

The impact of inequalities and health expenditure on mortality due to oral and oropharyngeal cancer: a
20-year trend analysis - **Supplement**

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Supplementary Chart S1. International Classification of Diseases, tenth revision (ICD-10) codes included in the categories of “oral cancer” and “oropharyngeal cancer.”

Oral Cancer	ICD-10
Malignant neoplasm of dorsal surface of tongue	C02.0
Malignant neoplasm of border of tongue	C02.1
Malignant neoplasm of ventral surface of tongue	C02.2
Malignant neoplasm of anterior two-thirds of tongue, part unspecified	C02.3
Malignant neoplasm of overlapping lesion of tongue	C02.8
Malignant neoplasm of tongue, unspecified	C02.9
Malignant neoplasm of upper gum	C03.0
Malignant neoplasm of lower gum	C03.1
Malignant neoplasm of gum, unspecified	C03.9
Malignant neoplasm of anterior floor of mouth	C04.0
Malignant neoplasm of lateral floor of mouth	C04.1
Malignant neoplasm of overlapping lesion of floor of mouth	C04.8
Malignant neoplasm of floor of mouth, unspecified	C04.9
Malignant neoplasm of hard palate	C05.0
Malignant neoplasm of soft palate	C05.1
Malignant neoplasm of uvula	C05.2
Malignant neoplasm of overlapping lesion of palate	C05.8
Malignant neoplasm of palate, unspecified	C05.9
Malignant neoplasm of cheek mucosa	C06.0
Malignant neoplasm of vestibule of mouth	C06.1
Neoplasia maligna of retromolar area	C06.2
Malignant neoplasm of overlapping lesion of other and unspecified parts of mouth	C06.8
Malignant neoplasm of mouth, unspecified	C06.9
Oropharyngeal Cancer	ICD-10
Malignant neoplasm of base of tongue	C01
Malignant neoplasm of lingual tonsil	C02.4
Malignant neoplasm of tonsillar fossa	C09.0
Malignant neoplasm of tonsillar pillar (anterior) (posterior)	C09.1
Malignant neoplasm of overlapping lesion of tonsil	C09.8
Malignant neoplasm of tonsil, unspecified	C09.9
Malignant neoplasm of vallecula	C10.0
Malignant neoplasm of anterior surface of epiglottis	C10.1
Malignant neoplasm of lateral wall of oropharynx	C10.2
Malignant neoplasm of posterior wall of oropharynx	C10.3
Malignant neoplasm of branchial cleft	C10.4
Malignant neoplasm of overlapping lesion of oropharynx	C10.8
Malignant neoplasm of oropharynx, unspecified	C10.9
Malignant neoplasm of Waldeyer ring	C14.2

Supplementary Table S1. North region: Annual percent change (APC), 95% confidence interval (IC_{95%}), and trends of oral (OC) and oropharyngeal (OPC) death rates, by intermediate geographic regions. Brazil, 1996-2018.

Intermediate Region	State	OC-APC(IC _{95%})	OC-Trend	OPC-APC(IC _{95%})	OPH-Trend
Altamira	Pará	1.88(-2.02;5.93)	↔	0.68(-3.53;5.07)	↔
Araguaína	Tocantins	1.14(-1.08;3.41)	↔	0.42(-2.99;3.96)	↔
Belém	Pará	-0.11(-1.53;1.33)	↔	-0.48(-1.95;1.02)	↔
Boa Vista	Roraima	-1.00(-4.10;2.20)	↔	-3.38(-8.03;1.51)	↔
Breves	Pará	3.43(-0.12;7.10)	↔	5.18(0.42;10.17)	↑
Castanhal	Pará	1.12(0.11;2.14)	↑	2.91(1.36;4.48)	↑
Cruzeiro do Sul	Acre	0.03(-4.87;5.19)	↔	-0.75(-5.31;4.04)	↔
Gurupi	Tocantins	2.70(0.05;5.41)	↔	1.78(-4.94;8.99)	↔
Ji-Paraná	Rondônia	-0.33(-2.48;1.86)	↔	-1.22(-3.81;1.44)	↔
Lábrea	Amazonas	4.71(-0.38;10.05)	↔	7.33(2.56;12.32)	↑
Macapá	Amapá	1.42(-1.65;4.58)	↔	-1.01(-5.16;3.32)	↔
Manaus	Amazonas	-0.91(-2.03;0.21)	↔	0.79(-0.79;2.39)	↔
Marabá	Pará	0.29(-2.63;3.30)	↔	1.57(0.60;2.56)	↑
Oiapoque - Porto Grande	Amapá	4.47(-4.91;14.77)	↔	1.33(-9.61;13.58)	↔
Palmas	Tocantins	1.96(-1.67;5.73)	↔	1.21(-3.38;6.03)	↔
Parintins	Amazonas	1.76(-0.91;4.51)	↔	4.06(1.05;7.15)	↑
Porto Velho	Rondônia	-1.31(-3.70;1.15)	↔	1.37(-0.67;3.44)	↔
Redenção	Pará	0.62(-2.62;3.98)	↔	0.94(-3.41;5.49)	↔
Rio Branco	Acre	-1.85(-4.41;0.78)	↔	-2.40(-4.45;-0.30)	↓
Rorainópolis - Caracará	Roraima	-1.23(-9.51;7.80)	↔	5.73(-6.27;19.26)	↔
Santarém	Pará	0.41(-2.17;3.06)	↔	0.58(-2.94;4.24)	↔
Tefé	Amazonas	1.06(-2.65;4.92)	↔	3.90(-0.02;7.98)	↔

↑ Increasing trend; ↓ Decreasing trend; ↔ Stationary trend

Supplementary Table S2. Northeast region: Annual percent change (APC), 95% confidence interval (IC_{95%}), and trends of oral (OC) and oropharyngeal (OPC) death rates, by intermediate geographic regions. Brazil, 1996-2018.

Intermediate Region	State	OC-APC(IC _{95%})	OC-Trend	OPC-APC(IC _{95%})	OPH-Trend
Aracaju	Sergipe	1.94(0.49;3.41)	↑	-0.56(-3.39;2.36)	↔
Arapiraca	Alagoas	2.73(1.48;3.99)	↑	2.88(1.41;4.38)	↑
Barreiras	Bahia	2.18(-0.08;4.50)	↔	0.68(-2.60;4.07)	↔
Caicó	Rio Grande do Norte	2.59(0.50;4.72)	↑	3.96(1.21;6.78)	↑
Campina Grande	Paraíba	3.62(1.18;6.12)	↑	3.10(1.05;5.20)	↑
Caruaru	Pernambuco	0.21(-0.86;1.30)	↔	1.85(1.06;2.64)	↑
Caxias	Maranhão	3.72(1.84;5.62)	↑	5.89(2.85;9.02)	↑
Corrente - Bom Jesus	Piauí	-0.83(-6.45;5.14)	↔	5.34(1.77;9.04)	↑
Crateús	Ceará	2.38(-0.47;5.31)	↔	1.42(-2.95;5.99)	↔
Feira de Santana	Bahia	1.73(0.24;3.26)	↑	3.98(2.38;5.61)	↑
Floriano	Piauí	2.87(-0.93;6.81)	↔	2.62(-3.71;9.38)	↔
Fortaleza	Ceará	-0.75(-1.42;-0.08)	↓	0.32(-0.44;1.09)	↔
Guanambi	Bahia	3.57(1.48;5.70)	↑	3.84(1.09;6.66)	↑
Iguatu	Ceará	-2.56(-4.27;-0.82)	↓	-1.78(-5.20;1.76)	↔
Ilhéus – Itabuna	Bahia	1.50(0.38;2.64)	↑	3.53(2.29;4.79)	↑
Imperatriz	Maranhão	1.73(0.21;3.27)	↑	4.41(2.82;6.03)	↑
Irecê	Bahia	3.45(0.57;6.41)	↑	4.35(1.87;6.90)	↑
Itabaiana	SeIGRpe	5.43(2.07;8.90)	↑	3.12(-0.83;7.23)	↔
João Pessoa	Paraíba	1.20(-1.70;4.19)	↔	1.30(0.27;2.34)	↑
Juazeiro	Bahia	4.09(1.76;6.48)	↑	4.59(1.99;7.25)	↑
Juazeiro do Norte	Ceará	2.37(0.33;4.46)	↑	3.69(1.92;5.48)	↑
Maceió	Alagoas	0.53(-0.86;1.94)	↔	0.88(-0.62;2.42)	↔
Mossoró	Rio Grande do Norte	3.30(0.22;6.46)	↑	3.92(2.65;5.19)	↑
Natal	Rio Grande do Norte	1.39(0.21;2.59)	↑	1.94(0.83;3.06)	↑
Parnaíba	Piauí	2.71(0.07;5.43)	↑	2.79(-0.29;5.97)	↔
Patos	Paraíba	2.53(0.57;4.52)	↑	2.41(-0.69;5.60)	↔
Paulo Afonso	Bahia	2.30(1.15;3.46)	↑	4.85(3.45;6.27)	↑
Petrolina	Pernambuco	1.14(0.06;2.22)	↑	0.62(-1.26;2.54)	↔
Picos	Piauí	4.82(1.25;8.50)	↑	1.75(-1.49;5.09)	↔
Presidente Dutra	Maranhão	2.74(-0.08;5.63)	↔	5.08(1.39;8.90)	↑
Quixadá	Ceará	-1.49(-3.57;0.64)	↔	0.96(-1.44;3.43)	↔
Recife	Pernambuco	-1.29(-1.79;-0.79)	↓	1.69(0.95;2.43)	↑
Salvador	Bahia	-2.37(-2.79;-1.95)	↓	-0.37(-1.19;0.46)	↔
Santa Inês - Bacabal	Maranhão	1.57(-1.12;4.34)	↔	2.12(-0.84;5.17)	↔
Santo Antônio de Jesus	Bahia	1.62(0.37;2.88)	↑	1.90(0.43;3.39)	↑
São Luís	Maranhão	0.69(-0.94;2.34)	↔	1.97(0.66;3.30)	↑
São Raimundo Nonato	Piauí	2.42(-2.53;7.62)	↔	8.86(2.24;15.91)	↑
Serra Talhada	Pernambuco	2.77(1.28;4.27)	↑	-1.20(-3.55;1.21)	↔
Sobral	Ceará	0.51(-1.29;2.35)	↔	0.42(-1.69;2.58)	↔
Sousa - Cajazeiras	Paraíba	2.13(0.03;4.28)	↑	2.69(-0.87;6.38)	↔
Teresina	Piauí	2.07(0.86;3.30)	↑	2.74(0.61;4.91)	↑
Vitória da Conquista	Bahia	2.74(1.37;4.14)	↑	3.00(1.37;4.66)	↑

↑ Increasing trend; ↓ Decreasing trend; ↔ Stationary trend

Supplementary Table S3. Southeast region: Annual percent change (APC), 95% confidence interval (IC_{95%}), and trends of oral (OC) and oropharyngeal (OPC) death rates, by intermediate geographic regions. Brazil, 1996-2018.

Intermediate Region	State	OC-APC	OC-Trend	OPC-APC	OPH-Trend
Araçatuba	São Paulo	-2.62(-4.09;-1.13)	↓	-0.64(-1.76;0.48)	↔
Araraquara	São Paulo	0.82(-0.84;2.51)	↔	-1.51(-2.44;-0.57)	↓
Barbacena	Minas Gerais	0.84(-1.29;3.02)	↔	1.72(0.42;3.04)	↑
Bauru	São Paulo	-1.07(-2.15;0.02)	↔	0.10(-1.20;1.42)	↔
Belo Horizonte	Minas Gerais	-0.94(-1.64;-0.23)	↓	1.91(1.23;2.61)	↑
Cachoeiro do Itapemirim	Espírito Santo	0.43(-1.51;2.40)	↔	0.62(-1.97;3.28)	↔
Campinas	São Paulo	-1.03(-1.24;-0.81)	↓	-1.76(-2.33;-1.18)	↓
Campos dos Goytacazes	Rio de Janeiro	-0.01(-2.13;2.16)	↔	-0.61(-1.72;0.53)	↔
Colatina	Espírito Santo	1.29(-0.51;3.12)	↔	3.95(2.47;5.46)	↑
Divinópolis	Minas Gerais	1.47(0.00;2.96)	↑	2.05(0.65;3.48)	↑
Governador Valadares	Minas Gerais	3.23(1.70;4.79)	↑	3.44(1.58;5.34)	↑
Ipatinga	Minas Gerais	1.95(-0.16;4.12)	↔	1.35(-0.36;3.10)	↔
Juiz de Fora	Minas Gerais	0.69(-0.06;1.44)	↔	-0.05(-1.40;1.33)	↔
Macaé - Rio das Ostras - Cabo Frio	Rio de Janeiro	-0.58(-1.82;0.67)	↔	-3.09(-4.76;-1.40)	↓
Marília	São Paulo	-0.69(-2.17;0.81)	↔	-0.84(-2.05;0.38)	↔
Montes Claros	Minas Gerais	2.31(1.06;3.57)	↑	4.12(2.75;5.51)	↑
Patos de Minas	Minas Gerais	0.70(-1.87;3.34)	↔	3.05(0.72;5.42)	↑
Petrópolis	Rio de Janeiro	-0.53(-1.80;0.75)	↔	-0.96(-1.99;0.08)	↔
Pouso Alegre	Minas Gerais	-0.09(-1.25;1.09)	↔	-0.24(-1.32;0.85)	↔
Presidente Prudente	São Paulo	-0.74(-1.59;0.11)	↔	-1.11(-2.29;0.07)	↔
Ribeirão Preto	São Paulo	-0.45(-1.64;0.76)	↔	-1.13(-2.30;0.05)	↔
Rio de Janeiro	Rio de Janeiro	-2.51(-3.20;-1.82)	↓	-2.02(-3.01;-1.01)	↓
São José do Rio Preto	São Paulo	-1.21(-1.90;-0.51)	↓	-2.06(-3.40;-0.70)	↓
São José dos Campos	São Paulo	-0.85(-1.70;0.00)	↔	-2.01(-2.75;-1.26)	↓
São Mateus	Espírito Santo	2.52(0.32;4.77)	↑	0.97(-2.23;4.27)	↔
São Paulo	São Paulo	-1.87(-2.14;-1.59)	↓	-1.11(-1.73;-0.49)	↓
Sorocaba	São Paulo	-1.08(-1.62;-0.54)	↓	-2.12(-2.67;-1.57)	↓
Teófilo Otoni	Minas Gerais	1.37(-1.13;3.93)	↔	3.97(1.91;6.08)	↑
Uberaba	Minas Gerais	-0.38(-2.22;1.50)	↔	1.90(-0.82;4.71)	↔
Uberlândia	Minas Gerais	-0.03(-1.09;1.04)	↔	-0.01(-1.60;1.61)	↔
VaIGRnha	Minas Gerais	0.76(-0.52;2.06)	↔	1.69(0.86;2.52)	↑
Vitória	Espírito Santo	0.36(-0.75;1.47)	↔	-1.40(-3.12;0.35)	↔
Volta Redonda - Barra Mansa	Rio de Janeiro	1.38(-0.46;3.25)	↔	-1.00(-3.16;1.20)	↔

↑ Increasing trend; ↓ Decreasing trend; ↔ Stationary trend

Supplementary Table S4. South region: Annual percent change (APC), 95% confidence interval (IC_{95%}), and trends of oral (OC) and oropharyngeal (OPC) death rates, by intermediate geographic regions. Brazil, 1996-2018.

Intermediate Region	State	OC-APC	OC-Trend	OPC-APC	OPH-Trend
Blumenau	Santa Catarina	-1.33(-2.29;-0.35)	↓	-1.62(-2.70;-0.52)	↓
Caçador	Santa Catarina	0.21(-3.24;3.78)	↔	-0.17(-4.33;4.17)	↔
Cascavel	Paraná	-1.08(-1.85;-0.30)	↓	-0.10(-1.71;1.55)	↔
Caxias do Sul	Rio Grande do Sul	-0.59(-1.97;0.81)	↔	-1.04(-2.62;0.56)	↔
Chapecó	Santa Catarina	-1.62(-2.78;-0.45)	↓	-2.86(-3.92;-1.79)	↓
Criciúma	Santa Catarina	-0.34(-2.05;1.40)	↔	0.59(-0.88;2.09)	↔
Curitiba	Paraná	-1.91(-2.86;-0.96)	↓	-1.70(-2.53;-0.87)	↓
Florianópolis	Santa Catarina	-2.39(-3.79;-0.98)	↓	2.14(0.58;3.73)	↑
Guarapuava	Paraná	0.67(-0.98;2.34)	↔	1.19(-0.74;3.15)	↔
Ijuí	Rio Grande do Sul	-1.46(-2.84;-0.07)	↓	0.02(-1.65;1.71)	↔
Joinville	Santa Catarina	-0.92(-1.96;0.14)	↔	-0.83(-2.31;0.68)	↔
Lages	Santa Catarina	-1.93(-5.02;1.26)	↔	0.79(-2.01;3.66)	↔
Londrina	Paraná	0.09(-0.56;0.75)	↔	-0.77(-1.42;-0.12)	↓
Maringá	Paraná	-1.24(-2.18;-0.28)	↓	0.32(-0.46;1.10)	↔
Passo Fundo	Rio Grande do Sul	-1.26(-2.31;-0.20)	↓	-0.45(-1.50;0.61)	↔
Pelotas	Rio Grande do Sul	-0.71(-2.30;0.90)	↔	2.02(1.04;3.01)	↑
Ponta Grossa	Paraná	0.09(-0.71;0.90)	↔	-2.29(-3.45;-1.12)	↓
Porto Alegre	Rio Grande do Sul	-0.63(-1.30;0.04)	↔	-0.62(-1.43;0.20)	↔
Santa Cruz do Sul - Lajeado	Rio Grande do Sul	-2.51(-4.69;-0.29)	↓	-0.01(-1.51;1.51)	↔
Santa Maria	Rio Grande do Sul	-2.36(-3.58;-1.13)	↓	-0.17(-1.42;1.08)	↔
Uruguaiana	Rio Grande do Sul	-0.39(-3.36;2.67)	↔	-0.16(-2.34;2.08)	↔

↑ Increasing trend; ↓ Decreasing trend; ↔ Stationary trend

Supplementary Table S5. Midwest region: Annual percent change (APC), 95% confidence interval (IC_{95%}), and trends of oral (OC) and oropharyngeal (OPC) death rates, by intermediate geographic regions. Brazil, 1996-2018.

Intermediate Region	State	OC-APC	OC-Trend	OPC-APC	OPH-Trend
Barra do Garças	Mato Grosso	5.31(3.25;7.42)	↑	2.94(-2.12;8.28)	↔
Cáceres	Mato Grosso	-1.36(-5.05;2.46)	↔	1.08(-4.72;7.23)	↔
Campo Grande	Mato Grosso do Sul	-0.16(-1.17;0.85)	↔	-1.39(-3.03;0.28)	↔
Corumbá	Mato Grosso do Sul	0.79(-1.21;2.83)	↔	-0.64(-2.58;1.35)	↔
Cuiabá	Mato Grosso	-0.74(-3.06;1.63)	↔	0.27(-1.12;1.67)	↔
Distrito Federal	Distrito Federal	-0.84(-2.98;1.36)	↔	0.43(-0.60;1.47)	↔
Dourados	Mato Grosso do Sul	-1.48(-2.68;-0.27)	↓	0.83(-1.28;2.98)	↔
Goiânia	Goiás	0.73(-0.68;2.17)	↔	1.42(0.60;2.24)	↑
Itumbiara	Goiás	-0.41(-2.91;2.16)	↔	0.14(-1.88;2.20)	↔
Luziânia - Águas Lindas de Goiás	Goiás	-0.65(-2.83;1.59)	↔	1.00(-0.86;2.89)	↔
Porangatu - Uruaçu	Goiás	2.00(0.37;3.65)	↔	0.04(-1.97;2.09)	↔
Rio Verde	Goiás	-0.58(-3.75;2.69)	↔	0.83(-0.42;2.10)	↔
Rondonópolis	Mato Grosso	3.02(-1.04;7.25)	↔	0.94(-1.61;3.57)	↔
São Luís de Montes Belos - Iporá	Goiás	5.31(2.53;8.18)	↑	0.15(-3.66;4.12)	↔
Sinop	Mato Grosso	0.77(-2.46;4.12)	↔	-0.83(-3.23;1.62)	↔

↑ Increasing trend; ↓ Decreasing trend; ↔ Stationary trend