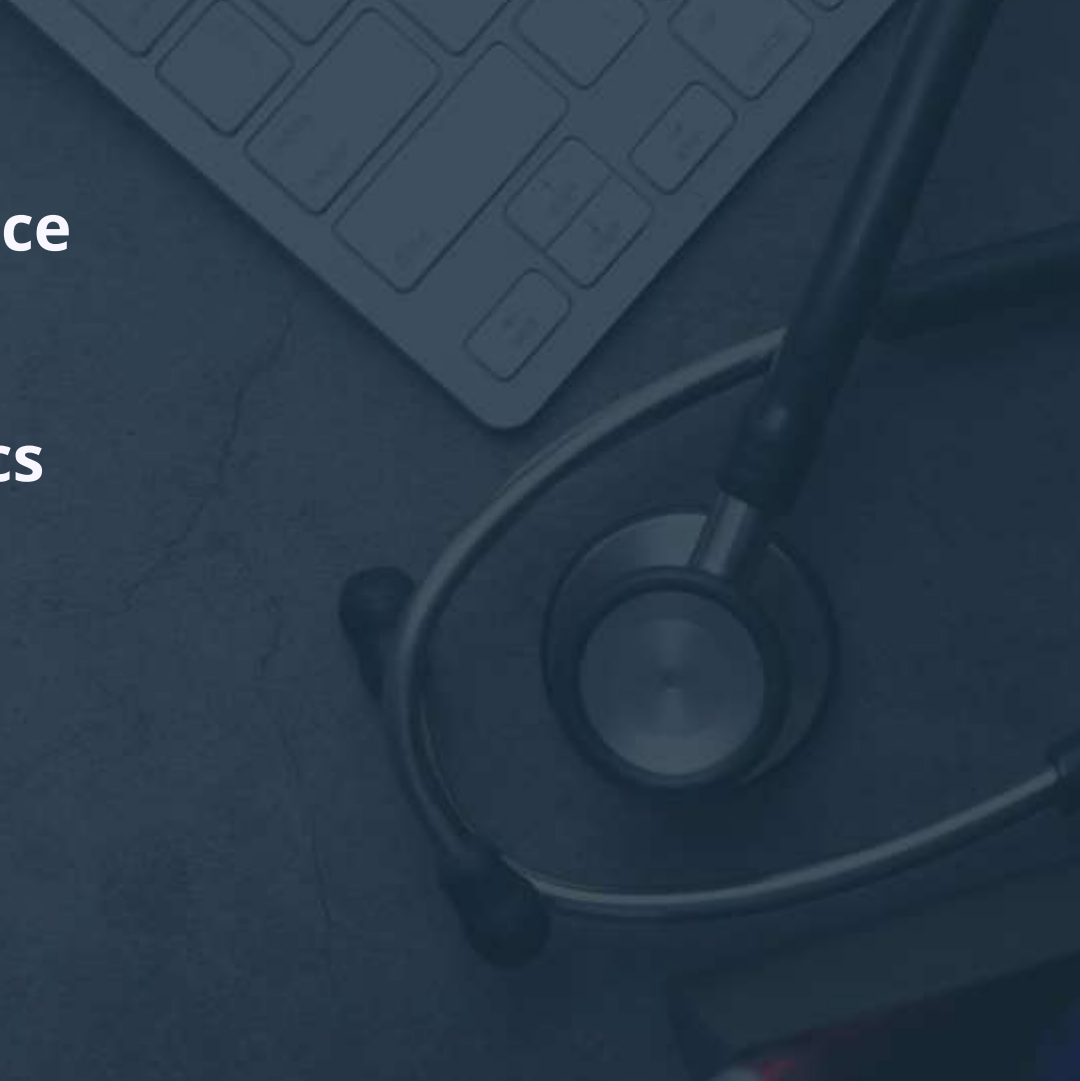


Chronic Disease Prevalence Analysis

Applied Business Analytics BAN5650

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JIGYANSHA DAHAL**





Overview & Methodology

- Observed prevalence of COPD, diabetes and osteoporosis.
- Focused on seniors aged 65+
- Calculated prevalence for each district by taking a population-weighted average of the states within that district.
- Ex: For New England, calculated weighted average of CT, ME, MA, NH, RI, VT based on 65+ population
- Used 2020 chronic disease & population data.



Calculation Methodology

District-1 (New England) COPD Prevalence Calculation:

State Prevalence = (Prevalence in State * Population of State) / Total Population of All States

State-1 Connecticut (CT):

- Prevalence in CT = 0.1143
- Population of CT = 272,491
- Total Population of All States = 1,500,653 (Sum of populations of all states)
- Prevalence in CT = $(0.1143 * 272,491) / 1,500,653 \approx 0.02068$ (Approximately)

Repeat the same calculation for all other states listed in the data.

For District-1 Weighted Average of COPD = $\text{SUM}(\text{Prevalence in State} * \text{Population of State}) / \text{Total Population of All States}$

This formula multiplies the product of COPD prevalence in each state and the population of that state and then divides the summation by the total population of all states.



Calculation Methodology

COPD																			
Bene_Geo_Lvl	Bene_Geo_Desc	Bene_Geo_Cd	Bene_Age_Lvl	Bene_Deemo_Lvl	Bene_Deemo_Desc	Bene_Cond	PrvInc	State_Code	BENES_FS_CNT										
State	Connecticut	9	65+	All	All	COPD	0.1143	CT	272491										
State	Maine	23	65+	All	All	COPD	0.1239	ME	139297										
State	Massachusetts	25	65+	All	All	COPD	0.1086	MA	726872										
State	New Hampshire	33	65+	All	All	COPD	0.1023	NH	181009										
State	Rhode Island	44	65+	All	All	COPD	0.1154	RI	79526										
State	Vermont	50	65+	All	All	COPD	0.0934	VT	101458										
									1500653										

Weighted Average - COPD	0.109628	10.9628
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Diabetes																			
Bene_Geo_Lvl	Bene_Geo_Desc	Bene_Geo_Cd	Bene_Age_Lvl	Bene_Deemo_Lvl	Bene_Deemo_Desc	Bene_Cond	PrvInc	State_Code	BENES_FS_CNT										
State	Connecticut	9	65+	All	All	Diabetes	0.2498	CT	272491										
State	Maine	23	65+	All	All	Diabetes	0.2297	ME	139297										
State	Massachusetts	25	65+	All	All	Diabetes	0.2341	MA	726872										
State	New Hampshire	33	65+	All	All	Diabetes	0.2191	NH	181009										
State	Rhode Island	44	65+	All	All	Diabetes	0.2501	RI	79526										
State	Vermont	50	65+	All	All	Diabetes	0.1997	VT	101458										
									1500653										

Weighted Average - Diabetes	0.233255	23.32553
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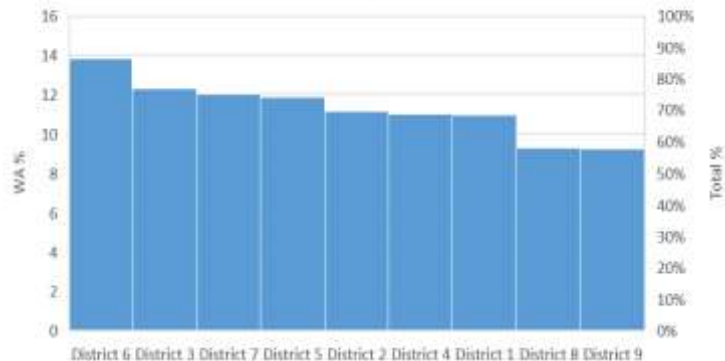
Osteoporosis																			
Bene_Geo_Lvl	Bene_Geo_Desc	Bene_Geo_Cd	Bene_Age_Lvl	Bene_Deemo_Lvl	Bene_Deemo_Desc	Bene_Cond	PrvInc	State_Code	BENES_FS_CNT										
State	Connecticut	9	65+	All	All	Osteoporosis	0.0839	CT	272491										
State	Maine	23	65+	All	All	Osteoporosis	0.0596	ME	139297										
State	Massachusetts	25	65+	All	All	Osteoporosis	0.0855	MA	726872										
State	New Hampshire	33	65+	All	All	Osteoporosis	0.0627	NH	181009										
State	Rhode Island	44	65+	All	All	Osteoporosis	0.071	RI	79526										
State	Vermont	50	65+	All	All	Osteoporosis	0.0499	VT	101458										
									1500653										

Weighted Average - Osteoporosis	0.07688	7.687988
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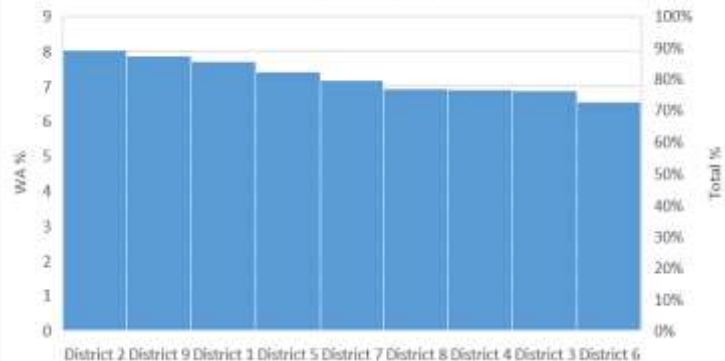


Analysis

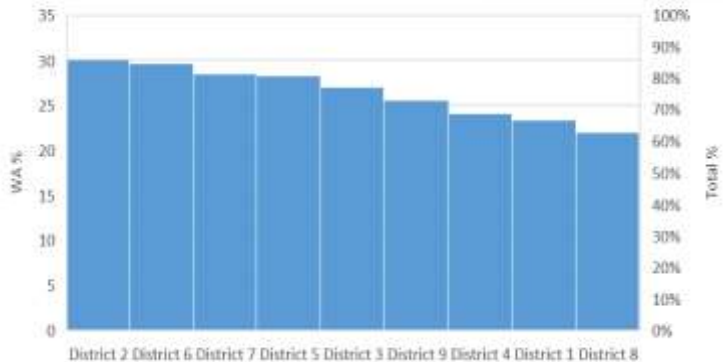
COPD



Osteoporosis



Diabeties





Analysis

For COPD

- Highest prevalence in District 6 (East South Central) at 13.8%
- Districts 2-7 have moderately high prevalence from 11-12%
- Lowest prevalence in Districts 8 and 9 (Mountain and Pacific) at 9-10%

For Osteoporosis

- Highest prevalence in District 2 (Middle Atlantic) with 8.02%
- Lowest prevalence in District 6 (East South Central) at 6.6%
- Other districts moderate

For Diabetes

- Highest prevalence in Districts 2 and 6 (Middle Atlantic and East South Central) at 29-30%
- Districts 1, 3-5, 7 have moderately high prevalence from 26-28%
- Lowest prevalence in Districts 8 and 9 (Mountain and Pacific) at 22-25%



Findings

- **Diabetes** is the **most prevalent** chronic disease followed by COPD and Osteoporosis.
- Around **1 million seniors** in **Middle Atlantic** (New York, New Jersey, and Pennsylvania) have **diabetes**.
- Around **0.3 million** seniors in **Middle Atlantic** (New York, New Jersey, and Pennsylvania) have Osteoporosis.
- Around **0.24 million** seniors in **East South Central** (of Alabama, Kentucky, Mississippi, and Tennessee) have COPD
- **Southern districts** have **higher COPD** and **diabetes** prevalence, likely reflecting risk factors like smoking, obesity, diet or genetic conditions.
- **Mountain** and **Pacific** districts have comparatively **low** prevalence across all 3 conditions.
- Understanding differences can guide public health planning and resource allocation.
- Comparing a single district across multiple conditions reveals disease patterns.



Thank
You!!!