	5.47
7112	Spectator Sports	5.51	*	0.33	0.83	3.15	4.24
5612	Facilities Support Services	3.59		0.84	2.00	2.34	2.66
7113	Promoters of Performing Arts, Sports, and Similar Events	3.65		2.80	1.35	1.37	1.98
5417	Scientific Research and Development Services	3.51		0.93	1.06	1.00	1.05
5122	Sound Recording Industries	4.21	**	0.54	0.47	0.42	0.68
7114	Agents and Managers for Artists, Athletes, Entertainers, and OI	4.00	**	0.14	0.07	0.10	0.23
7115	Independent Artists, Writers, and Performers	4.38	**	2.54	0.29	0.06	0.09
6243	Vocational Rehabilitation Services	4.16		0.33	0.10	0.03	0.03

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These three systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.

C13-metal products manufacturing

Number of industries: 11

4-digit NAICS	Metal product manufacturing	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
4841	General Freight Trucking	4.11		20.93	30.85	20.53	18.85
3272	Glass and Glass Product Manufacturing	3.85		5.15	9.93	13.14	14.74
3329	Other Fabricated Metal Product Manufacturing	3.64		6.10	12.16	13.93	11.91
3339	Other General Purpose Machinery Manufacturing	3.54		4.92	9.52	12.00	10.89
3313	Alumina and Aluminum Production and Processing	3.62		0.70	3.79	5.66	8.18
3328	Coating, Engraving, Heat Treating, and Allied Activities	3.67		4.12	5.88	6.97	7.94
3324	Boiler, Tank, and Shipping Container Manufacturing	3.76		2.28	4.63	6.52	7.85
3327	Machine Shops; Turned Product; and Screw, Nut, and Bolt Ma	3.66		48.77	12.85	8.80	7.14
3322	Cutlery and Handtool Manufacturing	4.29	*	3.53	4.19	6.11	5.89
3321	Forging and Stamping	4.12		2.79	4.03	3.90	4.02
3369	Other Transportation Equipment Manufacturing	3.91		0.71	2.18	2.45	2.59

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This marginal outlier was reallocated from the initial configuration.

C14-steel products manufacturing

Number of industries: 14

4-digit NAICS	Steel product manufacturing	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
3312	Steel Product Manufacturing from Purchased Steel	4.45		2.15	9.15	20.40	23.88
3314	Nonferrous Metal (except Aluminum) Production and Processi	4.92		0.52	2.43	23.76	21.22
3359	Other Electrical Equipment and Component Manufacturing	4.31		1.27	16.10	11.37	12.02
3334	Ventilation, Heating, Air-Conditioning, and Commercial Refrig	4.37		1.93	11.10	9.13	9.88
3353	Electrical Equipment Manufacturing	4.33		1.32	14.83	9.41	7.69
3331	Agriculture, Construction, and Mining Machinery Manufacturi	4.34		1.61	5.82	4.74	6.34
3271	Clay Product and Refractory Manufacturing	5.26		77.84	19.96	7.57	5.84
3315	Foundries	4.48		1.94	6.13	5.32	5.65
3345	Navigational, Measuring, Electromedical, and Control Instrum	4.57		0.51	4.54	2.74	2.51
3274	Lime and Gypsum Product Manufacturing	5.21		7.67	2.39	1.12	1.59
3351	Electric Lighting Equipment Manufacturing	4.31		0.98	3.94	2.02	1.44
3335	Metalworking Machinery Manufacturing	4.19		0.98	1.60	1.40	1.17
3333	Commercial and Service Industry Machinery Manufacturing	4.38		1.18	1.69	0.82	0.67
4882	Support Activities for Rail Transportation	5.19		0.09	0.31	0.21	0.10

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This configuration was the initial configuration.

C15-financial services and head offices

Number of industries: 17

4-digit NAICS	Financial services and head offices	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
5221	Depository Credit Intermediation	4.78		0.18	29.63	27.54	26.06
5511	Head offices	4.25		1.27	13.57	28.69	21.25
5173	Wired and Wireless Telecommunications Carriers	4.36		0.96	16.79	7.84	19.34
5241	Insurance Carriers	4.43		0.74	5.75	12.14	8.51
5224	Other credit and financial intermediation institutions, non-stock	5.31		46.61	13.23	3.85	6.97
5222	Nondepository Credit Intermediation	4.82		0.06	1.89	7.80	5.69
5211	Monetary Authorities-Central Bank	4.22		0.00	0.33	4.82	3.41
5151	Radio and Television Broadcasting	5.06	*	4.79	4.21	1.92	2.27
5223	Activities Related to Credit Intermediation	6.24	**	18.14	4.47	0.96	1.88
5242	Agencies, Brokerages, and Other Insurance Related Activities	5.39	**	15.77	6.61	1.70	1.85
5231	Securities and Commodity Contracts Intermediation and Broker	5.31	**	10.32	1.24	1.24	1.18
5225	Services related to credit intermediation, non-stock exchange	4.22		0.11	1.03	0.96	1.00
5112	Software Publishers	4.29		0.42	0.76	0.17	0.19
5232	Securities and Commodity Exchanges	4.31		0.02	0.08	0.22	0.17
5174	Satellite Telecommunications	4.82		0.30	0.16	0.06	0.07
5152	Cable and Other Subscription Programming	4.66		0.11	0.17	0.05	0.07
5331	Lessors of Nonfinancial Intangible Assets (except Copyrighted	4.27		0.19	0.07	0.06	0.06

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.

C16-electric power generation, transmission, and distribution and infrastructure construction

Number of industries : 10

4-digit NAICS	Electric power generation, transmission and distribution and infrastructure construction	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
2211	Electric Power Generation, Transmission and Distribution	4.98	**	0.45	16.86	47.40	59.03
2373	Highway, Street, and Bridge Construction	4.88		4.93	13.49	9.00	8.95
2371	Utility System Construction	4.73		4.73	12.33	7.22	7.73
5312	Offices of Real Estate Agents and Brokers	4.97		22.86	13.07	10.87	6.99
5413	Architectural, Engineering, and Related Services	4.49		26.47	19.70	8.95	5.23
5313	Activities Related to Real Estate	4.44		23.26	9.50	7.04	4.36
2382	Building Equipment Contractors	4.45		14.69	8.58	4.95	3.75
2389	Other Specialty Trade Contractors	4.74		1.80	4.04	2.31	2.13
2379	Other Heavy and Civil Engineering Construction	4.53		0.77	2.14	1.06	1.18
2212	Natural Gas Distribution	4.78	**	0.04	0.27	1.20	0.65

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These two systematic outliers were reallocated from the initial configuration.

C17-passenger transportation and communications

Number of industries : 13

4-digit NAICS	Passenger transportation and communications	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
4811	Scheduled Air Transportation	5.41		0.68	9.95	26.19	37.04
4852	Interurban and Rural Bus Transportation	6.18	*	21.98	29.03	22.54	20.03
4821	Rail Transportation	5.39		0.17	5.14	15.35	13.61
5111	Newspaper, Periodical, Book, and Directory Publishers	4.99		25.10	12.90	8.14	6.84
4921	Couriers and Express Delivery Services	4.87		10.86	14.00	6.90	6.33
4881	Support Activities for Air Transportation	5.26		6.01	12.33	8.22	6.32
5182	Data Processing, Hosting, and Related Services	5.11		4.83	7.23	6.14	4.03
4812	Nonscheduled Air Transportation	5.37	**	1.44	1.49	2.22	2.41
4855	Charter Bus Industry	5.44	**	11.41	3.06	1.56	1.41
4889	Other Support Activities for Transportation	5.37	**	4.40	2.87	1.55	1.02
5191	Other Information Services	4.88		8.44	1.30	0.98	0.77
4853	Taxi and Limousine Service	5.16		1.07	0.29	0.09	0.09
4922	Local Messengers and Local Delivery	5.47	**	3.61	0.41	0.10	0.09

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These four systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.

C18-retail and eating services

Number of industries : 6

4-digit NAICS	Retail and eating services	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
7225	Restaurants and Other Eating Places	7.36	*	34.75	44.31	33.36	45.71
4311	Wholesale trade of groceries and food	7.16	*	1.31	9.60	29.86	25.47
4611	Retail trade of groceries and food	6.91	*	55.54	39.11	32.26	23.22
7224	Drinking Places (Alcoholic Beverages)	6.68		1.69	2.73	2.09	2.77
8114	Personal and Household Goods Repair and Maintenance	5.86		5.79	3.40	1.89	2.30
5322	Consumer Goods Rental	5.95		0.92	0.86	0.54	0.53

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These three marginal outliers were reallocated from the initial configuration.

C19-employment services

Number of industries : 1

4-digit NAICS	Employment services	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
5613	Employment Services	3.17	*	100.00	100.00	100.00	100.00

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This industry is a marginal outlier that becomes a single industry cluster.

C20-plastic products manufacturing

Number of industries : 21

4-digit NAICS	Plastics product manufacturing	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
3261	Plastics Product Manufacturing	5.35		1.30	16.84	19.49	23.32
3222	Converted Paper Product Manufacturing	5.23		1.44	6.25	9.65	11.21
3256	Soap, Cleaning Compound, and Toilet Preparation Manufactur	5.74	**	0.41	2.96	10.93	9.39
3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibers anc	5.51	**	0.07	0.99	6.74	9.15
3273	Cement and Concrete Product Manufacturing	5.72		1.68	3.23	8.32	7.84
3221	Pulp, Paper, and Paperboard Mills	5.84	**	0.08	1.60	4.93	5.60
8111	Automotive Repair and Maintenance	5.64		57.87	28.93	8.62	5.59
3399	Other Miscellaneous Manufacturing	5.76		4.56	6.46	4.90	4.34
3255	Paint, Coating, and Adhesive Manufacturing	5.21		0.15	1.30	4.01	4.29
3323	Architectural and Structural Metals Manufacturing	5.28		14.55	9.23	4.55	3.93
3371	Household and Institutional Furniture and Kitchen Cabinet Mar	5.68		7.12	7.14	3.86	2.97
3259	Other Chemical Product and Preparation Manufacturing	5.19		0.29	1.54	3.10	2.92
3219	Other Wood Product Manufacturing	5.38		7.99	4.82	2.18	1.92
3326	Spring and Wire Product Manufacturing	5.28		0.18	1.00	1.79	1.90
4931	Warehousing and Storage	5.25		0.24	1.78	1.67	1.25
3279	Other Nonmetallic Mineral Product Manufacturing	5.54		1.11	1.33	1.21	1.17
3379	Other Furniture Related Product Manufacturing	5.64	**	0.17	1.23	1.00	0.93
3332	Industrial Machinery Manufacturing	5.31	**	0.20	0.73	1.09	0.92
5621	Waste Collection	5.29		0.15	0.76	0.97	0.69
4854	School and Employee Bus Transportation	6.01	*	0.10	1.66	0.85	0.59
5323	General Rental Centers	5.29		0.34	0.21	0.13	0.08

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These five systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.

C21-freight transportation services and residential and nonresidential construction

Number of industries : 15

4-digit NAICS	Freight transportation services and residential and nonresidential construction	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
4885	Freight Transportation Arrangement	5.84		8.14	10.79	23.12	19.44
2362	Nonresidential Building Construction	5.78		8.27	16.14	13.42	18.84
2361	Residential Building Construction	6.08	**	7.24	13.14	9.89	13.90
5616	Investigation and Security Services	5.79		7.84	20.55	15.45	10.97
4851	Urban Transit Systems	6.33		3.71	12.04	6.90	7.34
8113	Commercial and Industrial Machinery and Equipment (except .	5.69	**	35.32	8.22	7.59	6.78
5324	Commercial and Industrial Machinery and Equipment Rental ar	5.47		11.65	3.60	5.50	4.79
2372	Land Subdivision	6.66	**	2.49	3.30	3.55	4.64
5619	Other Support Services	5.60		3.25	4.81	5.77	4.60
4884	Support Activities for Road Transportation	5.74		3.66	1.66	3.86	3.24
3372	Office Furniture (including Fixtures) Manufacturing	5.52		2.53	2.32	1.92	2.32
2381	Foundation, Structure, and Building Exterior Contractors	5.48		2.42	1.52	1.03	1.32
5622	Waste Treatment and Disposal	5.58		0.27	0.49	0.85	0.70
2383	Building Finishing Contractors	5.47		2.59	0.72	0.50	0.58
5629	Remediation and Other Waste Management Services	5.70	**	0.62	0.69	0.65	0.53

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These four systematic outliers were reallocated from the initial configuration.

C22-business support services

Number of industries : 9

4-digit NAICS	Business support services	WCR _k	Outlier	Percentages within the Cluster			G. value added
				Employment	Establishments	Production	
3231	Printing and Related Support Activities	5.14		10.24	17.07	18.97	27.68
5121	Motion Picture and Video Industries	5.37		0.72	6.41	21.32	20.83
5614	Business Support Services	6.03		28.13	28.80	20.30	16.94
5411	Legal Services	5.17		15.45	17.45	17.05	13.03
5419	Other Professional, Scientific, and Technical Services	5.67		12.35	8.69	7.45	6.47
8122	Death Care Services	5.34		19.94	10.72	4.34	4.48
5179	Other Telecommunications	5.36		1.76	2.64	4.26	4.19
8124	Parking lots and garages for motor vehicles	5.22		8.77	5.57	3.83	3.88
5414	Specialized Design Services	5.18		2.62	2.65	2.48	2.49

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

This cluster corresponds to the original configuration of the cluster.

C23-education and health services

Number of industries : 19

4-digit NAICS	Education and health services	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
6113	General secondary education schools	5.25		0.78	12.70	25.15	22.83
6111	Basic, middle and special needs education schools	5.49		4.69	23.01	26.26	21.45
8121	Personal Care Services	5.41		40.98	16.84	7.70	8.69
5311	Lessors of Real Estate	5.78		5.76	4.85	8.33	8.66
7139	Other Amusement and Recreation Industries	5.36		5.20	6.49	6.43	8.33
6211	Offices of Physicians	5.33		11.92	6.98	5.84	6.36
6215	Medical and Diagnostic Laboratories	5.54	**	2.67	3.17	5.11	6.28
6212	Offices of Dentists	5.18		11.34	5.60	3.79	4.48
6116	Higher middle education schools	5.40		3.83	4.05	2.78	2.85
6213	Offices of Other Health Practitioners	5.19		5.16	3.11	2.11	2.28
8123	Drycleaning and Laundry Services	5.48		1.16	1.61	1.47	2.10
6244	Child Day Care Services	5.84	**	1.26	3.40	2.11	1.83
6214	Outpatient Care Centers	5.57	**	0.22	0.59	0.89	1.42
8129	Other Personal Services	5.36	**	1.08	0.76	0.56	0.72
6115	Terminal technical middle education schools	5.54		0.56	0.67	0.43	0.47
6114	Technical secondary education schools	5.89		0.19	0.43	0.42	0.47
6241	Individual and Family Services	5.95	**	3.12	5.41	0.22	0.38
6112	Higher technical education schoolsT	5.66		0.06	0.24	0.25	0.26
6117	Educational support servicesT	6.91	**	0.02	0.09	0.15	0.14

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These six systematic outliers were reallocated from the initial configuration.

C24-pharmaceutical and medical manufacturing and services

Number of industries : 14

4-digit NAICS	Pharmaceutical and medical manufacturing and services	WCR _k	Outlier	Percentages within the Cluster			
				Employment	Establishments	Production	G. value added
3254	Pharmaceutical and Medicine Manufacturing	6.51		1.92	19.61	55.17	55.03
6221	General Medical and Surgical Hospitals	5.92		4.14	25.12	18.46	20.09
7132	Gambling Industries	5.93		11.93	9.78	10.29	10.49
8112	Electronic and Precision Equipment Repair and Maintenance	6.02		63.52	15.07	5.93	5.04
6223	Specialty (except Psychiatric and Substance Abuse) Hospitals	5.83		1.89	6.39	4.16	3.91
7223	Special Food Services	5.84		5.71	10.93	4.24	3.61
6219	Other Ambulatory Health Care Services	6.87	**	1.90	4.24	0.36	0.65
6233	Continuing Care Retirement Communities and Assisted Living I	5.82		1.94	2.64	0.49	0.41
6239	Other Residential Care Facilities	5.93		2.50	2.60	0.29	0.29
6216	Home Health Care Services	7.36	**	0.49	0.50	0.27	0.16
6242	Community Food and Housing, and Emergency and Other Reli	6.36	**	1.83	1.34	0.13	0.13
6232	Residential Intellectual and Developmental Disability, Mental H	6.12	**	1.66	1.20	0.10	0.09
6222	Psychiatric and Substance Abuse Hospitals	6.40	*	0.15	0.20	0.07	0.06
6231	Nursing Care Facilities (Skilled Nursing Facilities)	6.18		0.42	0.37	0.06	0.05

Source: Authors' own estimation based on information from the 2013 Input-Output Account Matrix and the 2019 Economic Census, INEGI.

Note: * indicates marginal outliers and ** stands for systematic outliers.

These four systematic outliers were reallocated from the initial configuration, as well as the marginal outlier.