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## Appendix A

**Table A** Out-of-labor social benefits codes extracted from the Danish Register for Evaluation of Marginalization (DREAM) for inclusion

Type of out-of-labor social benefit	Code
Cash-benefit	130,133-139, 710,713-719, 730,733-739
Educational benefit	140,143-149, 720,723-729
Integration benefit	160,163-169, 700,703-709
Availability benefit	740,743-749
Rehabilitation benefit	750,753-758,760,763-768
Resource course grant	810,813-818
Job clarification	870,873-878

**Table B** Indicators of social vulnerability and operationalization including source of information

Indicator	Operationalization and source of information
Mental illness	<ul style="list-style-type: none"> <li>a) at least one hospital contact according to the International Classification of Disease 10th revision (ICD-10: F321, F322, F328, F329, F331, F332, F334-F339, F603, F20-F31, F34-F43, F50, F60-F62, F90-F92) (24)(25) <i>or</i></li> <li>b) having at least 5 prescription redemptions for mental disease in the Anatomical Therapeutic Chemical (ATC) Classification System: N06A, N05B, N06BA04, N06BA09, N06Ba12, N05X12, N05X13, N05AH03, N05AX08, N05AX09, N03AG01, N05AH04, N05BA (excluding N06AA09, N05BA02) (26)</li> </ul>
Alcohol misuse	<ul style="list-style-type: none"> <li>a) at least one hospital contact (ICD-10: F101-F109) (24) <i>or</i></li> <li>b) at least one redeemed prescription redemption for alcohol addiction (ATC: N07BB) (26) <i>or</i></li> <li>c) minimum one registration at a national alcohol treatment center (27) <i>or</i></li> <li>d) minimum one registration with a daily alcohol intake at a national drug treatment center (28)</li> </ul>
Drug misuse	<ul style="list-style-type: none"> <li>a) at least one hospital contact (ICD-10: F111-114, F119, T401, T403, F141-F143, F149 F151-F153, F159, F161-F162, F169, F191-F194, F199, F121-F122, F129, F131-F134, F139 F181-F182, F189) (24) <i>or</i></li> <li>b) at least one redeemed prescription for drug addiction (ATC: N07BC, N05BA) (26) <i>or</i></li> </ul>

- c) minimum one registration at a drug treatment center (28) *or*
- d) a registration at a national alcohol treatment center within the last month of a minimum of one specified drug: heroin, methadone, opiate, barbiturate, cocaine, amphetamine, hallucinogens, inhaler, or others (27)

Homelessness	Minimum one contact with a public homeless shelter (29)
Unconditional imprisonment	Any unconditional imprisonment sentence excluding sentences for traffic offenses (1460, 2110, 2210, 2220, 2420, 2610, 3835) (30)
Substance misuse-related illness	At least one hospital contact (ICD-10: B18, B20-B24, G62, K70-K77, K86) (24)

**Table C** Codes were extracted from the Danish National Health Service Register (20) and operationalized to assess the historical use of the dental care system

Variable	Operationalization
No/sporadic use	<ul style="list-style-type: none"> <li>a) no registration <i>or</i> maximum:</li> <li>b) one filling (1500-1507, 1509, 1550-1559, 4510-4515, 5420-4525) <i>and/or</i></li> <li>c) one extraction (1700-1703, 1801) <i>and/or</i></li> <li>d) one acute endodontic treatment (1600, 1601, 1605) <i>and/or</i></li> <li>e) one root cleaning (1431)</li> </ul>
Irregularly use	<p>Treatments beyond sporadic use <i>or</i> a maximum of one examination</p> <p>Treatments: 1300-1302, 1310-1410, 1420, 1425, 1430, 1431, 1440, 1452-1454, 1500-1507, 1509, 1550-59, 1600-06, 1700-03, 1800, 1801, 2910, 2920, 4510-15, 4520, 4521-25, 492921</p> <p>Examinations: 1001, 1100, 1110-1116, 1120, 1130, 1140-41, 1160, 1170, 1171, 1180, 1415, 2110, 2120, 491000-491115, 491140, 491141, 491181</p>
Regular use	A minimum of 2 examinations (codes extracted from above)

# Appendix B

**Table 1a** Demographic characteristics of total number of applications for public subsidies for dental care services in Copenhagen municipality (2013-2018), stratified by applications being granted versus not granted. The odds ratio (95% confidence interval) for being granted adjusted for age and gender.

	<b>Total no of applications</b> 18,529	<b>Granted</b> 15,369 (83.0)	<b>Not granted</b> 3,160 (17.0)	<b>OR</b> (95% CI)
<b>Gender</b>				
Male	8,642 (46.6)	7,166 (46.6)	1,476 (46.7)	1
Women (n, %)	9,887 (53.4)	8,203 (53.4)	1,684 (53.3)	1.00 (0.93-1.08)
<b>Age</b>				
Age (mean, SD)	44.5 (11.6)	44.6 (11.5)	43.7 (11.9)	
18-29	2,676 (14.4)	2,162 (14.1)	514 (16.3)	1
30-39	3,354 (18.1)	2,751 (17.9)	603 (19.1)	1.09 (0.95-1.24)
40-49	5,293 (28.6)	4,417 (28.7)	876 (27.7)	1.20 (1.06-1.35)
50-65	7,206 (38.9)	6,039 (39.3)	1,167 (36.9)	1.23 (1.10-1.38)
<b>Ethnicity</b>				
Ethnic Danes	10,838 (58.5)	8,978 (58.4)	1,860 (58.9)	1
Immigrants	6,857 (37.0)	5,734 (37.3)	1,123 (35.5)	1.04 (0.96-1.13)
Decedents	834 (4.5)	657 (4.3)	177 (5.6)	0.83 (0.69-0.99)
<b>Years with residence in Denmark</b>				
0-3	197 (2.9)	164 (2.9)	33 (3.0)	1
4-9	301 (4.5)	247 (4.4)	54 (4.9)	0.90 (0.56-1.45)
10 or more	6,216 (92.8)	5,207 (92.7)	1,009 (92.1)	1.00 (0.68-1.49)
<b>Family structure</b>				
Couple without children at home	1,316 (7.1)	1,053 (6.9)	263 (8.3)	1
Couple with children at home	1,904 (10.3)	1,523 (9.9)	381 (12.1)	1.00 (0.84-1.20)
Single with children at home	3,370 (18.2)	2,842 (18.5)	528 (16.7)	1.34 (1.14-1.59)
Single without children at home	11,939 (64.4)	9,951 (64.7)	1,988 (62.9)	1.24 (1.08-1.44)

**Table 1b** Sociodemographic characteristics of total number of applications for public subsidies for dental care services in Copenhagen municipality (2013-2018), stratified by applications being granted versus not granted. The odds ratio (95% confidence interval) for being granted adjusted for age and gender.

	<b>Total no of applications</b> 18,529	<b>Granted</b> 15,369 (83.0)	<b>Not granted</b> 3,160 (17.0)	<b>OR</b> (95% CI)
<b>Education</b>				
Long (>12 years)	2,344 (12.7)	1,903 (12.4)	441 (14.0)	1
Medium (9-12 years)	5,396 (29.1)	4,447 (28.9)	949 (30.0)	1.10 (0.97-1.25)
Short (<9 years)	9,245 (49.9)	7,716 (50.2)	1,529 (48.4)	1.24 (1.10-1.40)
Missing	1,544 (8.3)	1,303 (8.5)	241 (7.6)	1.27 (1.07-1.51)
<b>Income</b>				
Median annual income	124,507	124,431	124,757	
Q1;Q3	105,642;139,671	105,976;139,049	103,489;143,651	-
Q1 (lowest)	4,696 (25.3)	3,813 (24.8)	883 (27.9)	1.07 (0.96-1.19)
Q2	4,585 (24.7)	3,883 (25.3)	702 (22.2)	1.33 (1.19-1.48)
Q3	4,581 (24.7)	3,912 (25.5)	669 (21.2)	1.40 (1.25-1.56)
Q4	4,667 (25.2)	3,761 (24.5)	906 (28.7)	1
<b>Historic public support</b>				
No	5,170 (27.9)	3,988 (26.0)	1,182 (37.4)	1
<1 year	2,700 (14.6)	2,254 (14.7)	446 (14.1)	1.50 (1.33-1.69)
1.0-3.9	3,165 (17.1)	2,639 (17.2)	526 (16.7)	1.49 (1.33-1.67)
4.0-5.0	7,494 (40.4)	6,488 (42.2)	1,006 (31.8)	1.92 (1.74-2.11)
<b>Indicators of social vulnerability (ref=none)</b>				
Mental illness	8,643 (46.6)	7,174 (46.7)	1,469 (46.5)	1.01 (0.94-1.09)
Alcohol misuse	2,100 (11.3)	1,787 (11.6)	313 (9.9)	1.17 (1.03-1.33)
Drug misuse	4,168 (22.5)	3,547 (23.1)	621 (19.7)	1.22 (1.11-1.34)
Homelessness	1,351 (7.3)	1,155 (7.5)	196 (6.2)	1.24 (1.06-1.46)
Imprisonment	2,204 (11.9)	1,793 (11.7)	411 (13.0)	0.91 (0.81-1.03)
Chronic disease	1,092 (5.9)	930 (6.1)	162 (5.1)	1.16 (0.97-1.38)
<b>Number of indicators</b>				
Single indicator	6,470 (34.9)	5,326 (34.6)	1,144 (36.2)	1.00 (0.92-1.10)
Combined indicators	5,092 (27.5)	4,295 (28.0)	797 (25.2)	1.15 (1.04-1.27)
None	6,967 (37.6)	5,748 (37.4)	1,219 (38.6)	1

\* Chronic disease related to substance misuse

**Table 1c** Characteristics of the dental care system utilization: total number of applications for public subsidies for dental care services in Copenhagen municipality (2013-2018), stratified by applications being granted versus not granted. The odds ratio (95% confidence interval) for being granted adjusted for age and gender.

	<b>Total no of applications</b> 18,529	<b>Granted</b> 15,369 (83.0)	<b>Not granted</b> 3,160 (17.0)	<b>OR</b> (95% CI)
Historic use of dental care services				
No/sporadic use	6,152 (33.2)	5,075 (33.0)	1,077 (34.1)	1
Irregular use	7,237 (38.1)	6,004 (39.1)	1,233 (39.0)	1.03 (0.95-1.13)
Regular use	5,140 (27.7)	4,290 (27.9)	850 (26.9)	1.05 (0.95-1.16)
Use of dental care services 18 months after the index date				
Contact	16,033 (86.5)	13,767 (89.6)	2,266 (71.7)	
No contact	2,496 (13.5)	1,602 (10.4)	894 (28.3)	

**Table 2a** Demographic characteristics of the total number of applications that received grants equal to or above 10,000 DKK (1,344 EUR) for dental care services in Copenhagen municipality (2013-2018), stratified by grants used versus not used within 12 months of the index date. The odds ratio (95% confidence interval) for grant utilization, adjusted for age and gender.

	<b>Total</b> 5,083	<b>Grant used</b> 4,301 (84.6)	<b>Grant not used</b> 782 (15.4)	<b>OR</b> (95% CI)
<b>Gender</b>				
Male	2,753 (54.2)	2,403 (54.3)	350 (53.2)	1
Women (n, %)	2,330 (45.8)	2,022 (45.7)	308 (46.8)	0.96 (0.81-1.13)
<b>Age</b>				
Age (mean, SD)	44.6 (11.2)	44.4 (11.3)	45.6 (10.9)	
18-29	673 (13.2)	598 (13.5)	75 (11.4)	1
30-39	959 (18.9)	848 (19.2)	111 (16.9)	0.96 (0.70-1.31)
40-49	1,509 (29.7)	1,310 (29.6)	199 (30.2)	0.83 (0.62-1.10)
50-65	1,942 (38.2)	1,669 (37.7)	273 (41.5)	0.77 (0.59-1.01)
<b>Ethnicity</b>				
Ethnic Danes	3,018 (59.4)	2,647 (59.8)	371 (56.4)	1
Immigrants	1,815 (35.7)	1,559 (35.2)	256 (38.9)	0.88 (0.74-1.04)
Decedents	250 (4.9)	219 (4.6)	31 (4.7)	0.87 (0.58-1.32)
<b>Years with residence in Denmark (among immigrants)</b>				
0-3*	69 (3.9)	N/A*	N/A*	N/A*
4-9	80 (4.5)	67 (4.4)	13 (5.2)	N/A*
10 or more	1,637 (91.7)	1,404 (91.4)	233 (93.2)	N/A*
<b>Family structure</b>				
Couple without children at home	365 (7.2)	332 (7.5)	33 (5.0)	1
Couple with children at home	505 (9.9)	441 (10.0)	64 (9.7)	0.67 (0.43-1.05)
Single with children at home	896 (17.6)	774 (17.5)	122 (18.5)	0.63 (0.41-0.95)
Single without children at home	3,317 (65.3)	2,878 (65.0)	439 (66.7)	0.65 (0.45-0.94)

\*N/A: The analysis was not applicable due to the limited number of observations

**Table 2b** Sociodemographic characteristics of the total number of applications that received grants equal to or above 10,000 DKK (1,344 EUR) for dental care services in Copenhagen municipality (2013-2018), stratified by grants used versus not used within 12 months of the index date. The odds ratio (95% confidence interval) for grant utilization, adjusted for age and gender.

	<b>Total</b> 5,083	<b>Grant used</b> 4,301 (84.6)	<b>Grant not used</b> 782 (15.4)	<b>OR</b> (95% CI)
<b>Education</b>				
Short (<9 years)	2,702 (53.2)	2,345 (53.0)	357 (54.3)	0.96 (0.72-1.28)
Medium (9-12 years)	1,410 (27.4)	1,240 (28.0)	170 (25.8)	1.13 (0.83-1.53)
Long (>12 years)	484 (9.5)	418 (9.5)	66 (10.0)	1
Missing	487 (9.6)	422 (9.5)	65 (9.9)	1.00 (0.69-1.45)
<b>Income</b>				
Median annual income	122,963	122,817	123,359	-
Q1;Q3	104,040;137,218	104,040;137,108	104,093;138,156	-
Q1 (lowest)	1,281 (25.2)	1,105 (25.0)	176 (26.8)	0.92 (0.73-1.16)
Q2	1,267 (24.9)	1,118 (25.3)	149 (22.6)	1.17 (0.92-1.48)
Q3	1,260 (24.8)	1,097 (24.8)	163 (24.8)	1.05 (0.84-1.33)
Q4	1,275 (25.1)	1,105 (25.0)	170 (25.8)	1
Missing				
<b>Historic public support</b>				
No	1,388 (27.3)	1,212 (27.4)	176 (26.8)	1
<1 year	781 (15.4)	673(15.2)	108 (16.4)	0.93 (0.72-1.20)
1.0-3.9	838 (16.5)	748 (16.9)	90 (13.7)	1.26 (0.96-1.66)
4.0-5.0	2,076 (41.8)	1,792 (40.5)	284 (43.2)	0.98 (0.80-1.21)
<b>Indicators of social vulnerability (ref=none)</b>				
Mental illness	2,222 (43.7)	1,955 (44.2)	267 (40.6)	1.17 (0.99-1.38)
Alcohol misuse	704 (13.9)	615 (13.9)	89 (13.7)	1.07 (0.84-1.36)
Drug misuse	1,348 (26.5)	1,166 (26.4)	182 (27.7)	0.94 (0.78-1.13)
Homelessness	506 (10.0)	428 (9.7)	78 (11.9)	0.77 (0.60-1.00)
Imprisonment	761 (15.0)	629 (14.2)	132 (20.1)	0.58 (0.47-0.73)
Chronic disease*	356 (7.0)	300 (6.8)	56 (8.5)	0.81 (0.60-1.09)

Number of indicators				
Single indicators	1,672 (32.9)	1,472 (33.3)	200 (30.4)	1.09 (0.89-1.34)
Combined indicators	1,592 (31.3)	1,373 (31.0)	219 (33.3)	0.94 (0.77-1.15)
None	1,819 (35.8)	1,580 (35.7)	239 (36.2)	1

\*Chronic disease related to substance misuse

**Table 2c** Characteristics of the dental care system utilization: total number of applications that received grants equal to or above 10,000 DKK (1,344 EUR) for dental care services in Copenhagen municipality (2013-2018), stratified by grants used versus not used within 12 months of the index date. The odds ratio (95% confidence interval) for grants utilization, was adjusted for age and gender.

	<b>Total</b> 5,083	<b>Grant used</b> 4,301 (84.6)	<b>Grant not used</b> 782 (15.4)	<b>OR</b> (95% CI)
Historic use of dental care services				
No/sporadic use	2,238 (44.0)	1,968 (44.5)	270 (41.0)	1
Irregular use	2,095 (41.2)	1,805 (40.8)	290 (44.1)	0.85 (0.71-1.02)
Regular use	750 (14.8)	652 (14.7)	98 (14.9)	0.94 (0.73-1.21)
Use of dental care services 18 months after the index date				
Contact	4,829 (95.0)	4,425 (100)	404 (61.4)	-
No contact	254 (5.0)		254 (38.6)	-



**Table 3** Number of individuals who applied for public subsidies for dental care services once versus multiple times during the study period in Copenhagen municipality (2013-2018), stratified by the number of indicators of social vulnerability (none, single or combined indicators).

<b>Indicators of social vulnerability* (n, %)</b>				
<b>Applied for public subsidy (n, %)</b>	None	Single	Combined	Total
Once	2,641 (42.4)	2,144 (34.5)	1,438 (23.1)	6,233 (60.0)
Multiple times	1,526 (36.8)	1,450 (35.0)	1,170 (28.2)	4,146 (40.0)
<b>Total</b>	<b>4,167 (40.2)</b>	<b>3,594 (34.7)</b>	<b>2,608 (25.2)</b>	<b>10,369 (100)</b>

\*An individual was classified as having 'none', 'single', or 'combined indicators' defined by having two or more of the 'single' indicators: 1) mental illness, 2) alcohol misuse, 3) drug misuse, 4) homelessness, 5) imprisonment, and 6) chronic disease related to substance misuse