Summary Statistics of 26 Variables by Firm

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Firms Size Using 3 Levels Measured by Revenue

year	size_rev	count	total	props
2014	small	12711	18832	0.675
2014	medium	3626	18832	0.193
2014	large	2495	18832	0.132
2015	small	12855	19322	0.665
2015	medium	3724	19322	0.193
2015	large	2743	19322	0.142
2016	small	11563	18892	0.612
2016	medium	4238	18892	0.224
2016	large	3091	18892	0.164
2017	small	13170	21195	0.621
2017	medium	4710	21195	0.222
2017	large	3315	21195	0.156
2018	small	13671	21825	0.626
2018	medium	4703	21825	0.215
2018	large	3451	21825	0.158
2019	small	10954	18383	0.596
2019	medium	4152	18383	0.226
2019	large	3277	18383	0.178

Firms Size Using 2 Levels Measured by Revenue

year	sme_rev	count	total	props
2014	sme	16337	18832	0.868
2014	large	2495	18832	0.132
2015	sme	16579	19322	0.858
2015	large	2743	19322	0.142
2016	sme	15801	18892	0.836
2016	large	3091	18892	0.164
2017	sme	17880	21195	0.844
2017	large	3315	21195	0.156
2018	sme	18374	21825	0.842
2018	large	3451	21825	0.158
2019	sme	15106	18383	0.822
2019	large	3277	18383	0.178

Variables

In total there are 26 variables use to extract the factors that represent each construct access, skills, and usage.

- ▶ For the access index 6 variables
- ▶ For the skills index 9 variables
- ▶ For the usage index 11 variables

ACCESS variables I

These variables include continuous and binary variables' in total there are 6 variables. There is one variables for incentives access and five for physical access measuring computers and internet connectivity.

ACCESS variables II (Incentives)

- ▶ Var name: IT training courses for employees without specialist ICT skills.
- ▶ Type: binary
- ▶ Code: A1_B2b

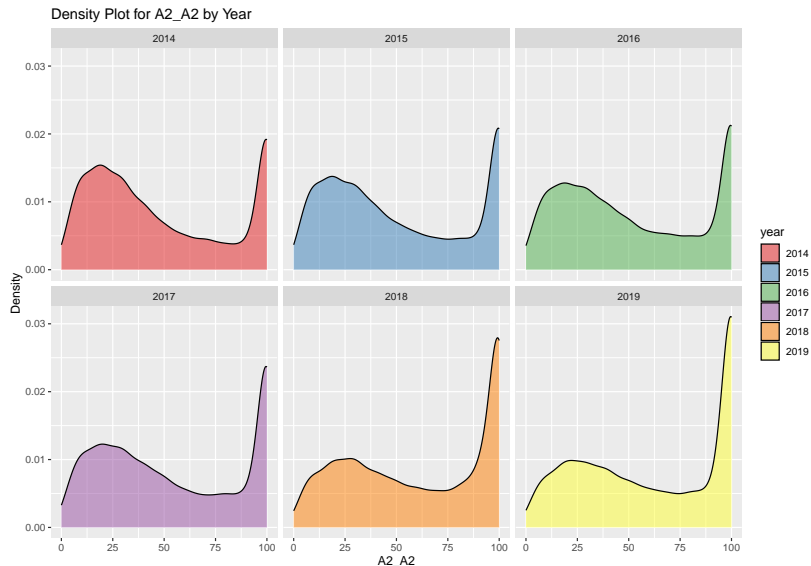| year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.14	0.35	16103	2729	0.86	0.14	0.14	0.14
2015	19322	0.17	0.37	16085	3237	0.83	0.17	0.16	0.18
2016	18892	0.17	0.38	15617	3275	0.83	0.17	0.16	0.18
2017	21195	0.18	0.38	17367	3828	0.82	0.18	0.17	0.19
2018	21825	0.23	0.42	16841	4984	0.77	0.23	0.22	0.24
2019	18383	0.27	0.44	13451	4932	0.73	0.27	0.26	0.28

ACCESS variables III (Physical Access)

▶ Var name: Percentage of employees using the computer out of the total employees.
▶ Type: continuous
▶ Code: A2_A2

year	count	mean	sd	median	min	max	IQR
2014	18832	48.75	33.51	39.81	0.26	100	62.64
2015	19322	51.44	33.91	43.00	0.00	100	69.00
2016	18892	52.86	33.72	46.01	0.25	100	67.75
2017	21195	54.56	34.02	48.78	0.15	100	70.23
2018	21825	61.20	33.52	63.45	0.23	100	68.08
2019	18383	62.16	34.05	63.95	0.38	100	70.00

ACCESS variables IV (Physical Access)
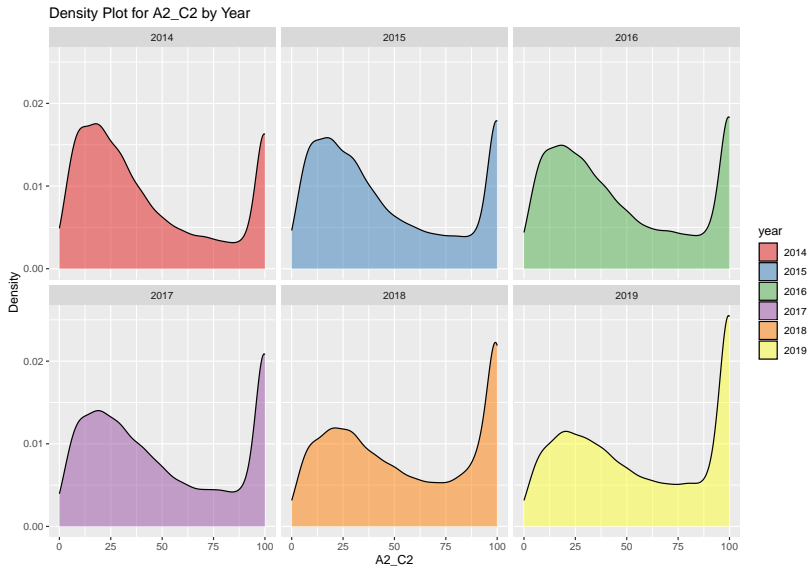
Density plot

Density Plot for A2_A2 by Year

ACCESS variables V (Physical Access)

- Var name: Percentage of employees using computers connected to the internet.
- Type: continuous
- Code: A2_C2

year	count	mean	sd	median	min	max	IQR
2014	18832	43.90	32.94	32.53	0.00	100	53.76
2015	19322	46.84	33.59	36.00	0.00	100	62.00
2016	18892	48.20	33.52	39.13	0.25	100	61.25
2017	21195	50.56	33.93	41.67	0.12	100	68.06
2018	21825	55.67	33.65	50.60	0.23	100	67.31
2019	18383	57.24	34.19	53.33	0.38	100	73.23

ACCESS variables VI (Physical Access)

Density plot

Density Plot for A2_C2 by Year

ACCESS variables VII (Physical Access)

▶ Var name: Enterprise provides mobile devices with mobile connection.
▶ Type: binary
▶ Code: A2_C5a

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.70	0.46	5726	13106	0.30	0.70	0.69	0.71
2015	19322	0.74	0.44	4954	14368	0.26	0.74	0.73	0.75
2016	18892	0.76	0.43	4543	14349	0.24	0.76	0.75	0.77
2017	21195	0.80	0.40	4315	16880	0.20	0.80	0.79	0.81
2018	21825	0.75	0.43	5431	16394	0.25	0.75	0.74	0.76
2019	18383	0.82	0.38	3316	15067	0.18	0.82	0.81	0.83

ACCESS variables VIII (Physical Access)

- ▶ Internet download speed low between 2 Mbit/s to 30 Mbit/s.
- ▶ Type: continuous
- ▶ Code: A2_C4_low

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.82	0.38	3351	15481	0.18	0.82	0.81	0.83
2015	19322	0.80	0.40	3875	15447	0.20	0.80	0.79	0.81
2016	18892	0.75	0.43	4715	14177	0.25	0.75	0.74	0.76
2017	21195	0.68	0.47	6776	14419	0.32	0.68	0.67	0.69
2018	21825	0.58	0.49	9189	12636	0.42	0.58	0.57	0.59
2019	18383	0.47	0.50	9813	8570	0.53	0.47	0.46	0.48

ACCESS variables IX (Physical Access)

- Internet download speed low between 2 Mbit/s to 30 Mbit/s.
- Type: continuous
- Code: A2_C4_high

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.18	0.38	15481	3351	0.82	0.18	0.17	0.19
2015	19322	0.20	0.40	15447	3875	0.80	0.20	0.19	0.21
2016	18892	0.25	0.43	14177	4715	0.75	0.25	0.24	0.26
2017	21195	0.32	0.47	14419	6776	0.68	0.32	0.31	0.33
2018	21825	0.42	0.49	12636	9189	0.58	0.42	0.41	0.43
2019	18383	0.53	0.50	8570	9813	0.47	0.53	0.52	0.54

SKILLS variables I

11 variables were selected, these variables include only binary variables. It represents the digital skills withing the enterprise. Measuring ICT training and the use of internal personnel to develop ICT tasks.

SKILLS variables II

- ▶ Var name: Employment of specialists in computer subjects.
- ▶ Type: binary
- ▶ Code: S_B1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.29	0.45	13427	5405	0.71	0.29	0.28	0.30
2015	19322	0.31	0.46	13303	6019	0.69	0.31	0.30	0.32
2016	18892	0.32	0.47	12781	6111	0.68	0.32	0.31	0.33
2017	21195	0.32	0.47	14477	6718	0.68	0.32	0.31	0.33
2018	21825	0.32	0.47	14828	6997	0.68	0.32	0.31	0.33
2019	18383	0.35	0.48	11924	6459	0.65	0.35	0.34	0.36

SKILLS variables III

▶ Var name: IT training courses for employees with specialist ict skills.
▶ Type: binary
▶ Code: S_B2a

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.12	0.32	16642	2190	0.88	0.12	0.12	0.12
2015	19322	0.13	0.33	16850	2472	0.87	0.13	0.13	0.13
2016	18892	0.13	0.34	16425	2467	0.87	0.13	0.13	0.13
2017	21195	0.13	0.34	18350	2845	0.87	0.13	0.13	0.13
2018	21825	0.18	0.38	17902	3923	0.82	0.18	0.17	0.19
2019	18383	0.21	0.41	14542	3841	0.79	0.21	0.20	0.22

SKILLS variables IV

- Use of internal personnel for ICT infrastructure maintenance.
- Type: binary
- Code: S_B5a1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.29	0.45	13357	5475	0.71	0.29	0.28	0.30
2015	19322	0.31	0.46	13419	5903	0.69	0.31	0.30	0.32
2016	18892	0.31	0.46	13108	5784	0.69	0.31	0.30	0.32
2017	21195	0.30	0.46	14780	6415	0.70	0.30	0.29	0.31
2018	21825	0.30	0.46	15306	6519	0.70	0.30	0.29	0.31
2019	18383	0.33	0.47	12398	5985	0.67	0.33	0.32	0.34

SKILLS variables V

- ▶ Var name: Use of internal personnel for office software support.
- ▶ Type: binary
- ▶ Code: S_B5b1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.44	0.5	10552	8280	0.56	0.44	0.43	0.45
2015	19322	0.46	0.5	10526	8796	0.54	0.46	0.45	0.47
2016	18892	0.46	0.5	10221	8671	0.54	0.46	0.45	0.47
2017	21195	0.45	0.5	11666	9529	0.55	0.45	0.44	0.46
2018	21825	0.43	0.5	12354	9471	0.57	0.43	0.42	0.44
2019	18383	0.47	0.5	9716	8667	0.53	0.47	0.46	0.48

SKILLS variables VI

- Var name: Use of internal personnel for enterprise software development.
- Type: binary
- Code: S_B5c1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.17	0.38	15626	3206	0.83	0.17	0.16	0.18
2015	19322	0.18	0.39	15819	3503	0.82	0.18	0.17	0.19
2016	18892	0.18	0.39	15411	3481	0.82	0.18	0.17	0.19
2017	21195	0.18	0.38	17411	3784	0.82	0.18	0.17	0.19
2018	21825	0.18	0.38	17972	3853	0.82	0.18	0.17	0.19
2019	18383	0.20	0.40	14752	3631	0.80	0.20	0.19	0.21

SKILLS variables VII

- ► Var name: Use of internal personnel for enterprise software support.
- ► Type: binary
- ► Code: S_B5d1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.23	0.42	14552	4280	0.77	0.23	0.22	0.24
2015	19322	0.24	0.42	14761	4561	0.76	0.24	0.23	0.25
2016	18892	0.25	0.43	14209	4683	0.75	0.25	0.24	0.26
2017	21195	0.24	0.43	16096	5099	0.76	0.24	0.23	0.25
2018	21825	0.24	0.43	16567	5258	0.76	0.24	0.23	0.25
2019	18383	0.26	0.44	13526	4857	0.74	0.26	0.25	0.27

SKILLS variables VIII

- Var name: Use of internal personnel for enterprise software support.
- Type: binary
- Code: S_B5e1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.15	0.36	15914	2918	0.85	0.15	0.14	0.16
2015	19322	0.17	0.37	16129	3193	0.83	0.17	0.16	0.18
2016	18892	0.17	0.37	15774	3118	0.83	0.17	0.16	0.18
2017	21195	0.16	0.37	17812	3383	0.84	0.16	0.16	0.16
2018	21825	0.16	0.36	18427	3398	0.84	0.16	0.16	0.16
2019	18383	0.18	0.38	15163	3220	0.82	0.18	0.17	0.19

SKILLS variables IX

- ▶ Var name: Use of internal personnel for web development support.
- ▶ Type: binary
- ▶ Code: S_B5f1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.18	0.38	15469	3363	0.82	0.18	0.17	0.19
2015	19322	0.19	0.39	15649	3673	0.81	0.19	0.18	0.20
2016	18892	0.20	0.40	15166	3726	0.80	0.20	0.19	0.21
2017	21195	0.18	0.39	17281	3914	0.82	0.18	0.17	0.19
2018	21825	0.17	0.38	18037	3788	0.83	0.17	0.17	0.17
2019	18383	0.20	0.40	14666	3717	0.80	0.20	0.19	0.21

SKILLS variables X

- Var name: Use of internal personnel for web development support.
- Type: binary
- Code: S_B5g1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.31	0.46	13032	5800	0.69	0.31	0.30	0.32
2015	19322	0.34	0.47	12800	6522	0.66	0.34	0.33	0.35
2016	18892	0.33	0.47	12609	6283	0.67	0.33	0.32	0.34
2017	21195	0.32	0.47	14444	6751	0.68	0.32	0.31	0.33
2018	21825	0.29	0.45	15507	6318	0.71	0.29	0.28	0.30
2019	18383	0.34	0.47	12083	6300	0.66	0.34	0.33	0.35

USAGE variables I

These variables include only binary variables, we selected 11 variables. It measures how the enterprise use a variety of digital technologies in different business operations in marketing, management, e-commerce and human resources.

USAGE variables II (Marketing)

- ▶ Var name: Use of Website
- ▶ Type: binary
- ▶ Code: UMK_C7

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.75	0.43	4752	14080	0.25	0.75	0.74	0.76
2015	19322	0.77	0.42	4455	14867	0.23	0.77	0.76	0.78
2016	18892	0.79	0.41	3963	14929	0.21	0.79	0.78	0.80
2017	21195	0.78	0.41	4594	16601	0.22	0.78	0.77	0.79
2018	21825	0.79	0.40	4496	17329	0.21	0.79	0.78	0.80
2019	18383	0.85	0.35	2702	15681	0.15	0.85	0.84	0.86

USAGE variables III (Marketing)

- ▶ Var name: possibility to place orders or reservations online eg online shopping cart
- ▶ Type: binary
- ▶ Code: UMK_C8c

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.44	0.50	10547	8285	0.56	0.44	0.43	0.45
2015	19322	0.44	0.50	10767	8555	0.56	0.44	0.43	0.45
2016	18892	0.46	0.50	10256	8636	0.54	0.46	0.45	0.47
2017	21195	0.48	0.50	11027	10168	0.52	0.48	0.47	0.49
2018	21825	0.47	0.50	11540	10285	0.53	0.47	0.46	0.48
2019	18383	0.43	0.49	10497	7886	0.57	0.43	0.42	0.44

USAGE variables IV (Marketing)

- Var name: Links or references to company profiles on social media
- Type: binary
- Code: UMK_C8h

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.32	0.47	12745	6087	0.68	0.32	0.31	0.33
2015	19322	0.38	0.49	11894	7428	0.62	0.38	0.37	0.39
2016	18892	0.44	0.50	10568	8324	0.56	0.44	0.43	0.45
2017	21195	0.48	0.50	11125	10070	0.52	0.48	0.47	0.49
2018	21825	0.54	0.50	9963	11862	0.46	0.54	0.53	0.55
2019	18383	0.55	0.50	8239	10144	0.45	0.55	0.54	0.56

USAGE variables V (Marketing)

- Var name: Use of social network.
- Type: binary
- Code: UMK_C10a

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.33	0.47	12615	6217	0.67	0.33	0.32	0.34
2015	19322	0.38	0.49	11961	7361	0.62	0.38	0.37	0.39
2016	18892	0.44	0.50	10655	8237	0.56	0.44	0.43	0.45
2017	21195	0.48	0.50	11106	10089	0.52	0.48	0.47	0.49
2018	21825	0.45	0.50	11967	9858	0.55	0.45	0.44	0.46
2019	18383	0.57	0.50	7930	10453	0.43	0.57	0.56	0.58

USAGE variables VI (Marketing)

- Var name: Social media and multimedia.
- Type: binary
- Code: UMK_C10c

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.14	0.35	16102	2730	0.86	0.14	0.14	0.14
2015	19322	0.17	0.38	15956	3366	0.83	0.17	0.16	0.18
2016	18892	0.21	0.41	14971	3921	0.79	0.21	0.20	0.22
2017	21195	0.23	0.42	16375	4820	0.77	0.23	0.22	0.24
2018	21825	0.21	0.41	17167	4658	0.79	0.21	0.20	0.22
2019	18383	0.29	0.46	12997	5386	0.71	0.29	0.28	0.30

USAGE variables VII (Management)

- Var name: Using ERP software
- Type: binary
- Code: UM_E1

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.46	0.5	10107	8725	0.54	0.46	0.45	0.47
2015	19322	0.47	0.5	10278	9044	0.53	0.47	0.46	0.48
2016	18892	0.50	0.5	9497	9395	0.50	0.50	0.49	0.51
2017	21195	0.50	0.5	10644	10551	0.50	0.50	0.49	0.51
2018	21825	0.49	0.5	11105	10720	0.51	0.49	0.48	0.50
2019	18383	0.51	0.5	9022	9361	0.49	0.51	0.50	0.52

USAGE variables VIII (Management)

- ▶ Var name: Use operational CRM software
- ▶ Type: binary
- ▶ Code: UM_E2b

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.23	0.42	14477	4355	0.77	0.23	0.22	0.24
2015	19322	0.24	0.43	14666	4656	0.76	0.24	0.23	0.25
2016	18892	0.26	0.44	13979	4913	0.74	0.26	0.25	0.27
2017	21195	0.25	0.44	15814	5381	0.75	0.25	0.24	0.26
2018	21825	0.28	0.45	15734	6091	0.72	0.28	0.27	0.29
2019	18383	0.37	0.48	11577	6806	0.63	0.37	0.36	0.38

USAGE variables IX (Management)

- Var name: Use analytical CRM software
- Type: binary
- Code: UM_E2a

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.35	0.48	12259	6573	0.65	0.35	0.34	0.36
2015	19322	0.35	0.48	12517	6805	0.65	0.35	0.34	0.36
2016	18892	0.37	0.48	11934	6958	0.63	0.37	0.36	0.38
2017	21195	0.37	0.48	13431	7764	0.63	0.37	0.36	0.38
2018	21825	0.34	0.47	14323	7502	0.66	0.34	0.33	0.35
2019	18383	0.24	0.43	13996	4387	0.76	0.24	0.23	0.25

USAGE variables XI (e-commerce)

- Var name: Possibility to place orders or reservations online eg online shopping cart
- Type: binary
- Code: UC_C8a

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.17	0.38	15619	3213	0.83	0.17	0.16	0.18
2015	19322	0.18	0.39	15779	3543	0.82	0.18	0.17	0.19
2016	18892	0.20	0.40	15113	3779	0.80	0.20	0.19	0.21
2017	21195	0.22	0.41	16547	4648	0.78	0.22	0.21	0.23
2018	21825	0.22	0.42	16915	4910	0.78	0.22	0.21	0.23
2019	18383	0.21	0.41	14501	3882	0.79	0.21	0.20	0.22

USAGE variables XII (e-commerce)

- ▶ Var name: Web sales through intermediary websites or ecommerce sites marketplaces or apps
- ▶ Type: binary
- ▶ Code: UC_J7

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.46	0.50	10124	8708	0.54	0.46	0.45	0.47
2015	19322	0.46	0.50	10404	8918	0.54	0.46	0.45	0.47
2016	18892	0.49	0.50	9649	9243	0.51	0.49	0.48	0.50
2017	21195	0.50	0.50	10688	10507	0.50	0.50	0.49	0.51
2018	21825	0.09	0.28	19957	1868	0.91	0.09	0.09	0.09
2019	18383	0.09	0.28	16808	1575	0.91	0.09	0.09	0.09

USAGE variables XIII (Human Resources)

- ▶ Var name: Announcement of vacancies or possibility to apply for employment online.
- ▶ Type: binary
- ▶ Code: UM_C8g

year	count	prop	std_dev	num_0s	num_1s	prop_0s	prop_1s	lo_95_CI	up_95_CI
2014	18832	0.23	0.42	14455	4377	0.77	0.23	0.22	0.24
2015	19322	0.25	0.43	14519	4803	0.75	0.25	0.24	0.26
2016	18892	0.26	0.44	13933	4959	0.74	0.26	0.25	0.27
2017	21195	0.27	0.44	15573	5622	0.73	0.27	0.26	0.28
2018	21825	0.26	0.44	16150	5675	0.74	0.26	0.25	0.27
2019	18383	0.30	0.46	12879	5504	0.70	0.30	0.29	0.31