

PMB Costing Study 2009

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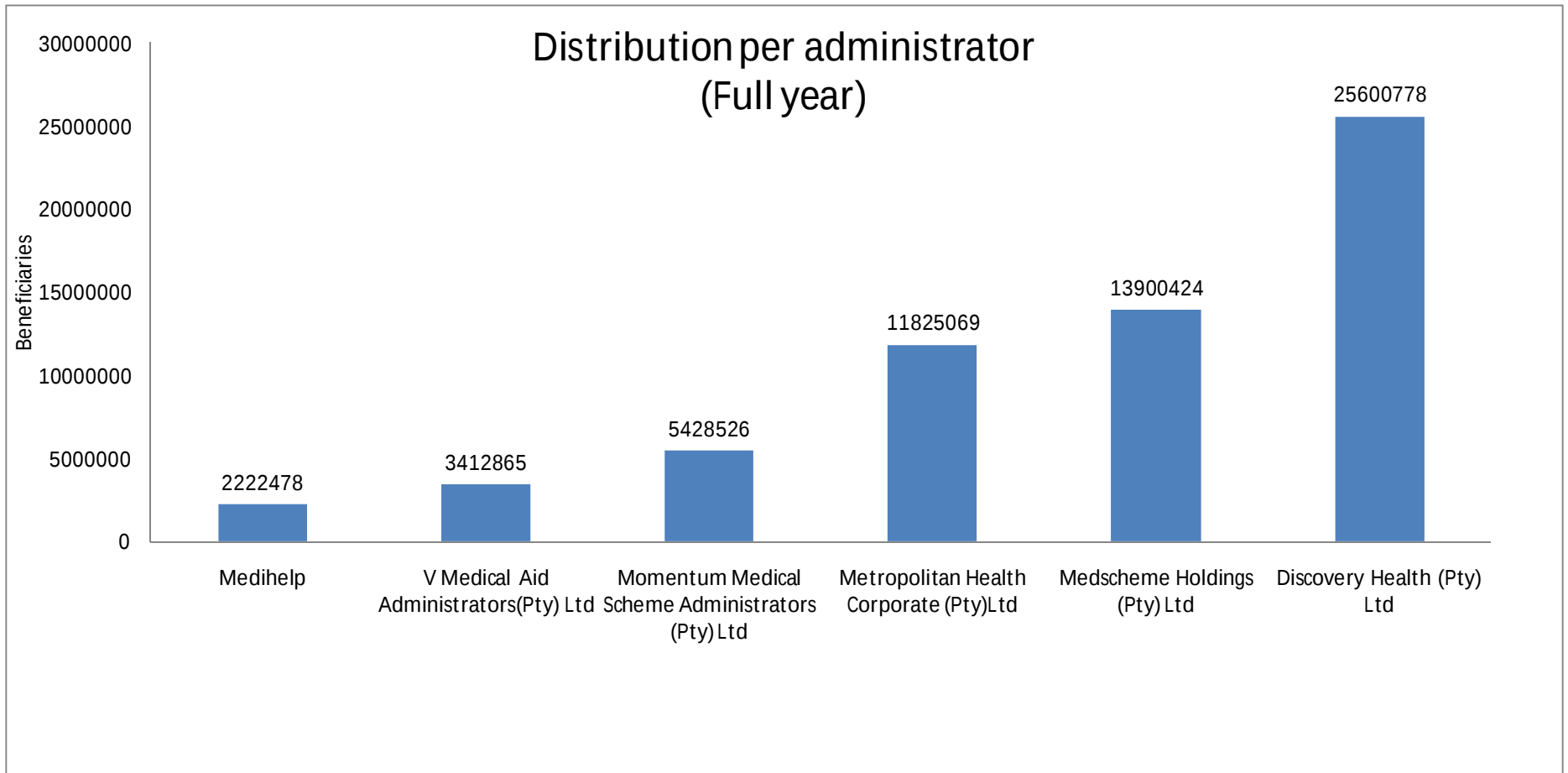
Original objectives of the study

- ✓ Costing of the current PMB package
- ✓ Evaluate the current REF risk factors
- ✓ If necessary, identify new REF risk factors

Today's feedback

- Summary of feedback presented at technical committee meeting of 23 March 2011
- Significant risk factors
- Count and weighting tables for 2012

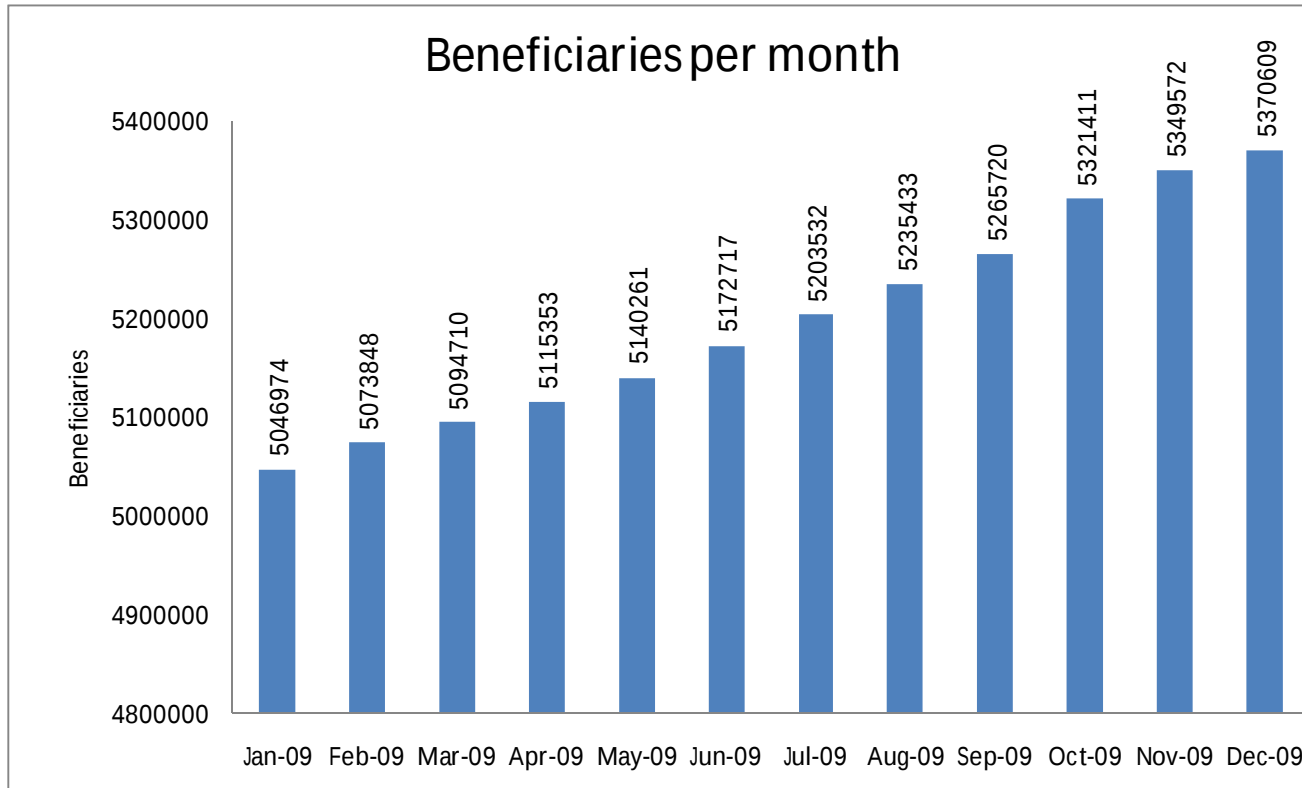
Participation



Note: Not all schemes/options of certain administrators participate

Vmed: Self administrated schemes, one analyst who was responsible for the data extraction

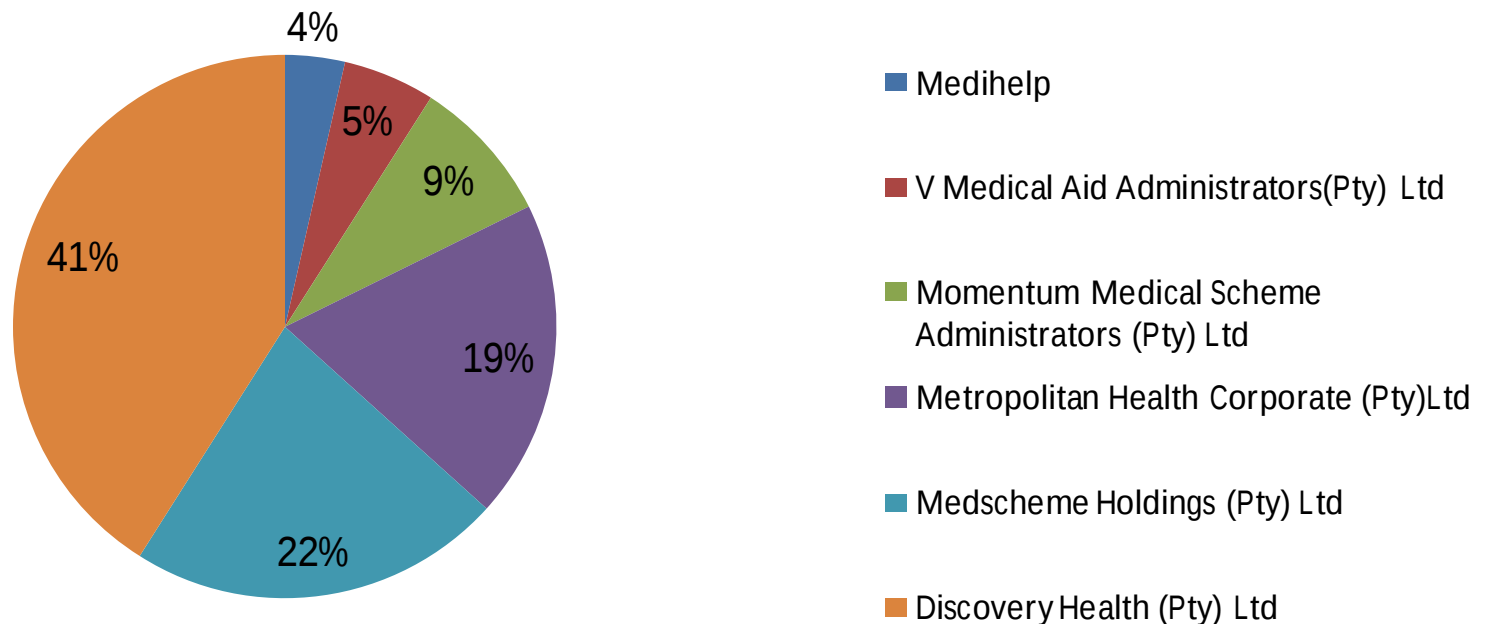
Participation (2009)



62 390 140 beneficiary months (lives) for the full year (65,42% of population)
Population: 95 354 460 beneficiary months

Proportional participation

Percentage distribution of beneficiaries per administrator



Participation

Schemes

46 different schemes

Open: 12 (26,09%)

Restricted: 34 (73,91%)

SR data for December 2009: Open: 32,17%; Restricted: 67,83%

Benefit options

147 benefit options

Open: 85 (57,82%)

Restricted: 62 (42,18%)

SR data for December 2009: Open: 53,74%; Restricted: 46,26%

Beneficiary months for full year

Open: 71,76% (effect of Discovery Health Medical Scheme)

Restricted: 28,24%

SR data for December 2009: Open: 59,69%; Restricted: 41,31%

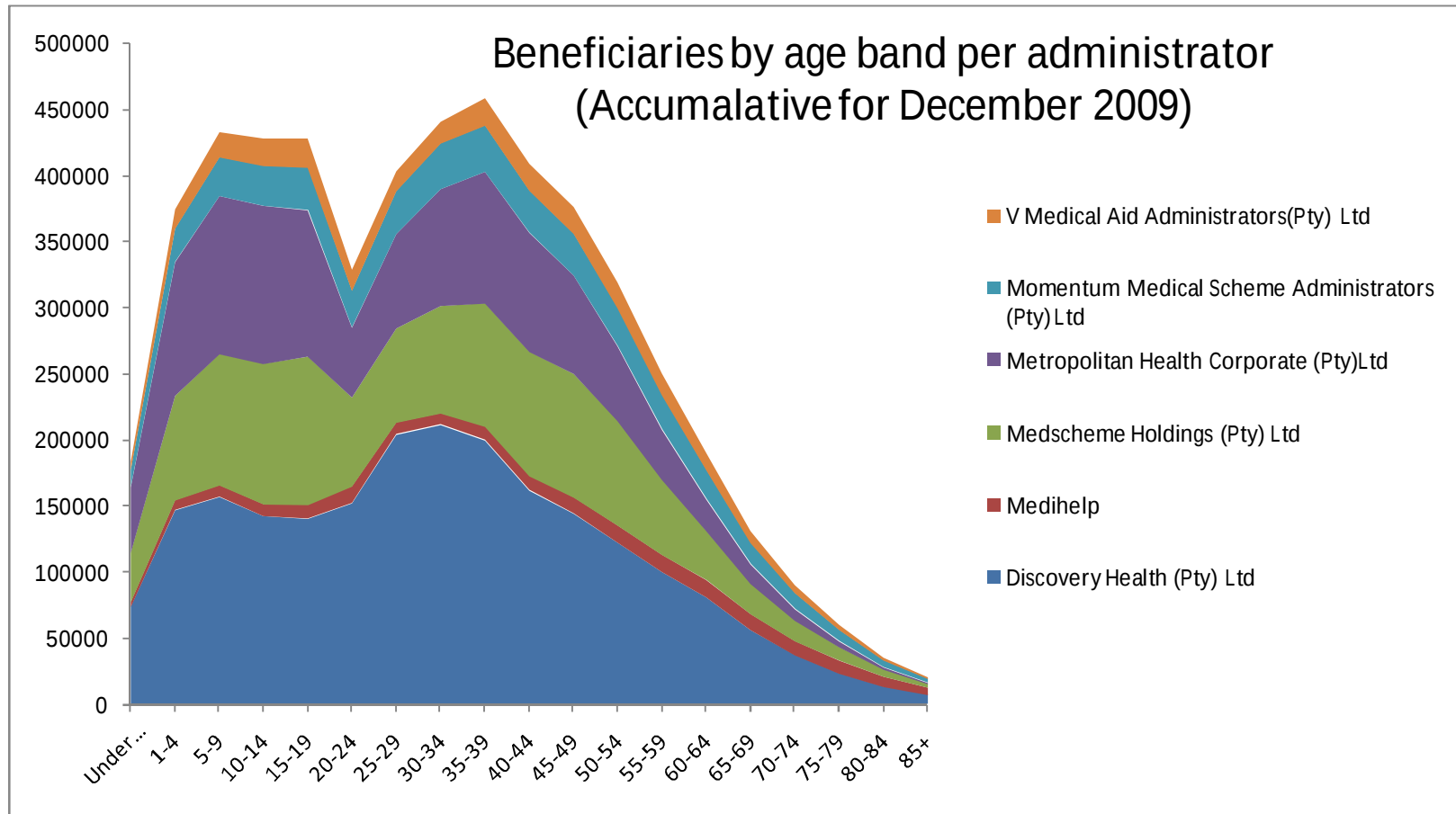
Gender distribution

Male: 46,96%

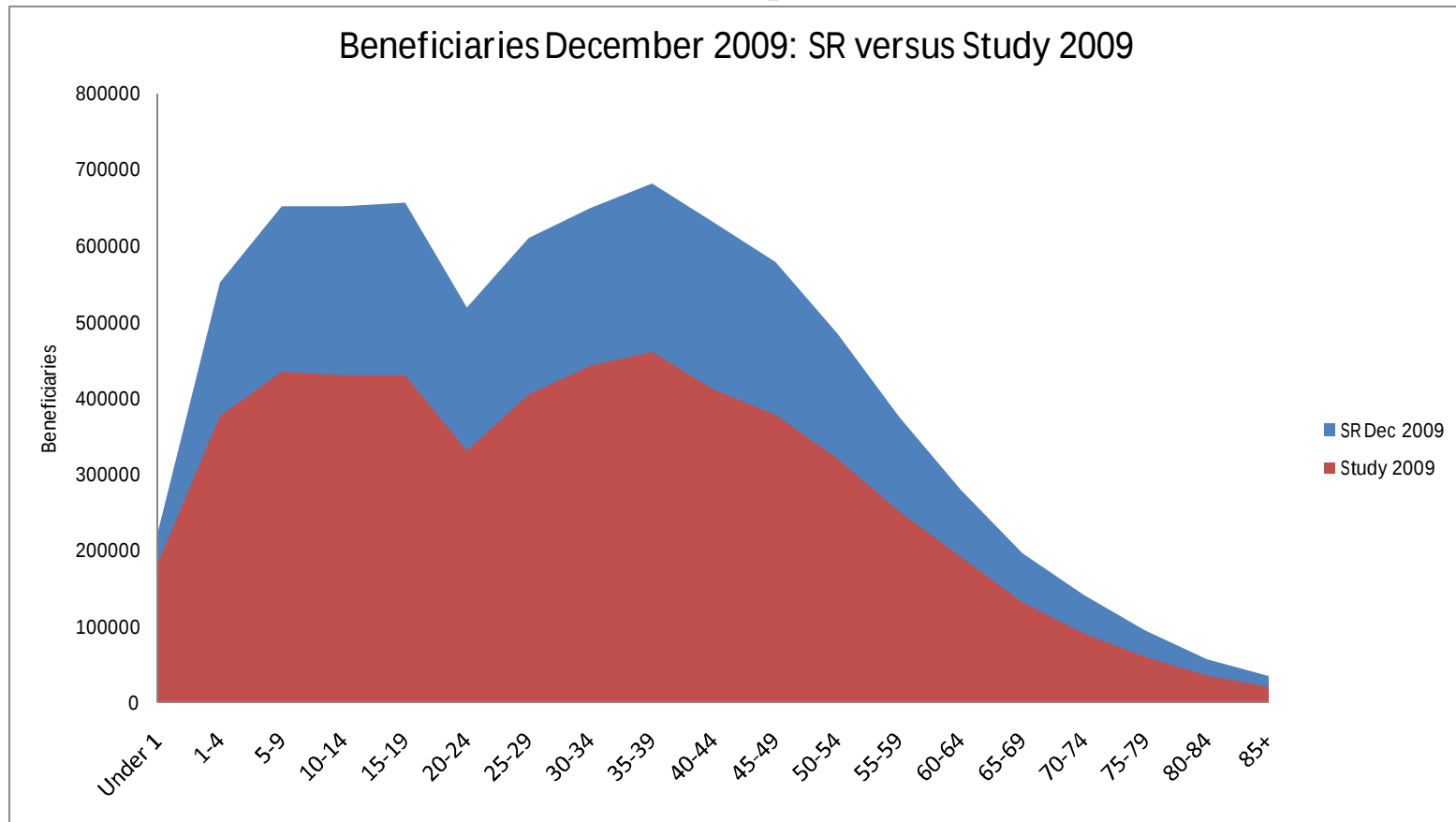
Female: 53,04%

SR data for December 2009: Male 47,94%; Female 52,06%

Participation



Participation



Total number of beneficiaries for December 2009

SR data (population): 8 068 505

Study 2009: 5 370 609 (66,56% of population)
(65,42% of population for the full year)

PMB Cost Estimates

Approach

Lower limit:	Administrators identification of PMB claims or primary icd10
Middle value:	?
Upper limit:	DEG classification of claims

Total Claim amount: R55 458 698 212

Total PMB amount: R23 911 049 324 (Administrators identification)
43,1% of benefits claimed were PMBs

PMB Cost Estimates

- ✓ Primary ICD10 code
- ✓ Administrators classification of PMB claims
- ✓ One line in a DEG flagged by administrator as a PMB, then all the claim lines in that DEG are flagged as PMB's
- ✓ Grouper's classification

Discovery Episode Grouper (DEG)

The Discovery Episode Grouper (DEG) consists of a diagnosis code categorisation model which uses claims data as input. The DEG software analyses claims data and organises all relevant services (including pharmaceutical prescriptions, pathology, radiology and ancillary services) provided during the course of a patient's treatment, into diagnostically and chronologically related episodes of care. The method of aggregating related claims defines an episode building methodology which is found at the heart of leading health care decision support systems.

Episodes are initiated by a claim, which identifies the initial occurrence of the specified condition. The following scenarios will trigger the beginning of an episode.

- A diagnosis is made when a patient first visits a primary health care provider for treatment
- A patient is admitted to hospital
- A chronic medication claim is received

The DEG model allows the episode to continue until treatment is completed and it is assumed that the patient has recovered from the illness.

The result of this is the consistent identification of clinically homogenous episodes of care, regardless of treatment location or duration.

DEG's and Clusters of care

DEG Code	DEG Description	CMS Clusters
1	Human Immunodeficiency Virus Type I (HIV) Infection	1
3	Neoplasm, Malignant: Breast, Female	2
4	Neoplasm, Malignant: Cervix Uteri	3
5	Neoplasm, Malignant: Vagina	3
6	Neoplasm, Malignant: Vulva	3
7	Neoplasm, Malignant: Ovaries	3
8	Neoplasm, Malignant: Endometrium	3
9	Neoplasm, Malignant: Female Genitourinary System	3
10	Neoplasm, Malignant: Prostate	4
11	Neoplasm, Malignant: Penile	5
12	Neoplasm, Malignant: Testicular	5
13	Neoplasm, Malignant: Male Genitourinary System	5
14	Neoplasm, Malignant: Bladder, Urinary	6
15	Neoplasm, Malignant: Kidneys	6
16	Neoplasm, Malignant: Melanoma	7
17	Neoplasm, Malignant: Thyroid	8
18	Neoplasm, Malignant: Lungs, Bronchi, or Mediastinum	9
19	Neoplasm, Malignant: Larynx, Glottis	10
20	Neoplasm, Malignant: Larynx, Subglottic	10
21	Neoplasm, Malignant: Larynx, Supraglottic	10
22	Neoplasm, Malignant: Nasopharyngeal	10
23	Neoplasm, Malignant: Sinuses	10
24	Neoplasm, Malignant: Other Respiratory System	10
25	Neoplasm, Malignant: Oral Cavity	10
26	Neoplasm, Malignant: Salivary Glands and Mandible	10
27	Neoplasm, Malignant: Hypopharynx	10
28	Neoplasm, Malignant: Oropharynx	10
29	Neoplasm, Malignant: Colon and Rectum	11
30	Neoplasm, Malignant: Esophagus	11
31	Neoplasm, Malignant: Small Bowel	11
32	Neoplasm, Malignant: Stomach	11
33	Neoplasm, Malignant: Other Hepatobiliary Tract	11
34	Neoplasm, Malignant: Pancreas	11
35	Neoplasm, Malignant: Other Gastrointestinal System	11
36	Neoplasm: Central Nervous System	12
37	Neoplasm: Eye	13
38	Neoplasm, Malignant: Other Skin and Soft Tissue	14
39	Neoplasm, Malignant: Primary Bone	15
41	Neoplasm, Malignant: Nonspecific Sites	16
42	Neoplasm, Malignant: Kaposi's	17
44	Neoplasm, Malignant: Other Endocrine System	18
45	Neoplasm, Malignant: Unspecified Primary Site	19
46	Encounter for Chemotherapy	20



PMB Cost Estimates

REF Study 2005

- 2009: R307,65
- 2010: R340,95 (10,8% increase)
- 2011: R371,63 (9% increase?)

PMB Costing Study 2009

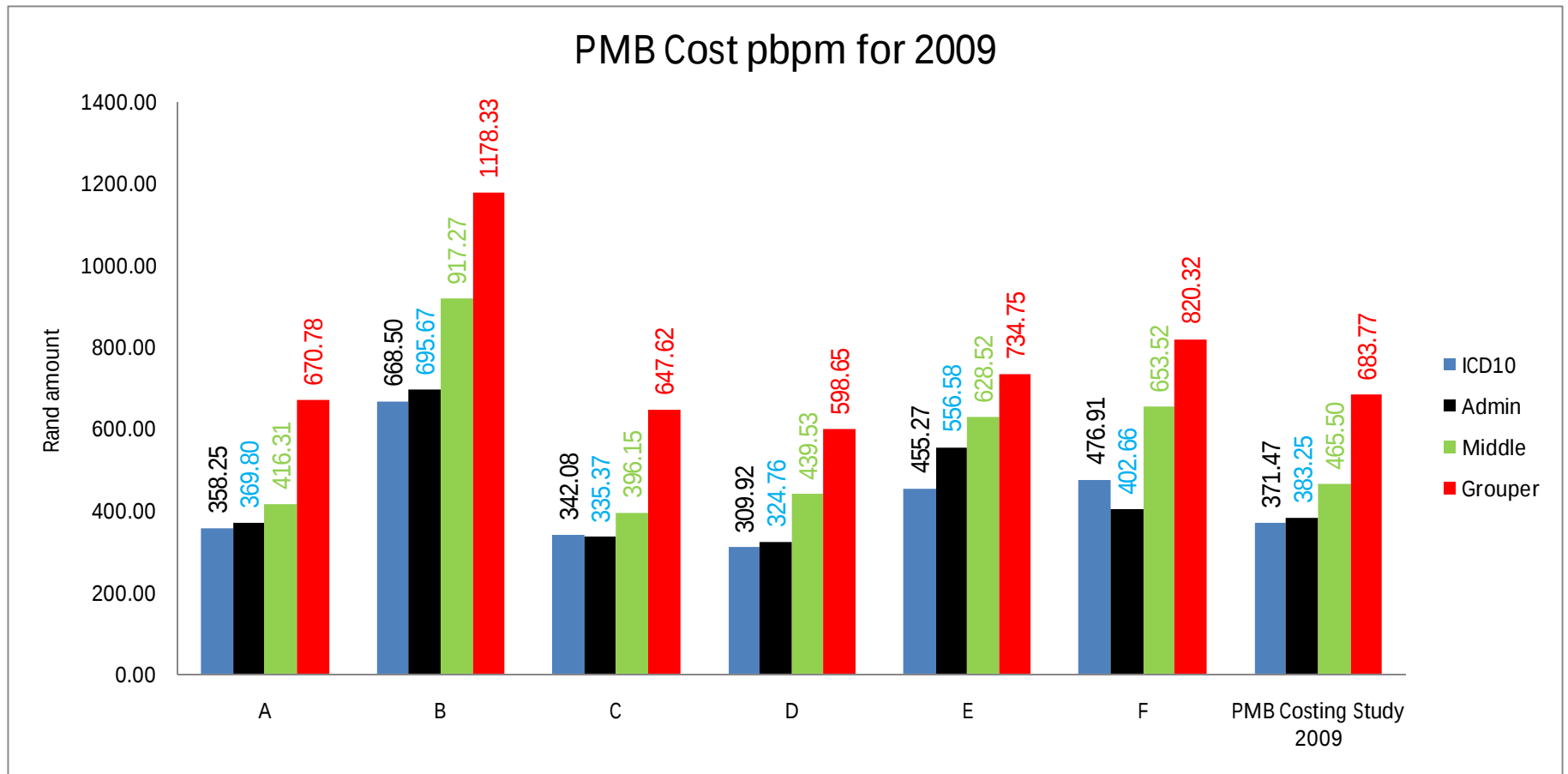
(Based on administrators classification)

- 2009: R383,25
- 2010: R424,64
- 2011: R462,85

Under estimate of approximately 24,5% for 2009

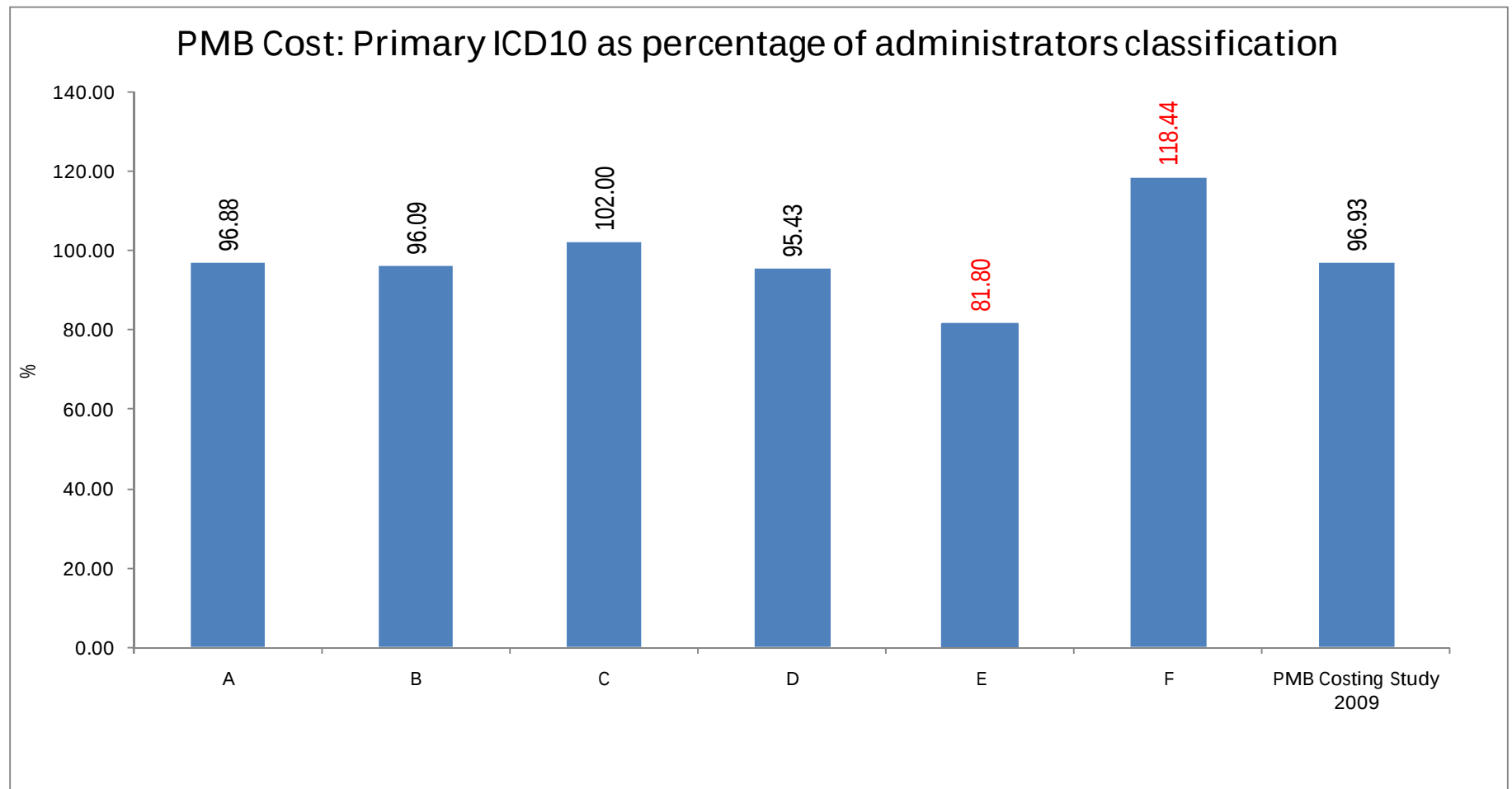
Impact of Life style diseases, members and healthcare providers have become more conscious of PMBs and the entitlement to PMBs, coding, etc.

PMB Cost Estimates (2009)



Net relevant healthcare expenditure incurred (incl. managed healthcare claims): R711,60

PMB Cost Estimates (2009)

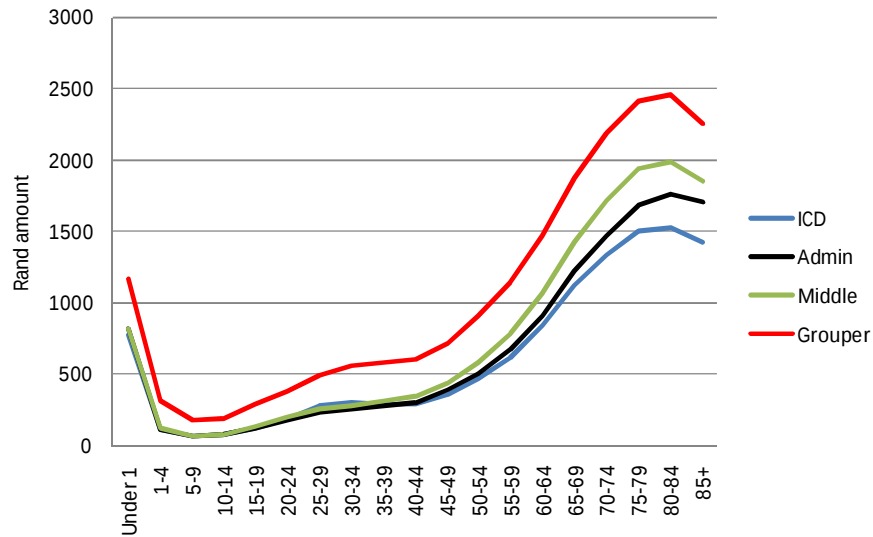


The role of the primary icd10 code in the identification of PMBs

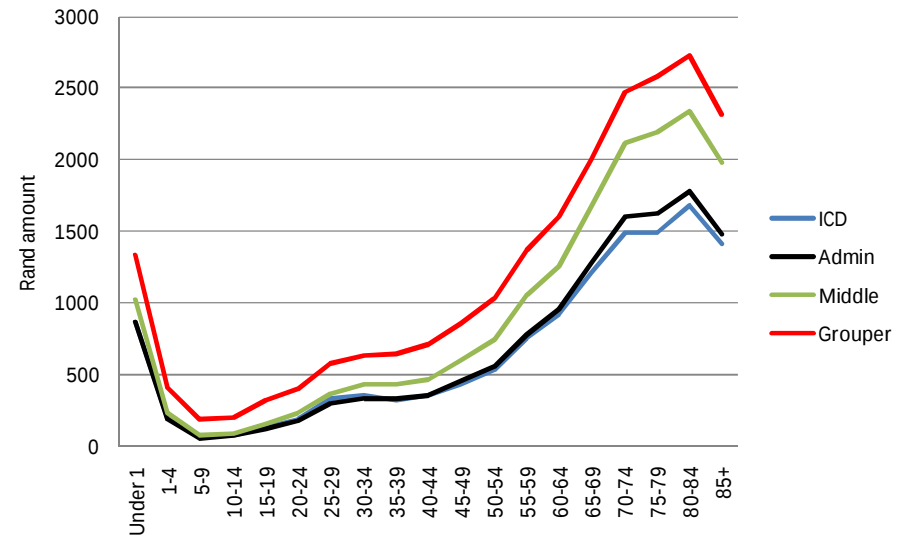
Ratio: (Cost based on the primary icd10 code)/(Cost based on schemes identification of PMBs).

PMB Cost Estimates (2009)

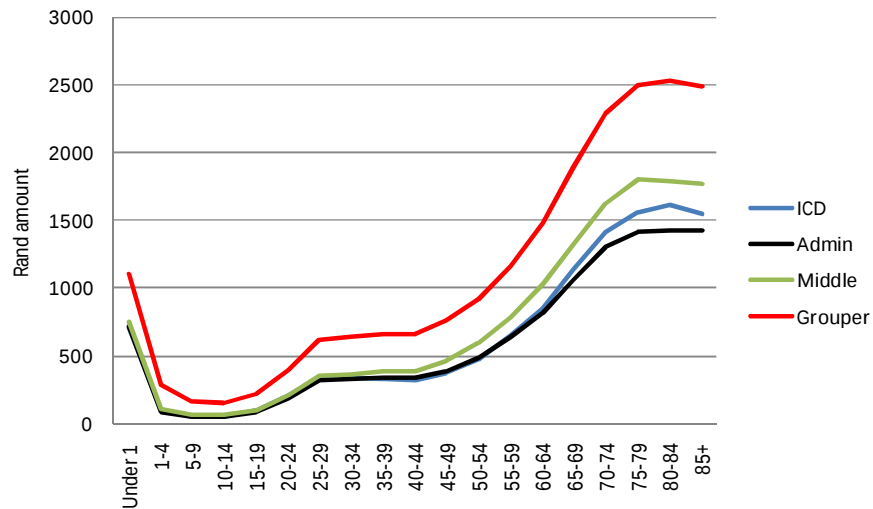
Administrator A



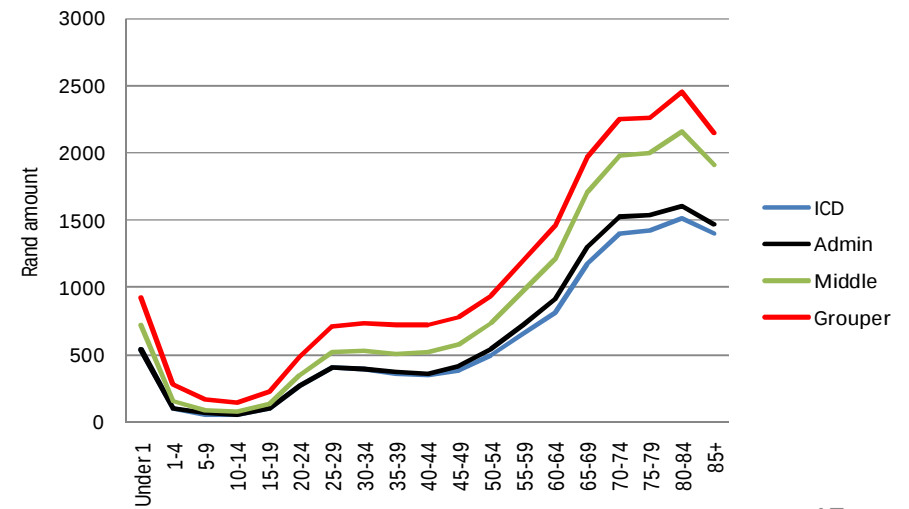
Administrator B



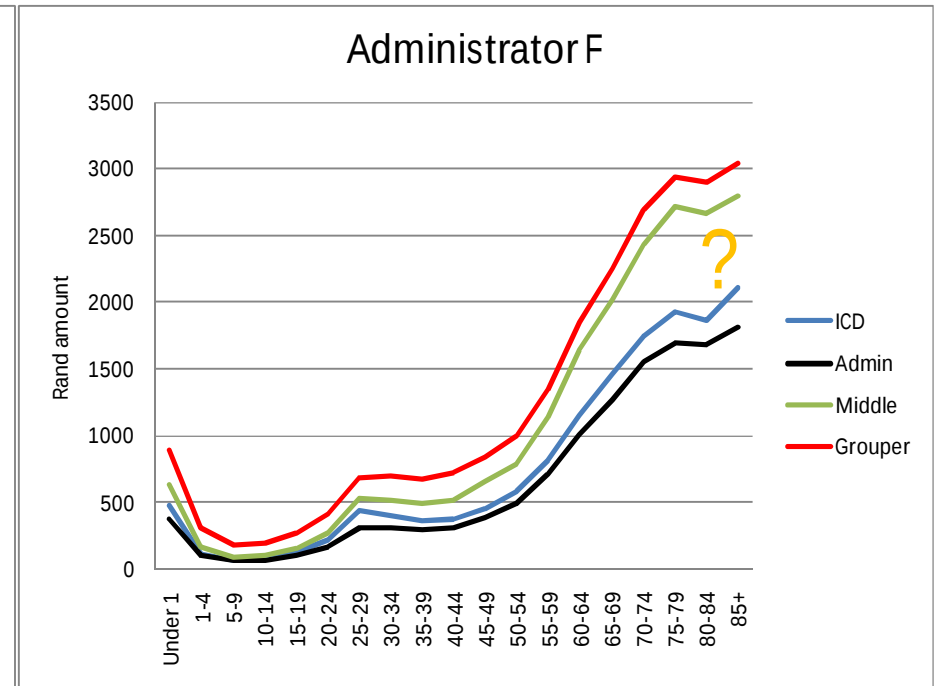
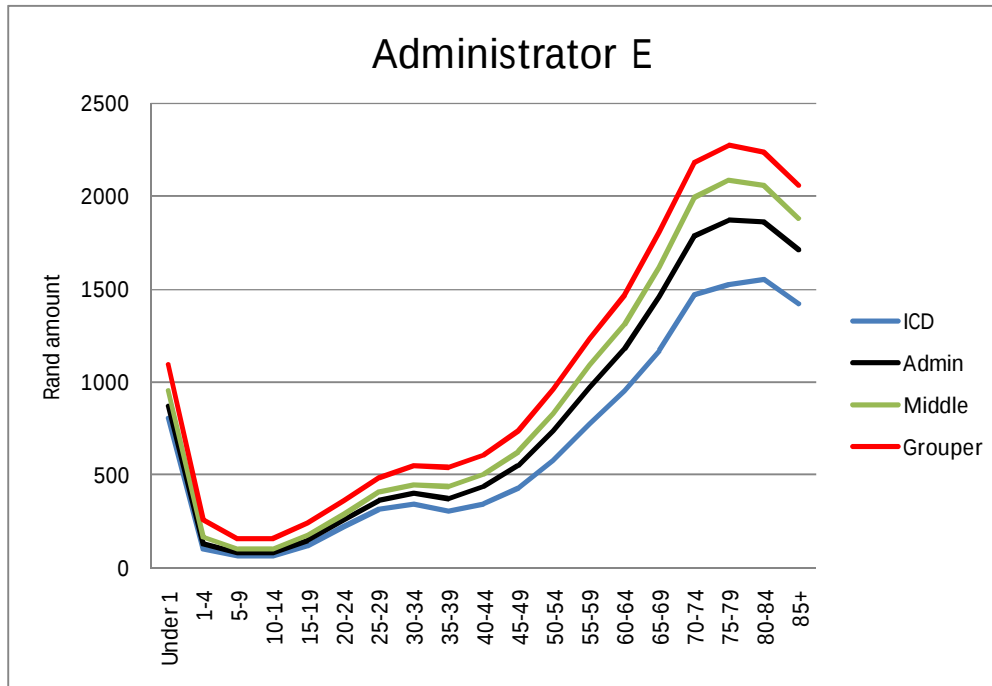
Administrator C



Administrator D



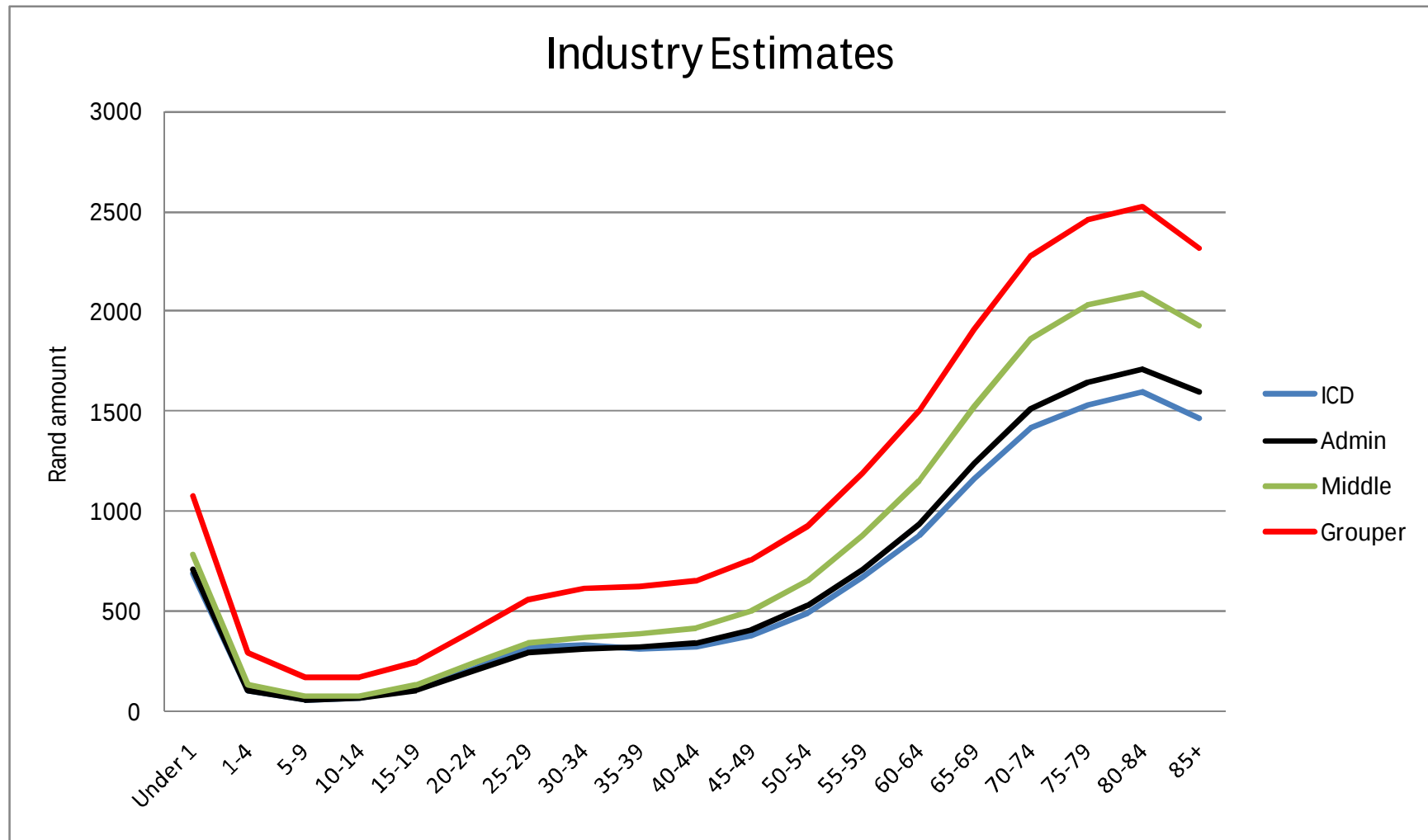
PMB Cost Estimates (2009)



Difference between ICD10 and administrators classification?
Secondary ICD10 codes?

Shape of curves in older age bands?

PMB Cost Estimates (2009)



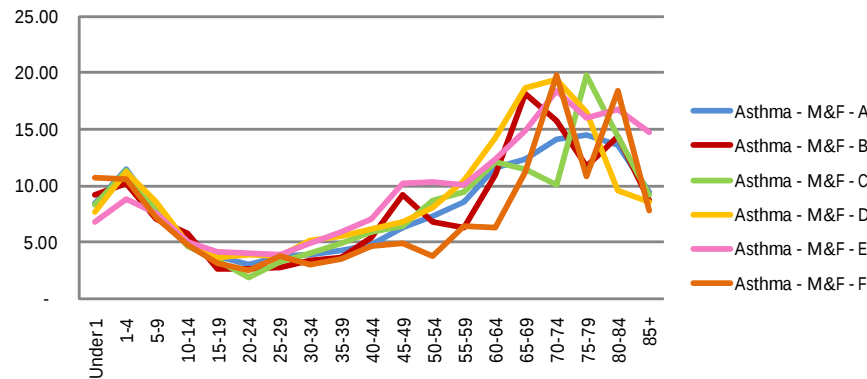
DEG results

Comparison of the different administrators

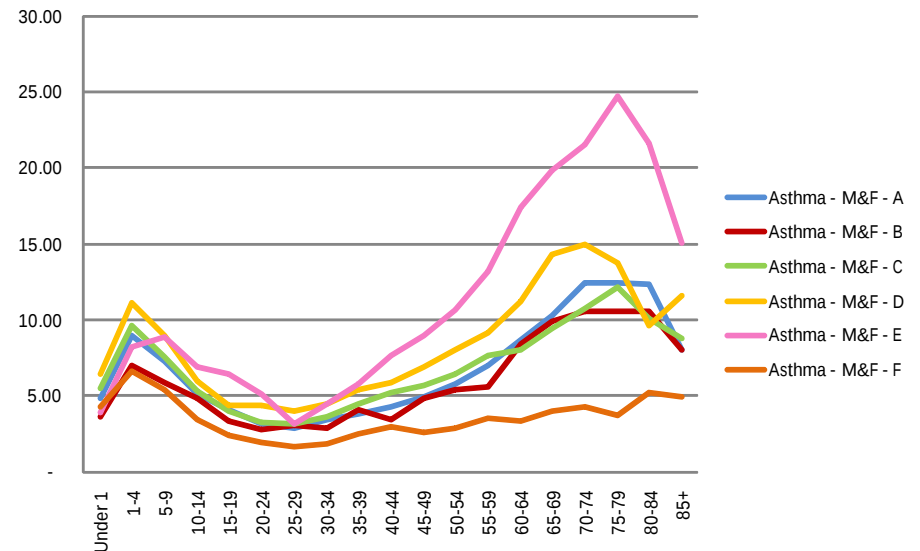
- ✓ Cost per life per month
- ✓ Ratio of treating beneficiaries and all the beneficiaries (lives)
- ✓ Cost per treating beneficiary

Asthma (AST)

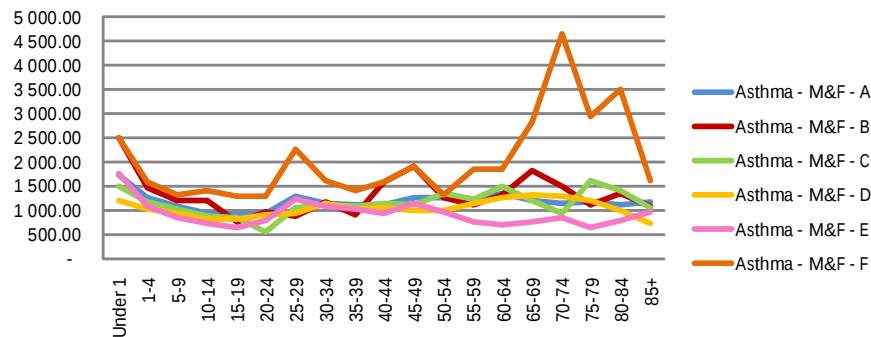
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)



Choose CTG

Asthma

Choose Administrator 1

A

Choose Administrator 1

D

Choose Administrator 2

B

Choose Administrator 2

E

Choose Administrator 3

C

Choose Administrator 3

F

Gender

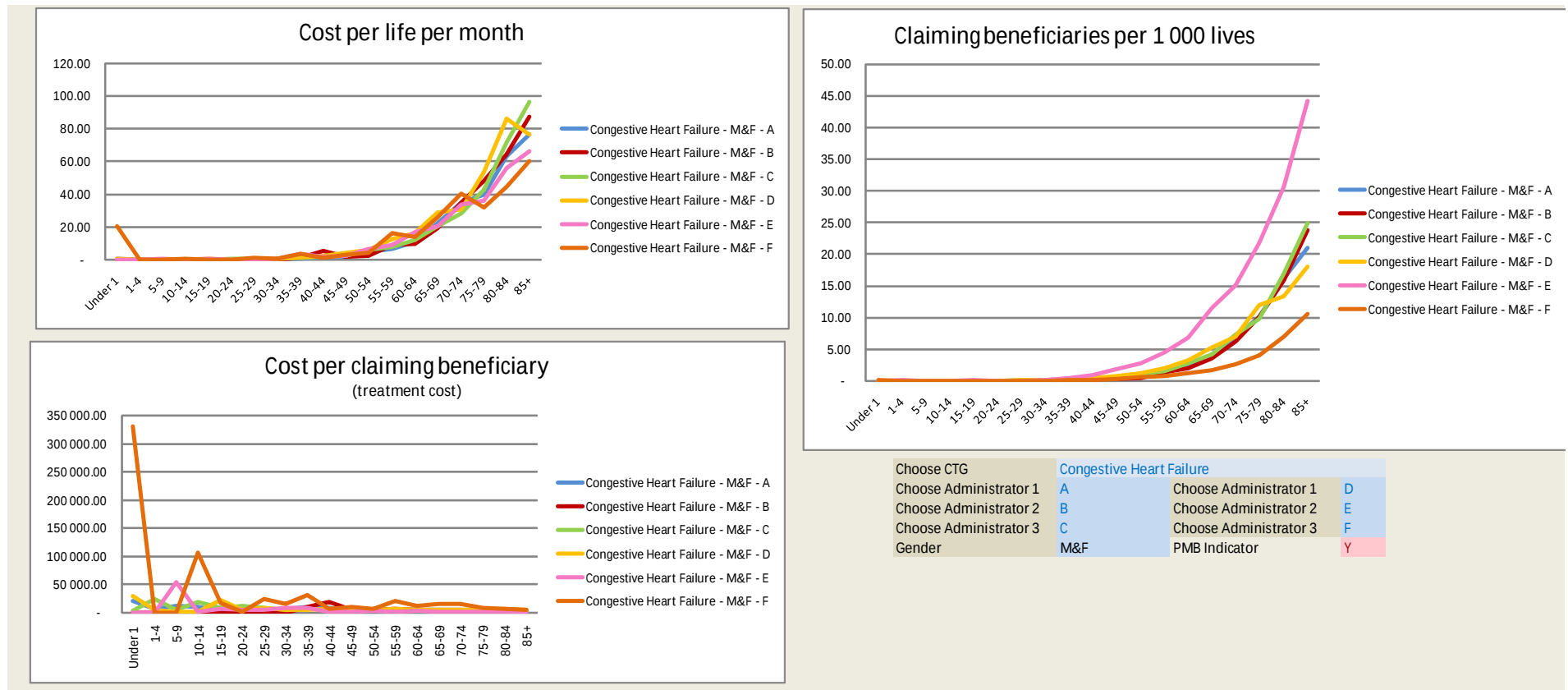
M&F

PMB Indicator

Y

Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

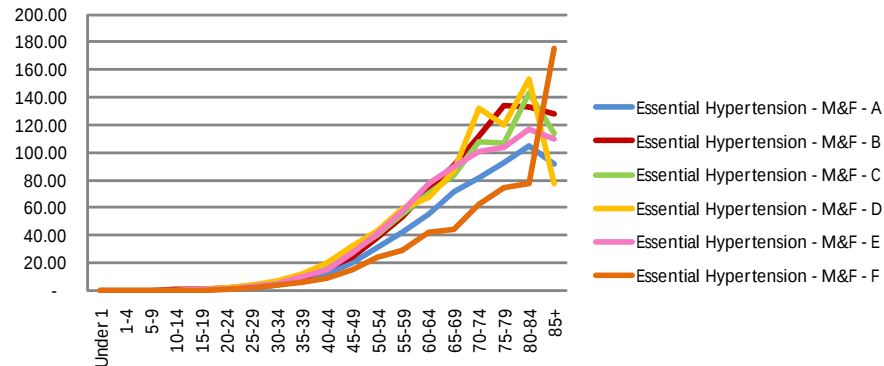
Congestive Heart Failure (CHF)



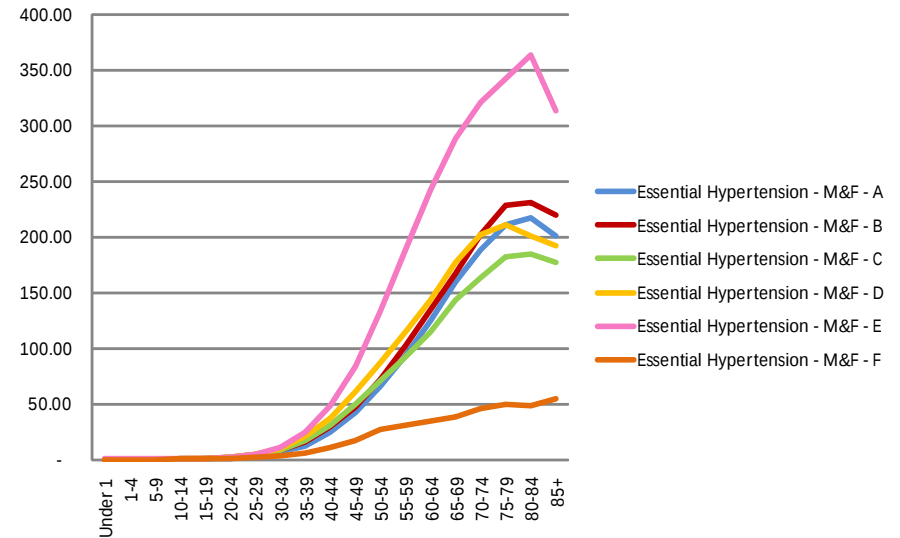
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Essential Hypertension (CMY)

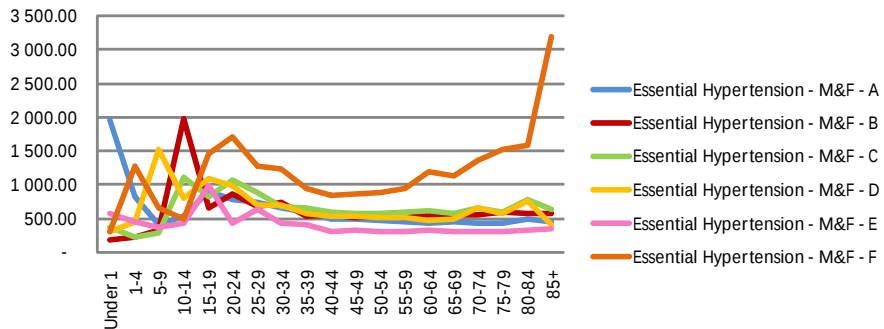
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)

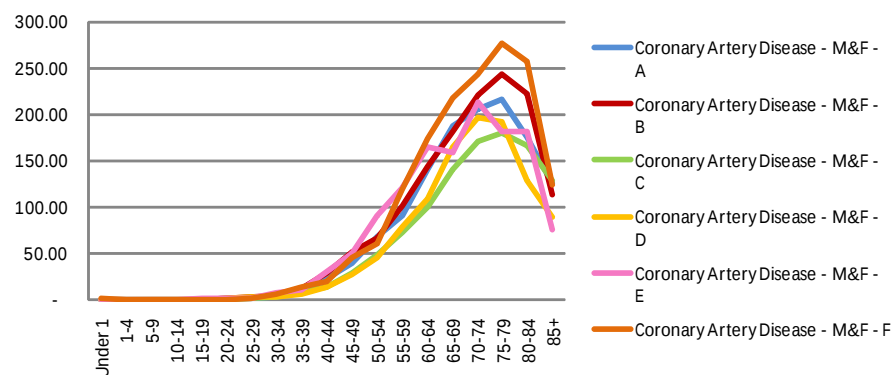


Choose CTG	Essential Hypertension	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

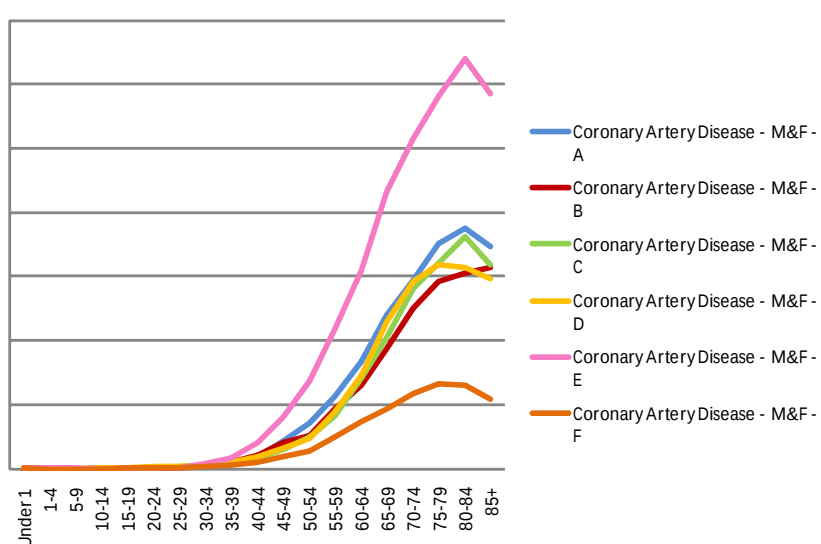
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Coronary Artery Disease (IHD/HYL)

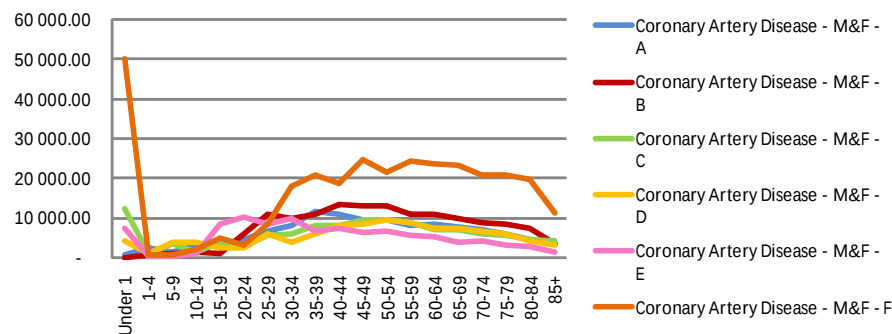
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)

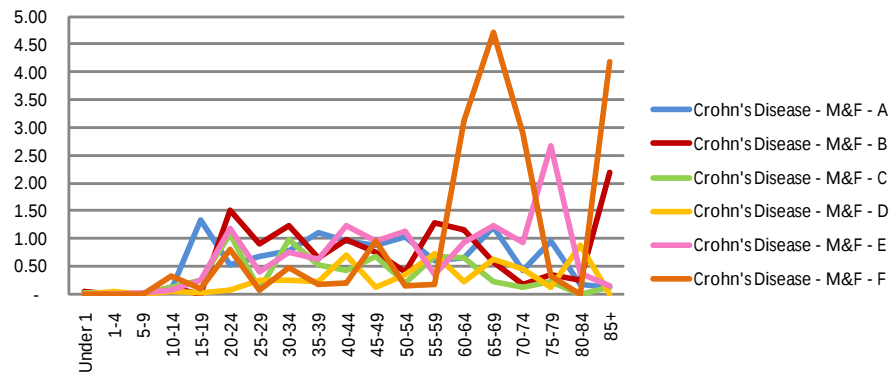


Choose CTG	Coronary Artery Disease	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

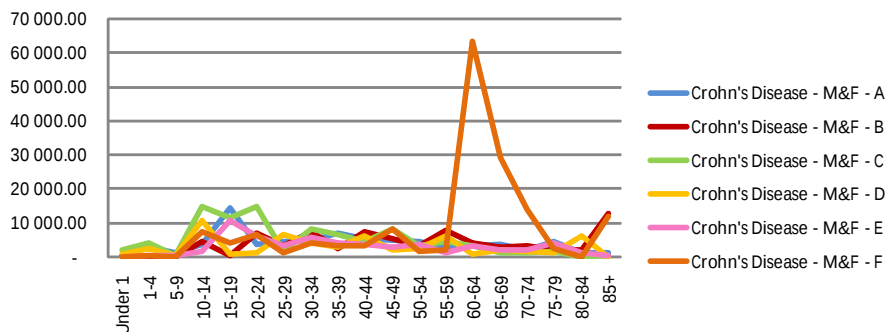
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Crohn's Disease (CSD)

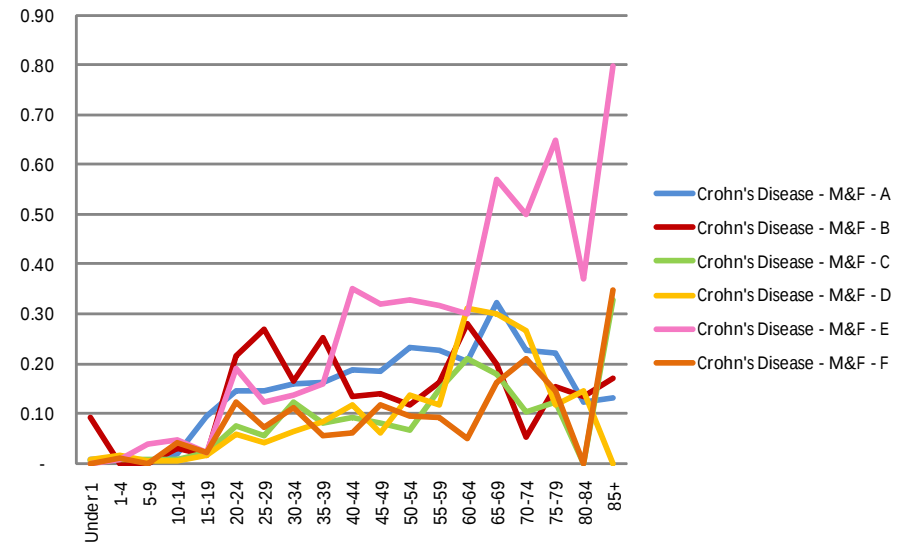
Cost per life per month



Cost per claiming beneficiary
(treatment cost)



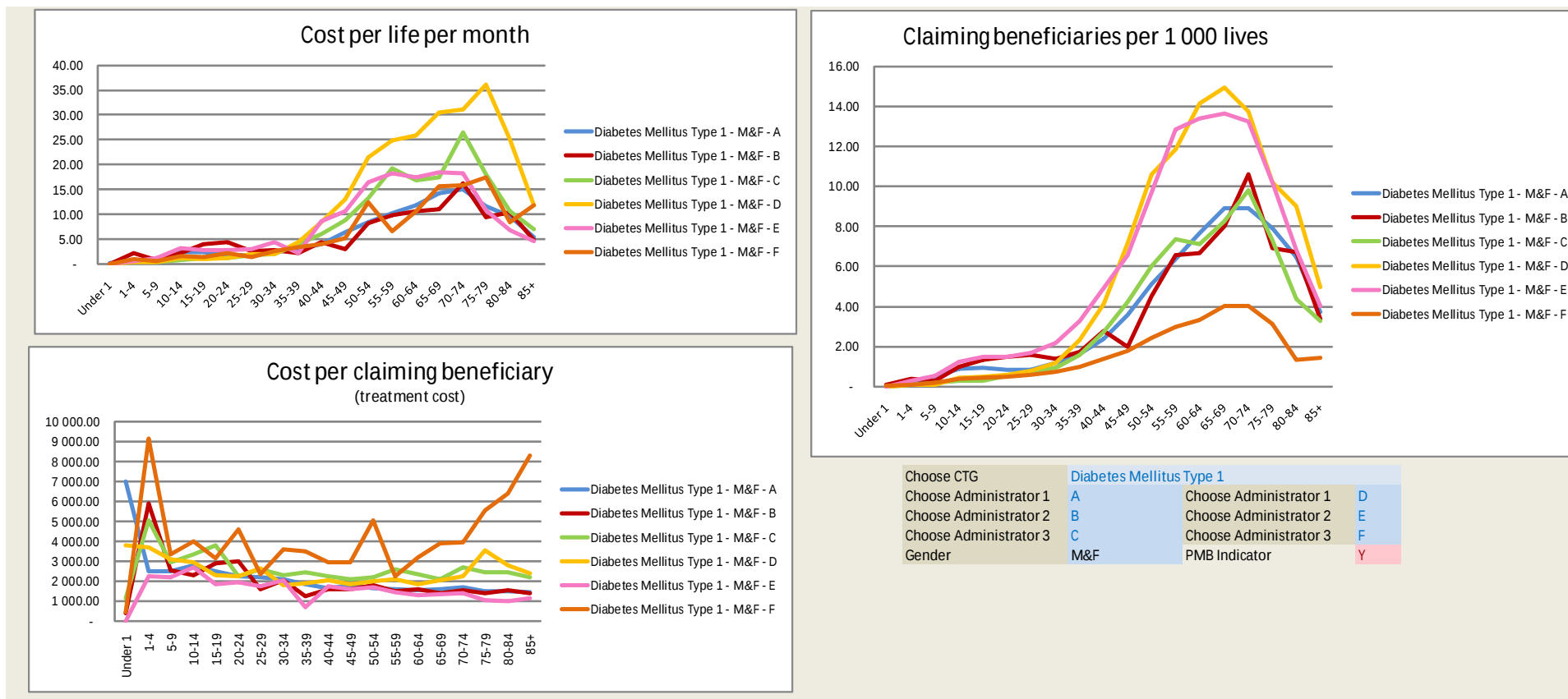
Claiming beneficiaries per 1 000 lives



Choose CTG	Crohn's Disease	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

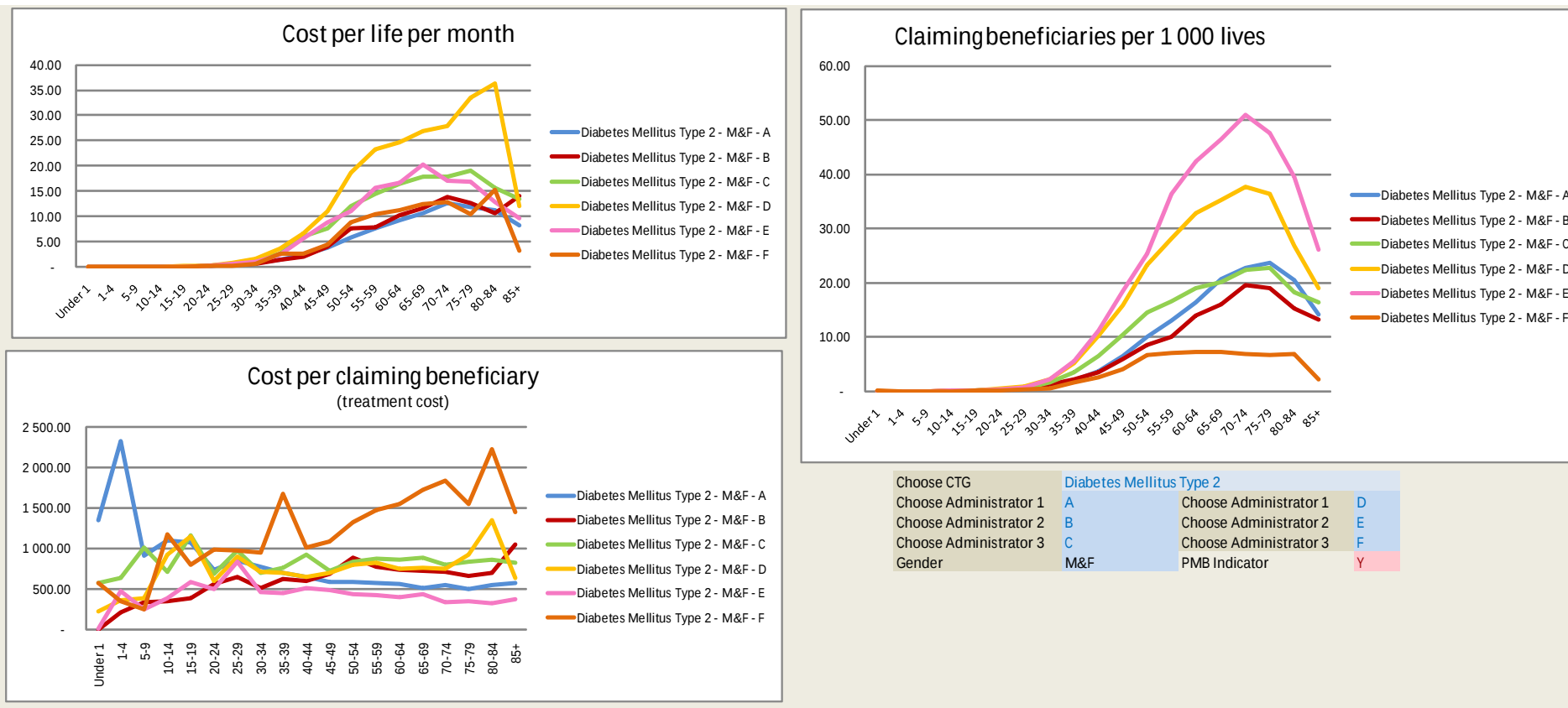
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Diabetes Mellitus Type 1 (DM1)



Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

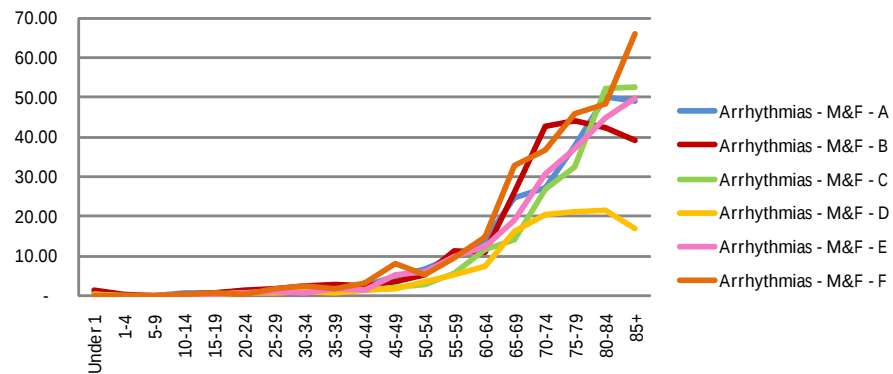
Diabetes Mellitus Type 2 (DM2)



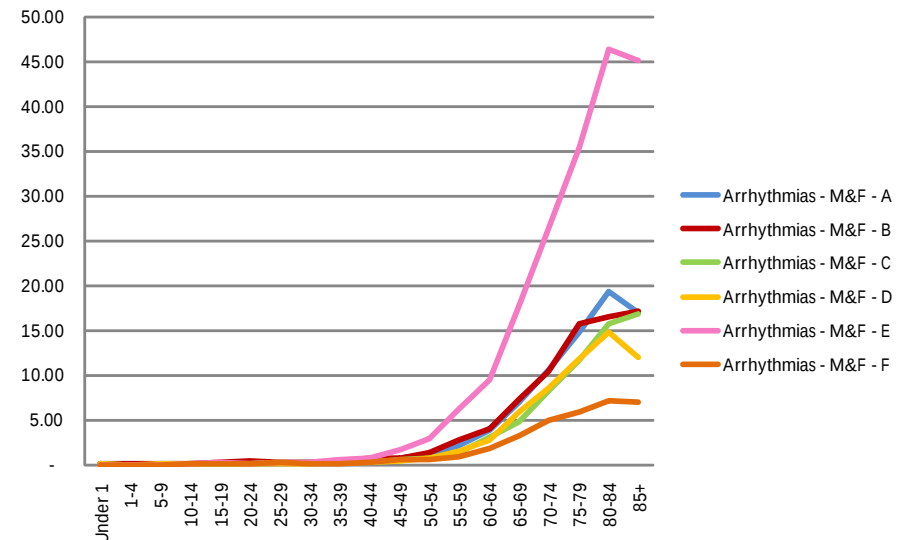
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Arrhythmias (DYS)

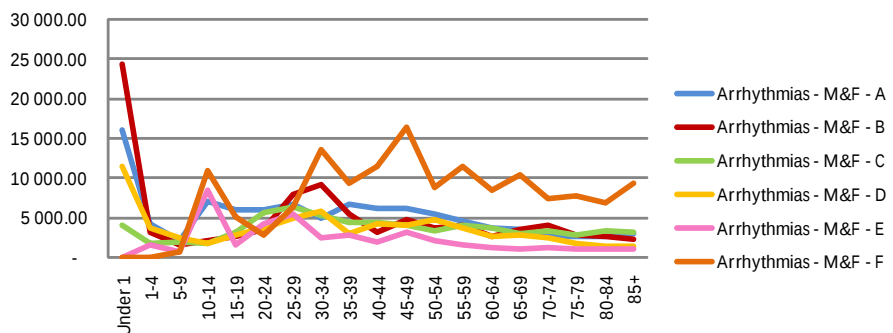
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)

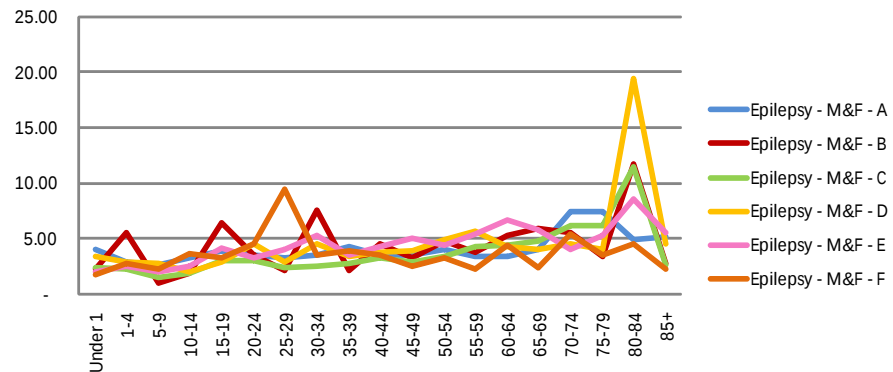


Choose CTG	Arrhythmias	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

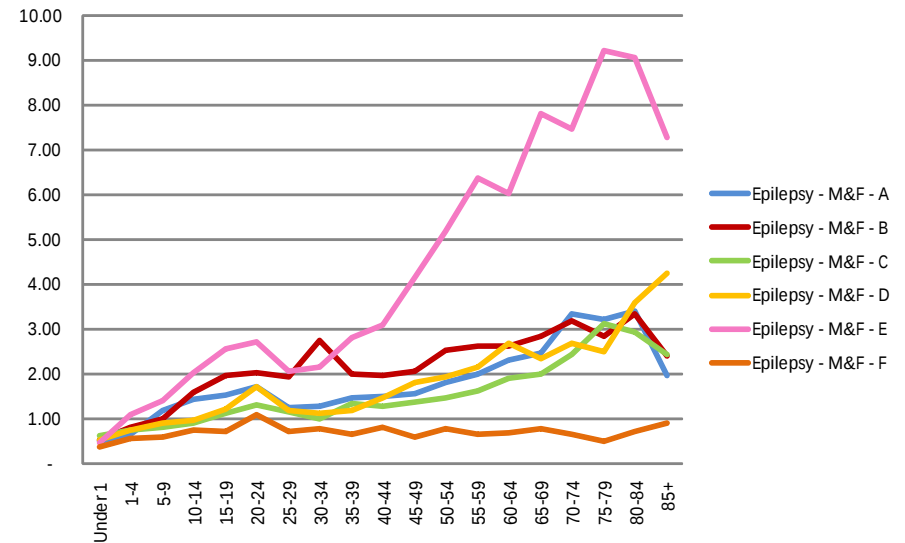
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Epilepsy (EPL)

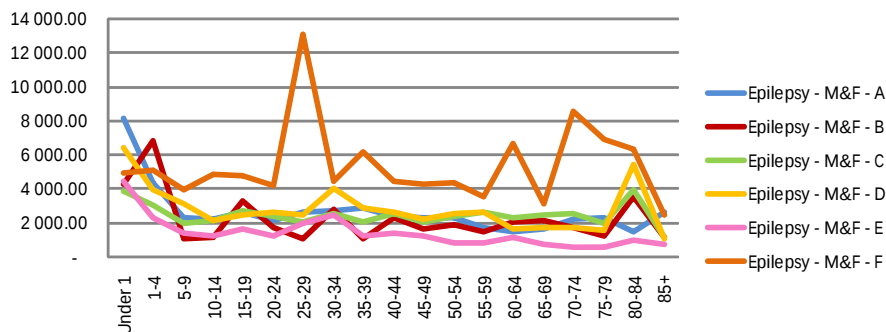
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)

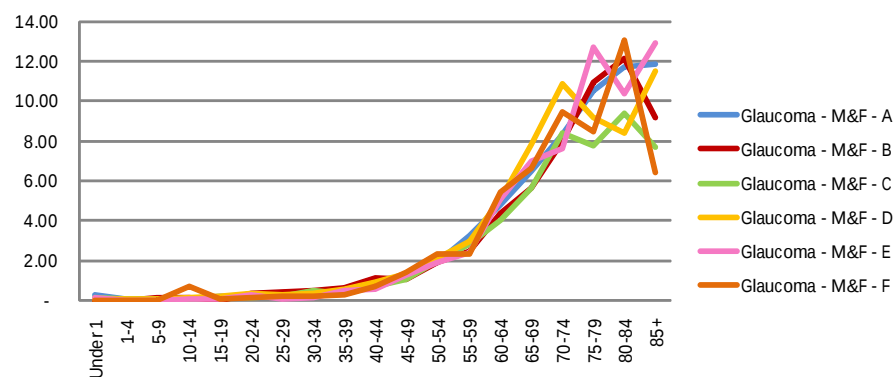


Choose CTG	Epilepsy	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

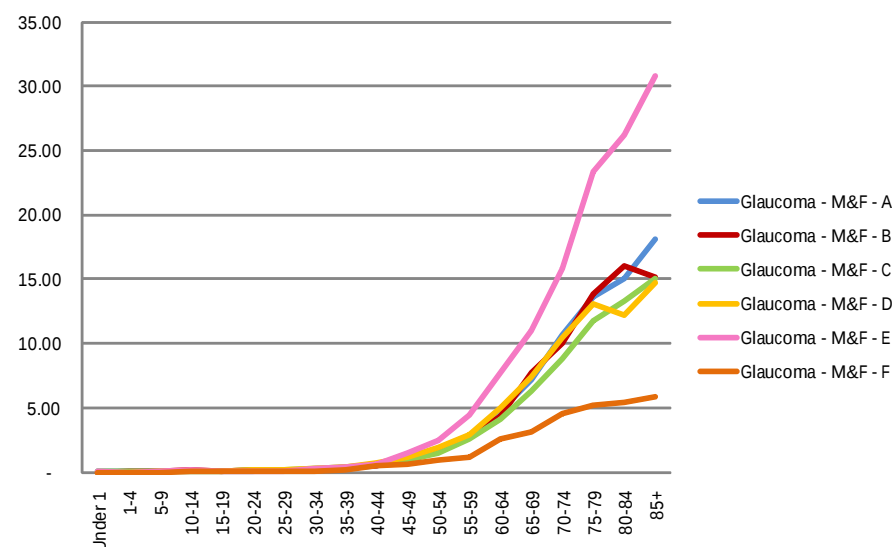
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Glaucoma (GLC)

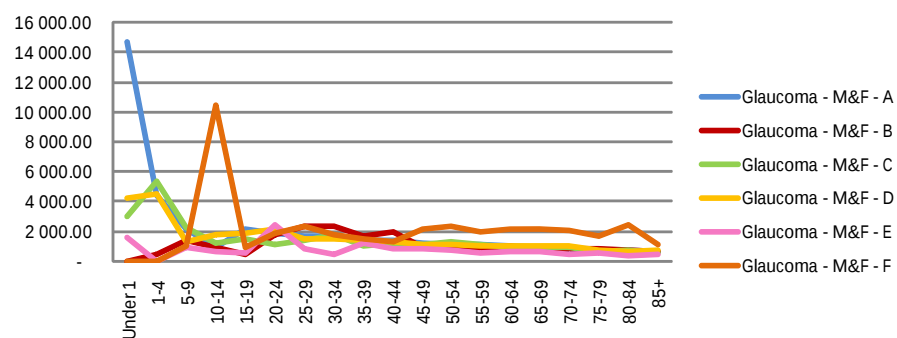
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)

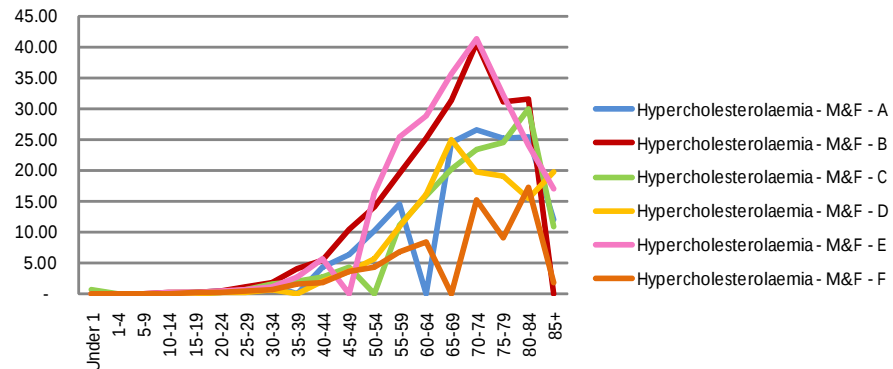


Choose CTG	Glaucoma		
Choose Administrator 1	A	Choose Administrator 1	D
Choose Administrator 2	B	Choose Administrator 2	E
Choose Administrator 3	C	Choose Administrator 3	F
Gender	M&F	PMB Indicator	Y

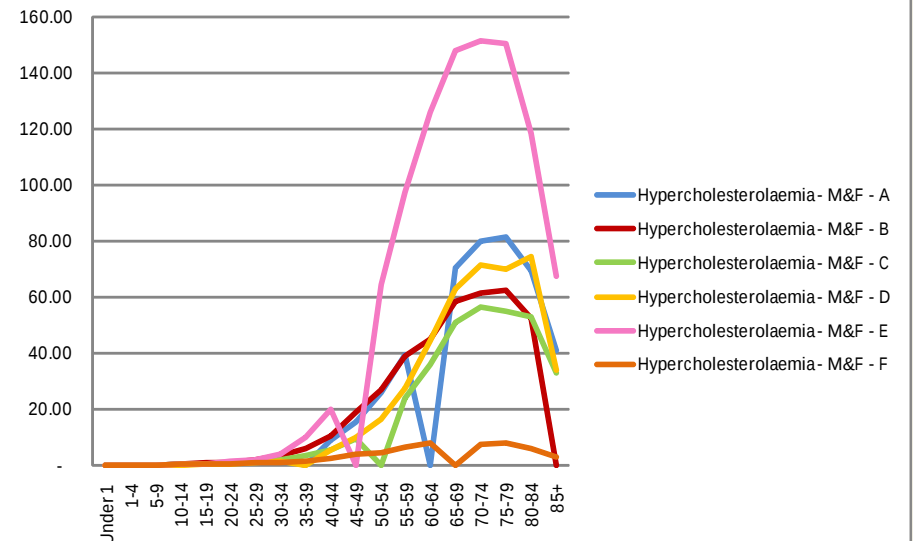
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Hypercholesterolemia (HYL)

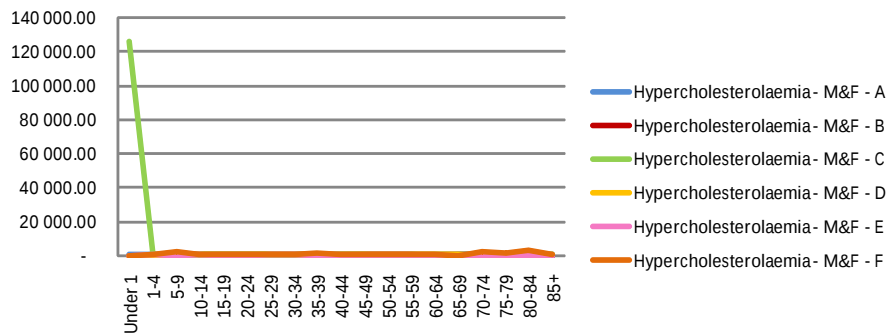
Cost per life per month



Claiming beneficiaries per 1 000 lives



Cost per claiming beneficiary
(treatment cost)

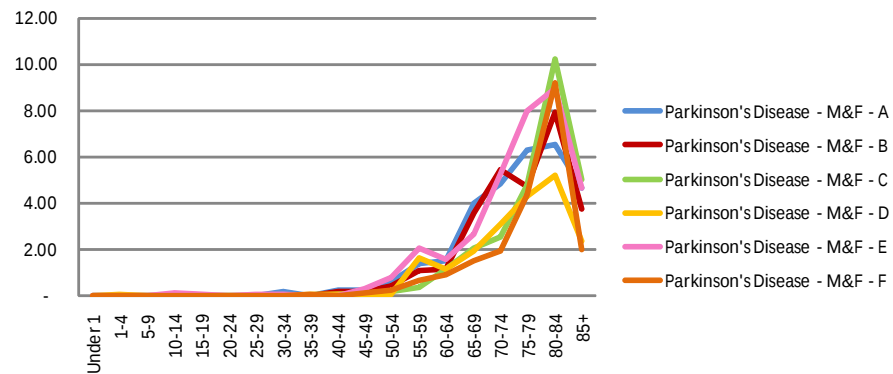


Choose CTG	Hypercholesterolaemia	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

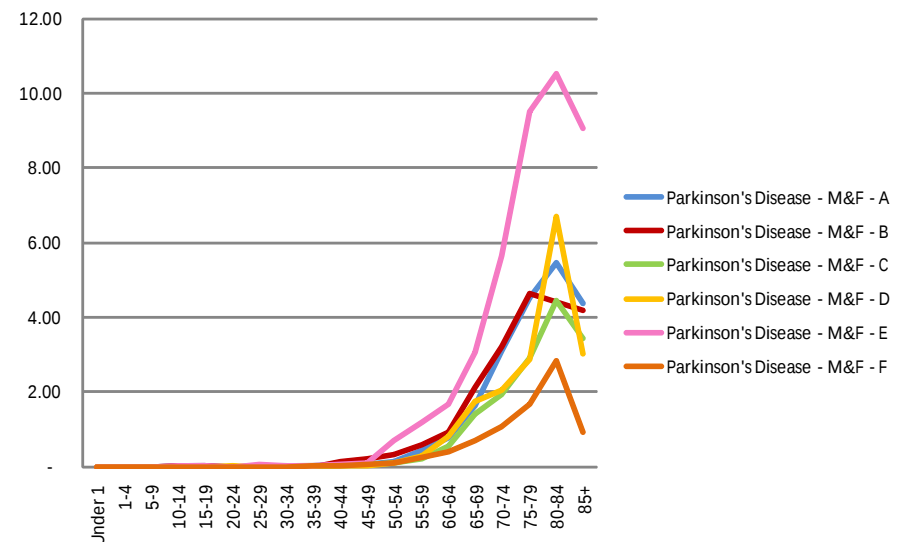
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Parkinson's Disease (PAR)

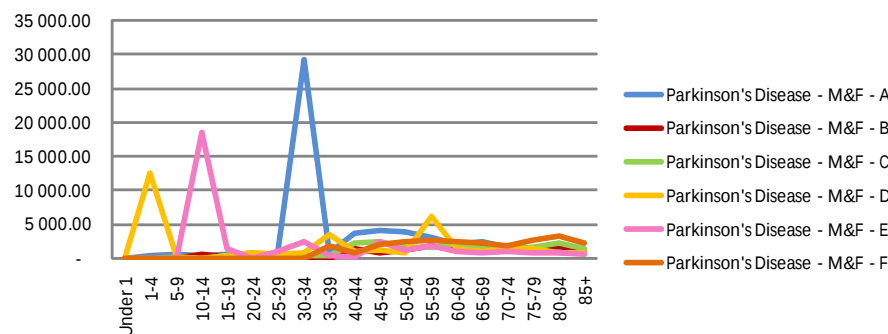
Cost per life per month



Claiming beneficiaries per 1 000 lives



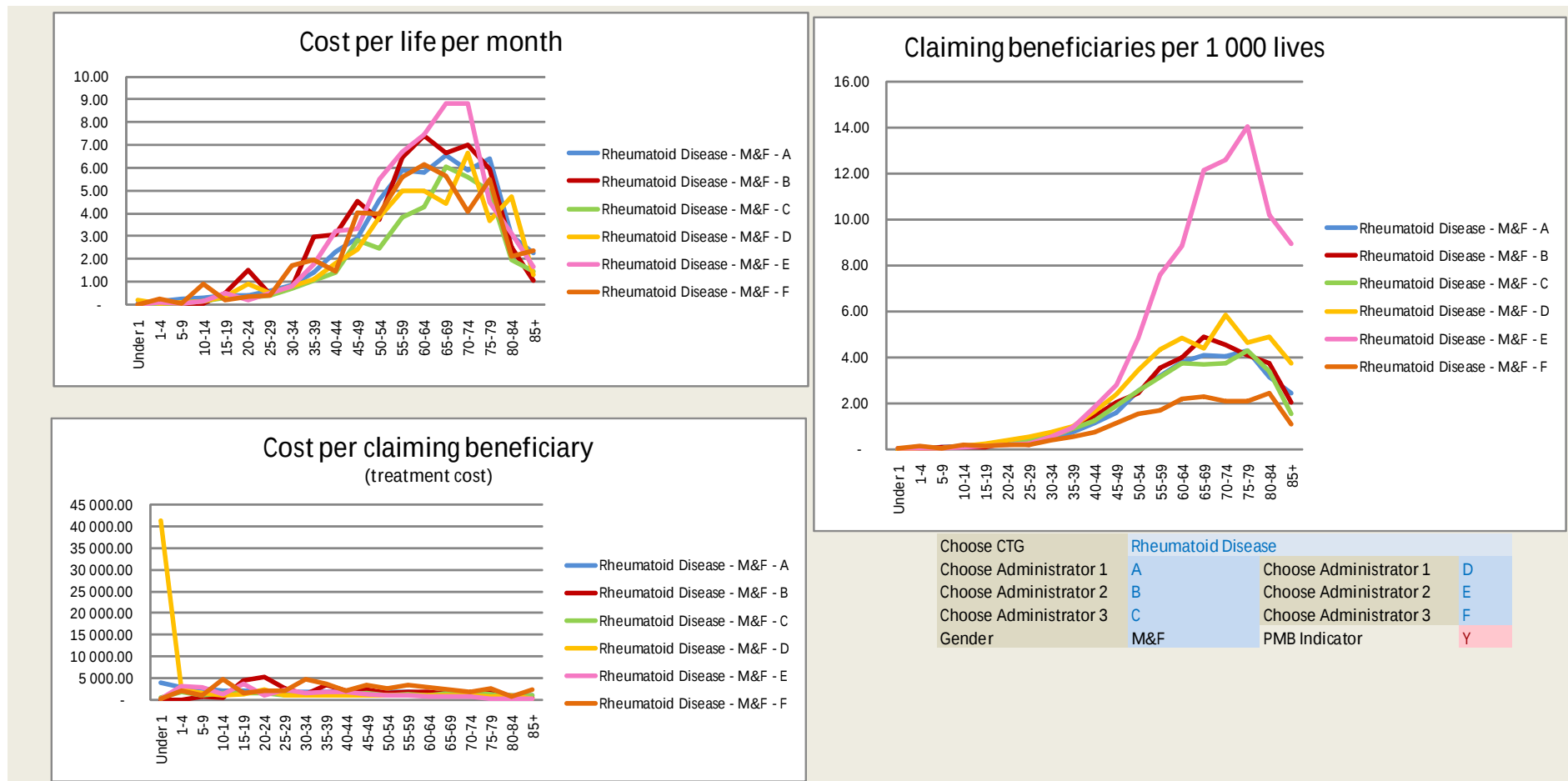
Cost per claiming beneficiary
(treatment cost)



Choose CTG	Parkinson's Disease	
Choose Administrator 1	A	Choose Administrator 1 D
Choose Administrator 2	B	Choose Administrator 2 E
Choose Administrator 3	C	Choose Administrator 3 F
Gender	M&F	PMB Indicator Y

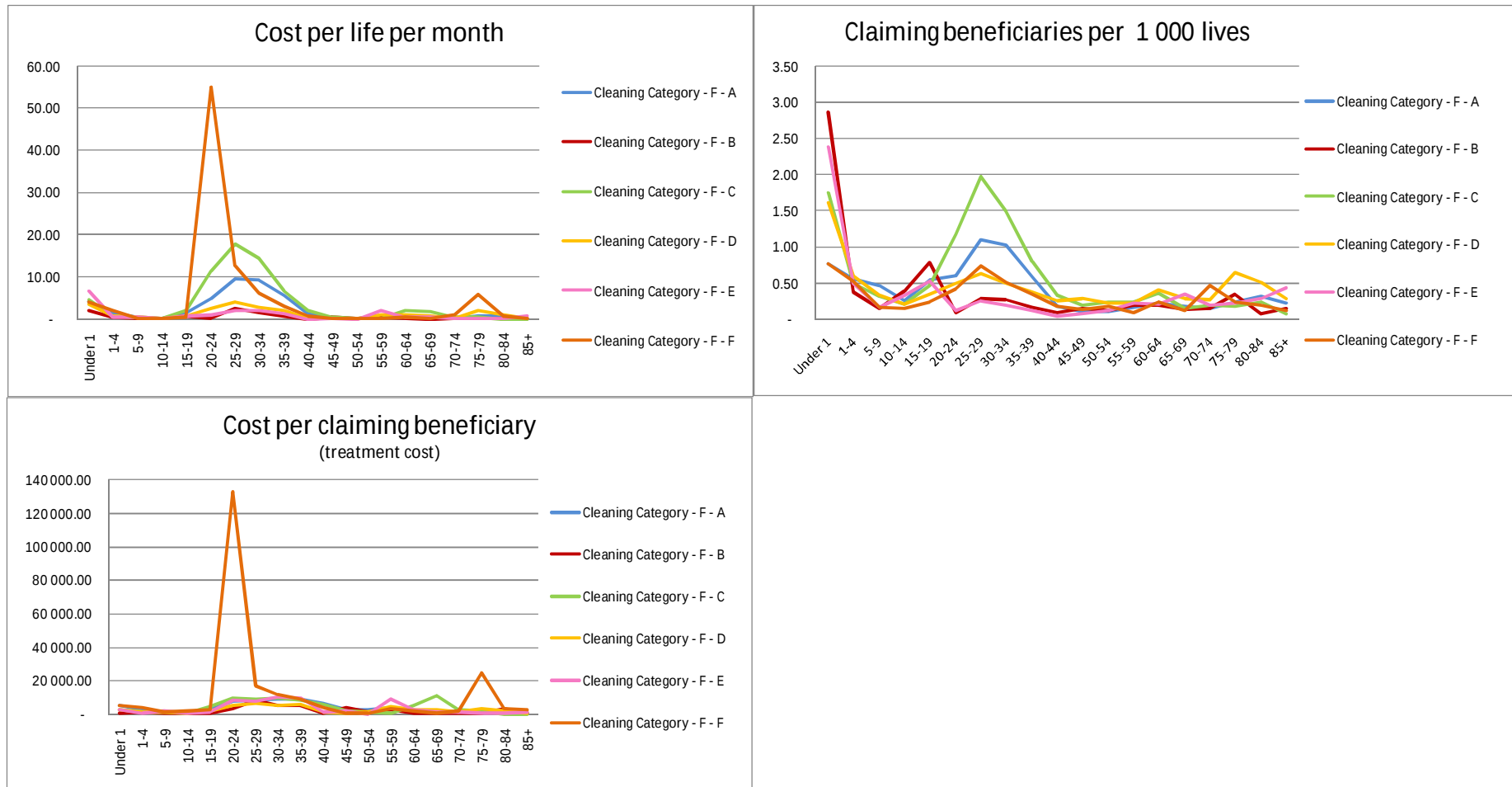
Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Rheumatoid Disease (RHA)



Note: Same results as presented at meeting of 23/03/2011 without cleansing category.

Cleaning category (no claims excluded)



Identification of risk factors

Data

Exclude the data from Administrators E and F from the risk the factor analysis

Regression analysis

Dependant variable: PMB cost per beneficiary according to administrators classification (possible to repeat it for the other three scenarios)

Independent variables

Age (19 dummy variables)

Gender (dummy)

DEG's (549 dummy variables)

Clusters of care (194 dummy variables)

} Two different models

Data

One record for each beneficiary

Use the beneficiary months (exposure) as weighting variable

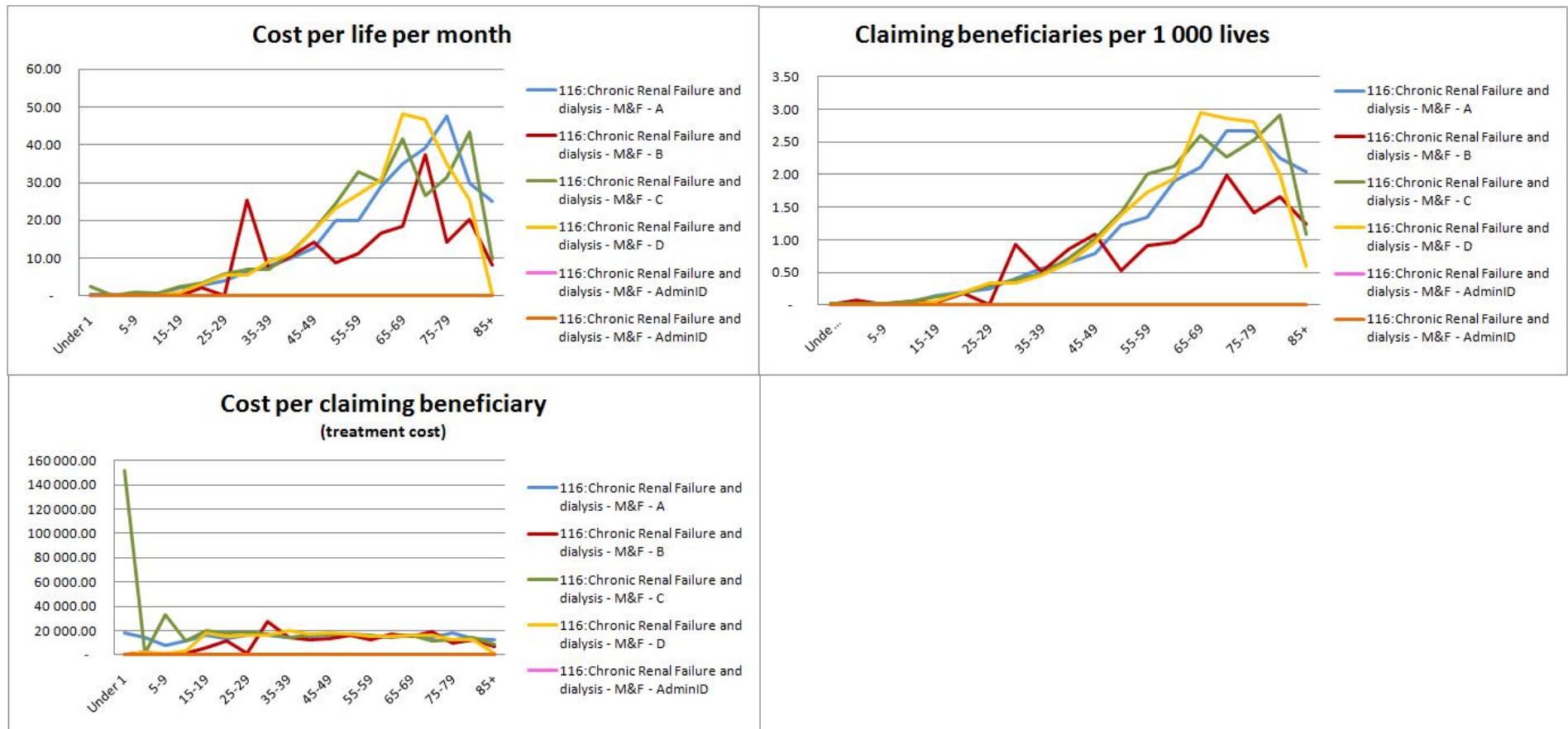
Top 30 significant DEG's

Step	DEG	REF crosswalk
1	Chronic Renal Failure	CRF
2	Coronary Artery Disease	HYL / IHD
3	Acute Renal Failure	
4	Hyaline Membrane Disease/Respiratory Distress Syndrome	
5	Cerebrovascular Disease	HYL
6	Prematurity: Retinopathy	
7	Congestive Heart Failure	CMY
8	Prematurity: Low Birthweight	
9	Complications of Surgical and Medical Care	
10	Pneumonia: Bacterial	
11	Neoplasm, Malignant: Colon and Rectum	
12	Fracture: Femur, Head or Neck	
13	Prematurity: Extremely Low Birthweight	
14	Neoplasm: Central Nervous System	
15	Pulmonary Embolism	
16	Cataract	
17	Neoplasm, Malignant: Leukemia, Other Types	
18	Delivery, Cesarean Section	MAT
19	Prematurity: Very Low Birthweight	
20	Fracture: Femur, Except Head or Neck	
21	Anomaly: Patent Ductus Arteriosus	
22	Tuberculosis	
23	Diabetes Mellitus Type 1	DM1
24	Cholecystitis and Cholelithiasis	
25	Chronic Obstructive Pulmonary Disease	COP
26	Aortic Stenosis	
27	Neoplasm, Malignant: Breast, Female	
28	Other Disorders of Respiratory System	BCE
29	Aneurysm, Abdominal	
30	Neoplasm, Malignant: Prostate	

Top 30 significant clusters of care

Step	Cluster description	REF risk factor
1	Chronic Renal Failure and dialysis	CRF
2	Coronary Artery Disease	IHD
3	Acute Renal Failure	
4	Abnormal birthweight	
5	Cerebrovascular Disease	HYL
6	Malignant neoplasms of the gastrointestinal system	
7	Congestive Heart Failure and cardiomyopathies	CMY
8	Malignant Hematological neoplasms	
9	Neonatal conditions excluding birthweight	
10	Pneumonia	
11	Pregnancy, delivery and complications	
12	Neoplasm of the central nervous system	
13	Cataract	
14	Fracture of the femur and fracture, dislocation or sprain of the hip and pelvis.	
15	Pulmonary Embolism	
16	Congenital Heart Disease	CHF/CMY
17	Cholecystitis and Cholelithiasis	
18	Disorders of the heart valves	
19	Malignant neoplasm of the prostate	
20	Malignant neoplasm of the female breast	
21	Calculus of the Urinary Tract	
22	Other atherosclerosis	
23	Arrhythmias and conduction disorders	
24	Epilepsy	EPL
26	Diabetes Mellitus Type 1 and 2	DM1 and DM2
27	HIV, tuberculosis and pneumocystis carinii	HIV
28	Hemophilia A or B	HAE
29	Diseases of Arteries including aneurysms	
30	Malignant neoplasms of the female genitourinary and genital systems	

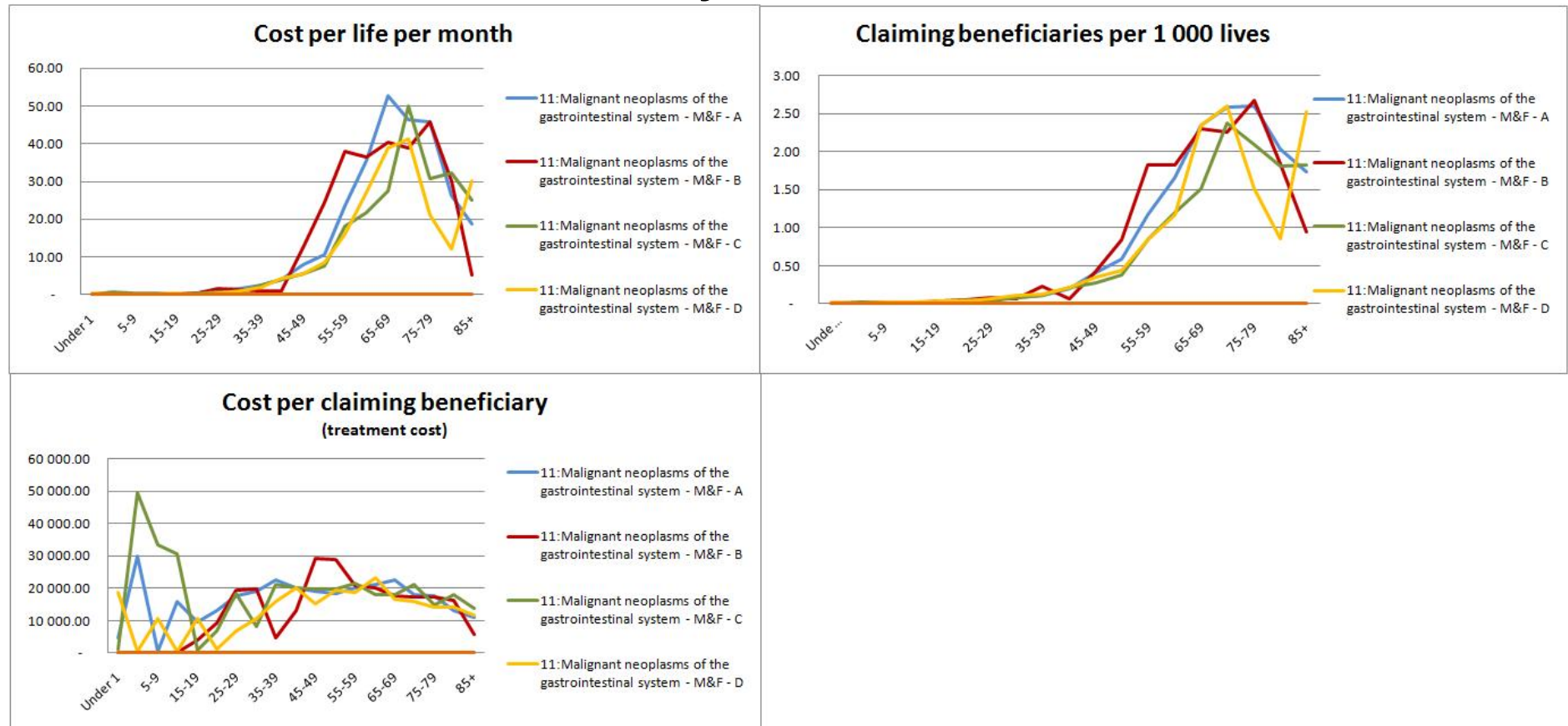
Cluster: Chronic Renal Failure and dialysis



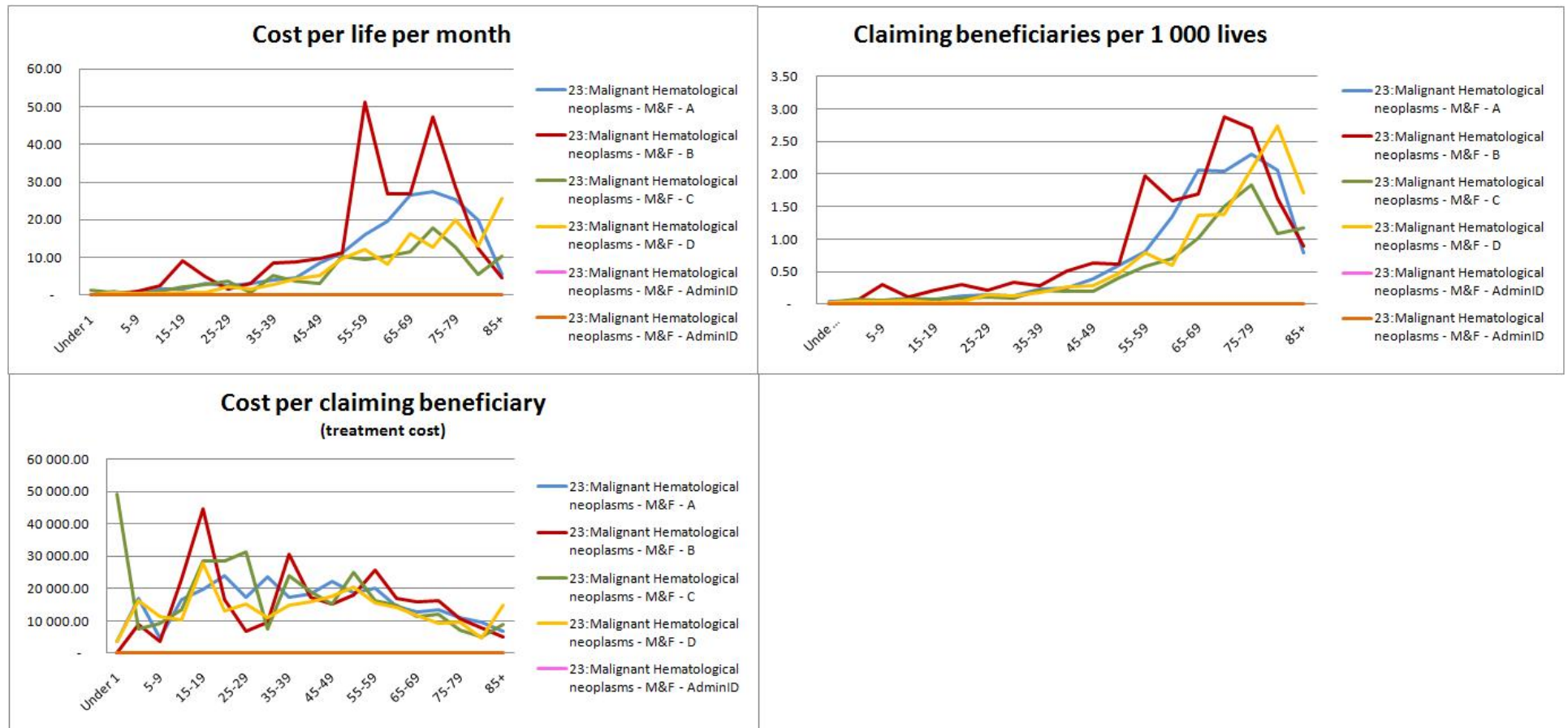
Cluster: Coronary Artery Disease



Cluster: Malignant neoplasm's of the gastrointestinal system

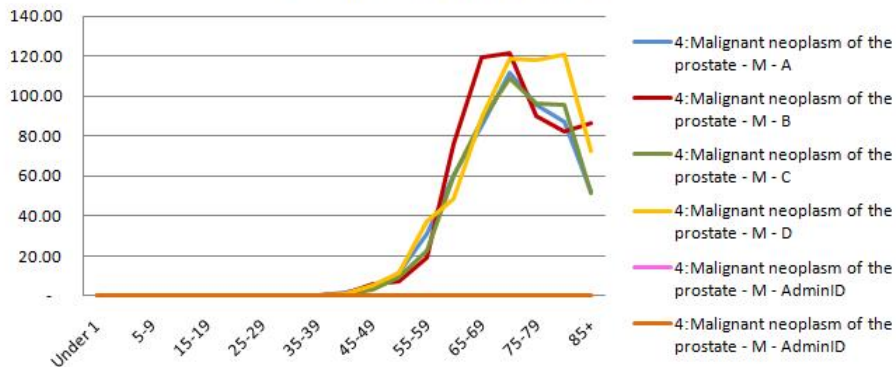


Cluster: Malignant Haematological neoplasm's

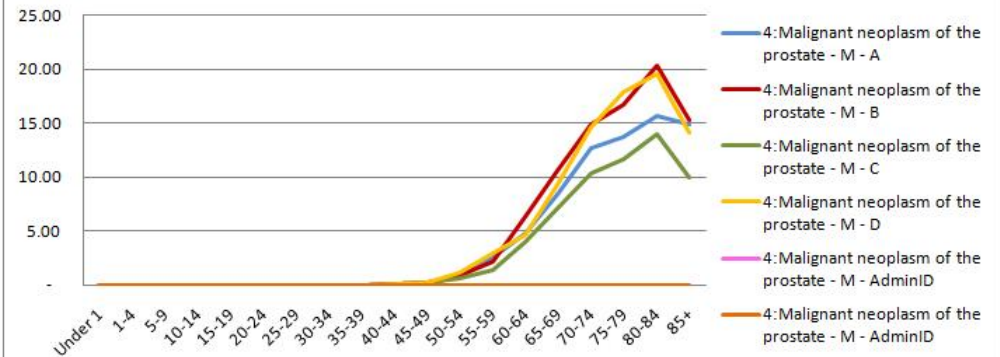


Cluster: Malignant neoplasm of the prostate

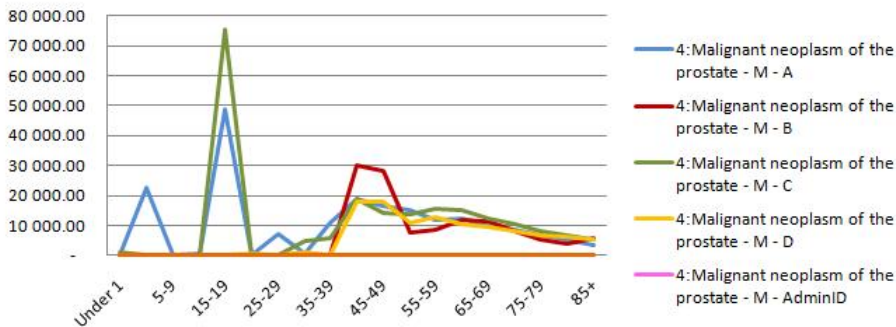
Cost per life per month



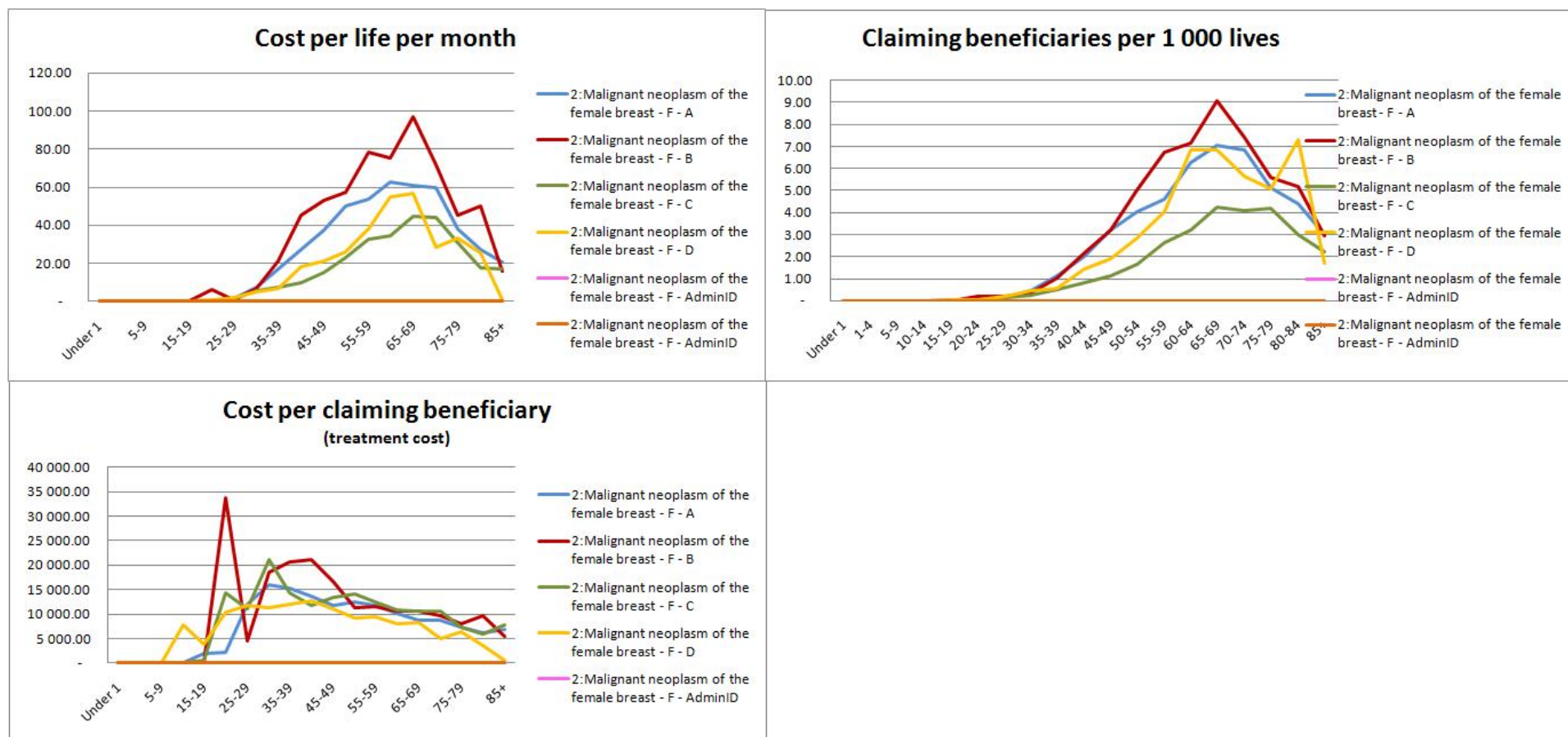
Claiming beneficiaries per 1 000 lives



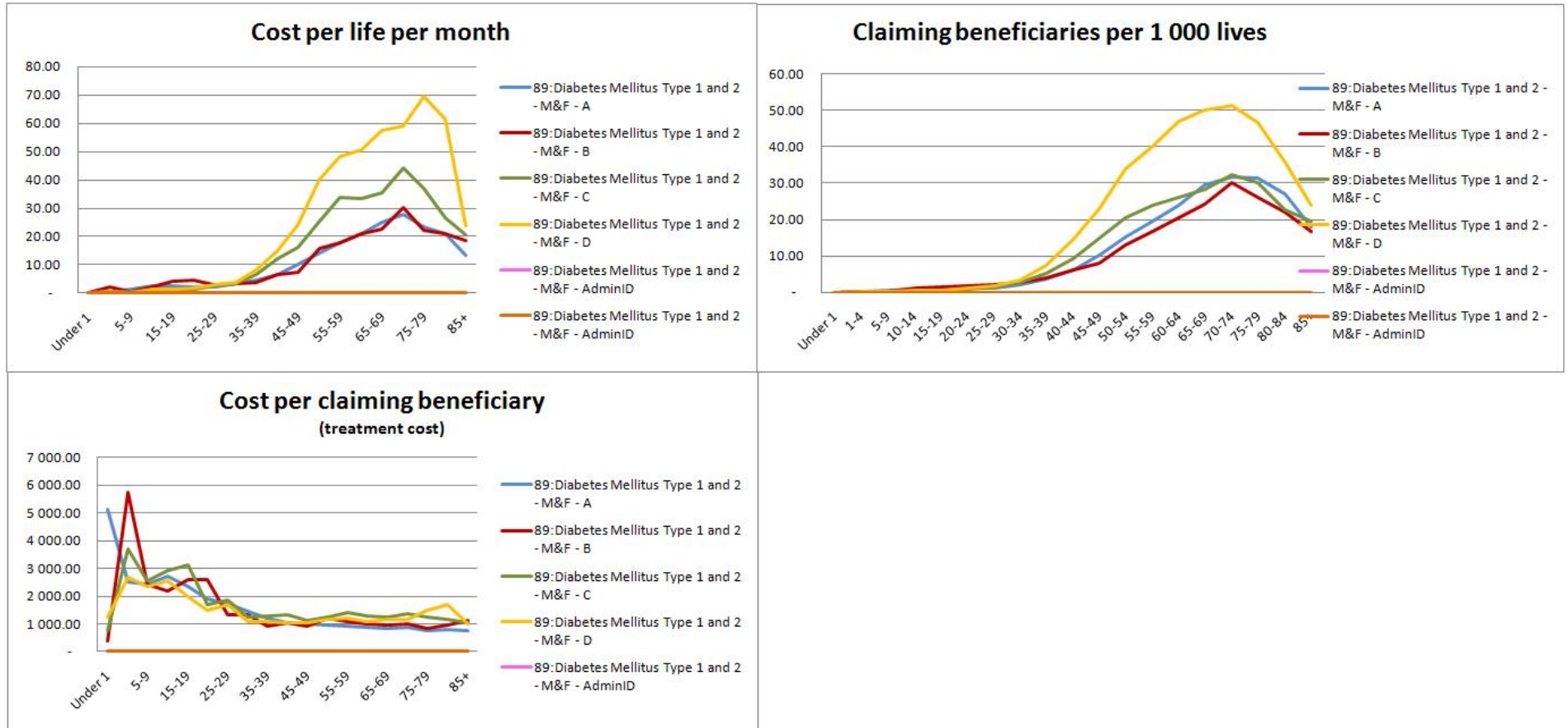
**Cost per claiming beneficiary
(treatment cost)**



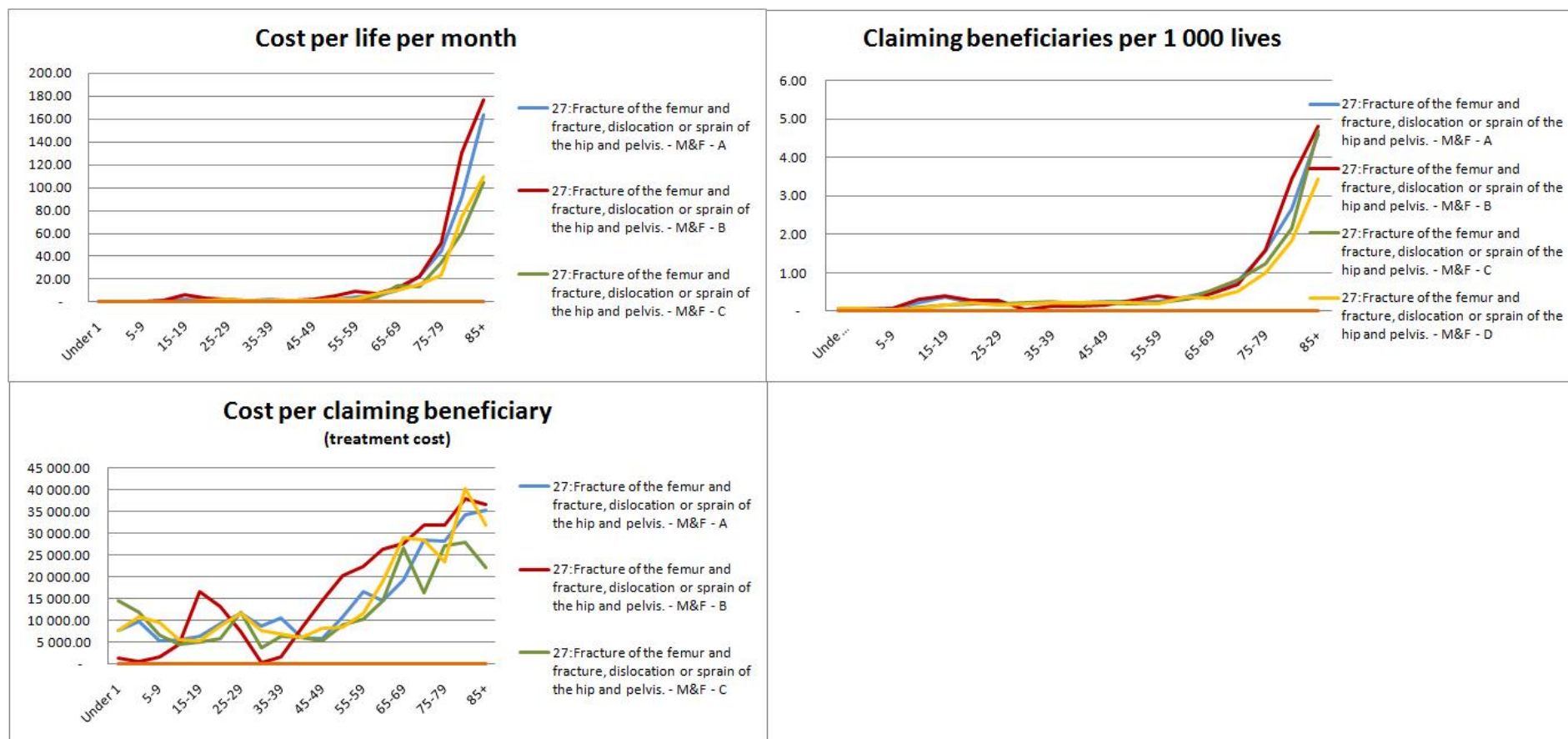
Cluster: Malignant neoplasm of the female breast



Cluster: Diabetes Mellitus Type 1 and 2



Cluster: Fracture of the femur and fracture, dislocation or sprain of the hip and pelvis



Theme of significant risk factors

- Cancers
- Premature births / MAT
- Fractures (Trauma)
- HIV and tuberculosis
- REF CDL's (Cardiovascular, etc.)

New risk factors without REF legislation?

Decision

- Default to the current REF formula and calculate new expected count and weighting tables
- Do more research on the available data

The REF formula

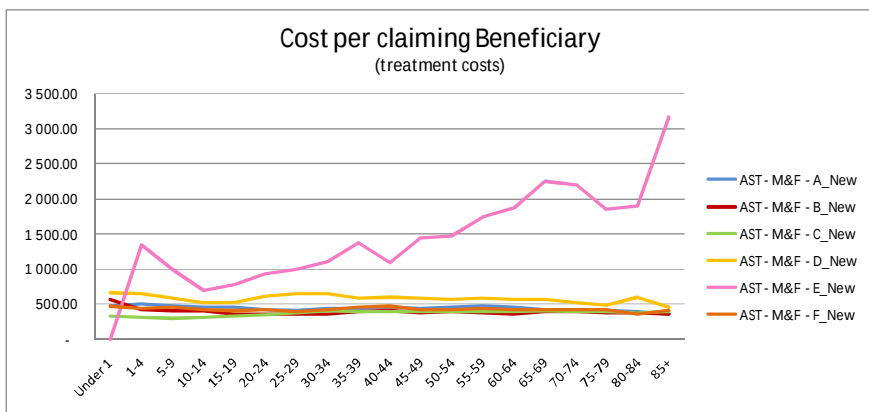
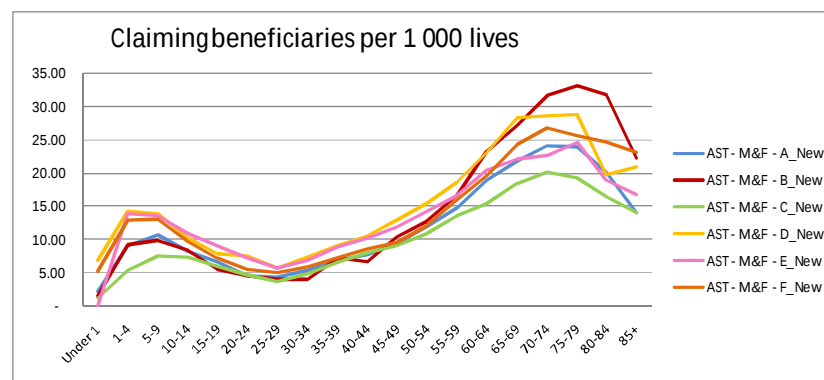
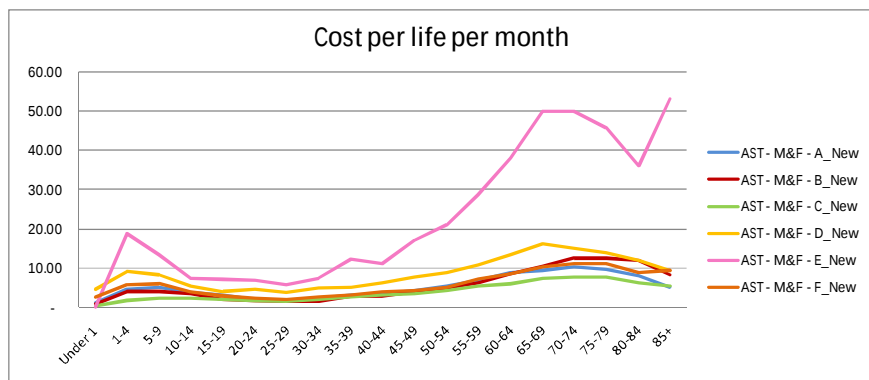
The data

- Evaluate the prevalence data from all participating administrators/schemes

Methodology

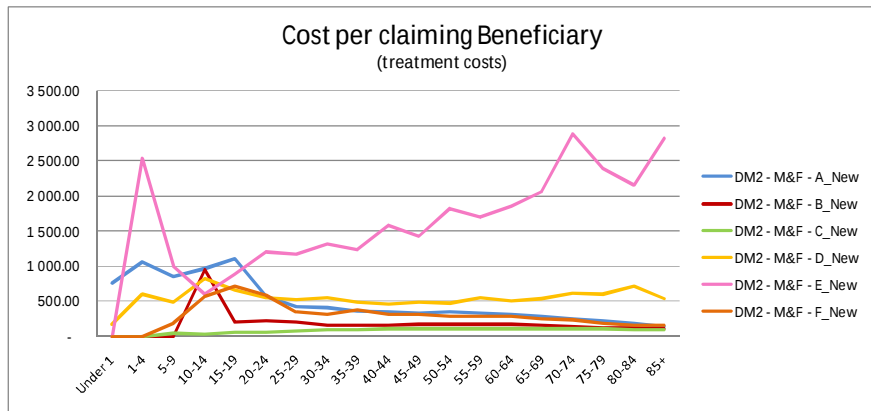
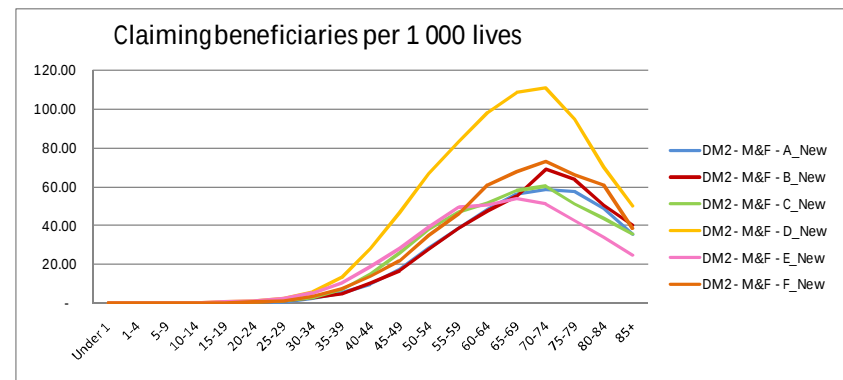
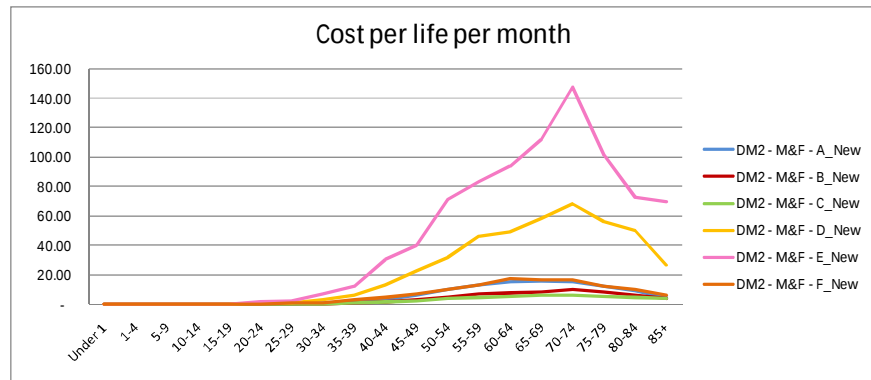
- Similar as for the REF Study 2005
- Under 1 counts: Default all the CDLs to the NON column
- One regression model (total PMB claims) instead of three separate models (DTP, CDL and related)

Prevalence: Asthma



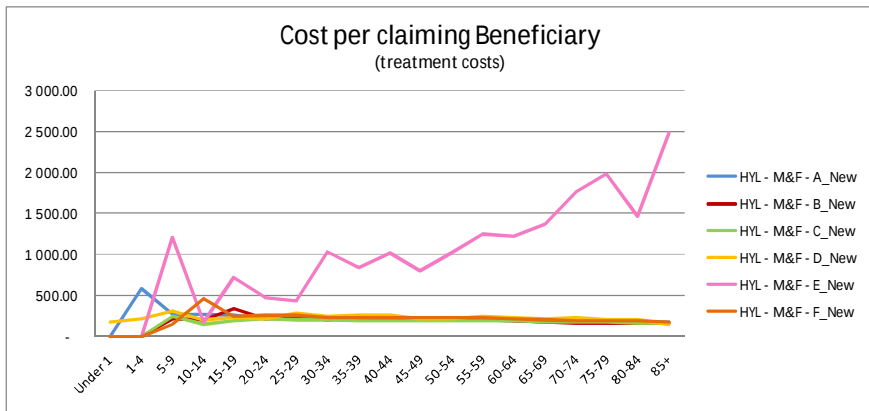
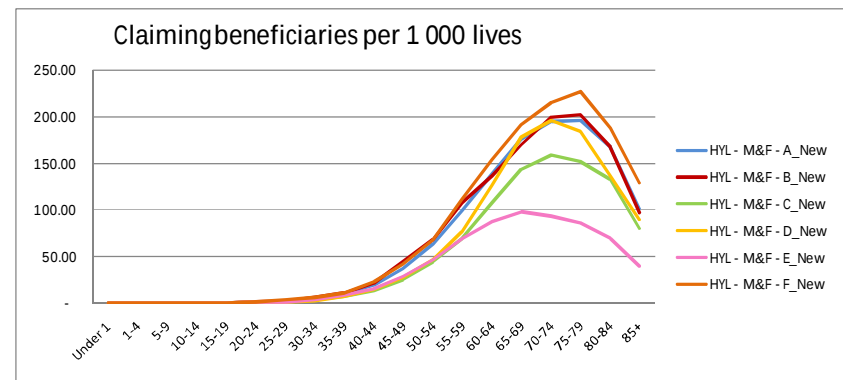
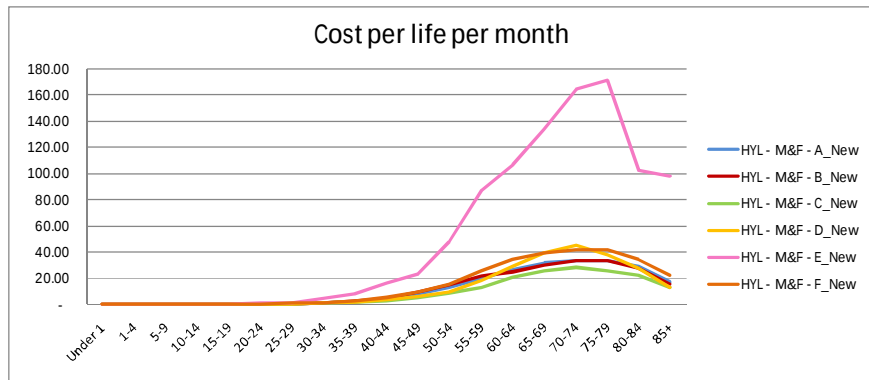
12 months of prevalence data

Prevalence: Diabetes Type 2



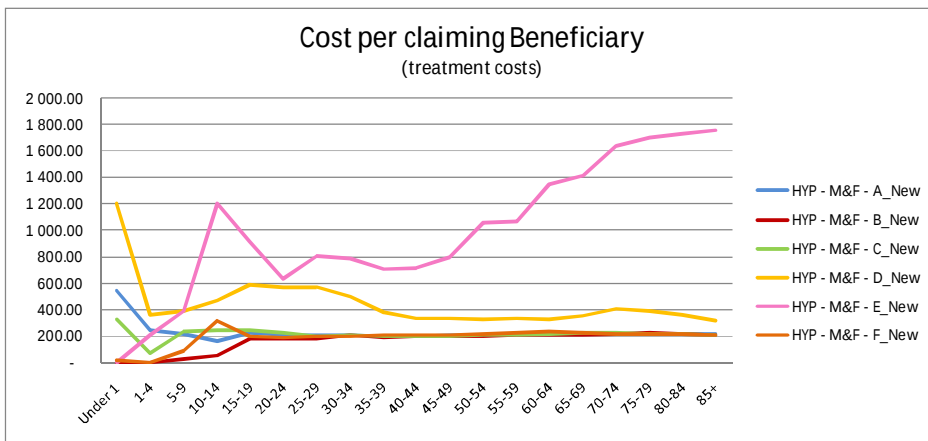
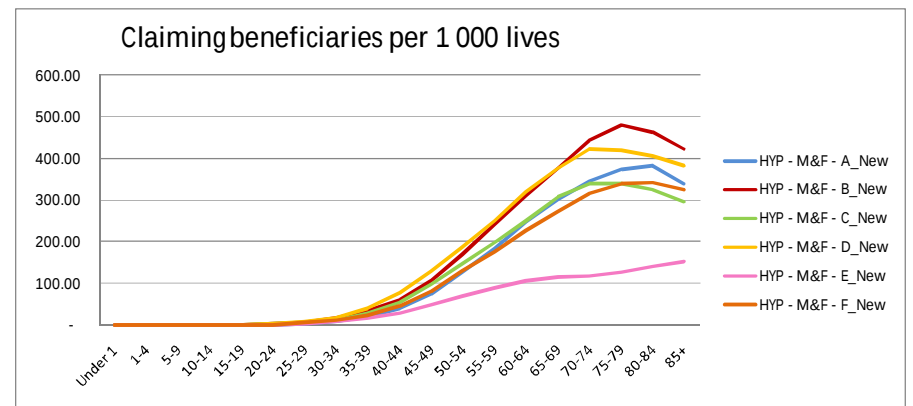
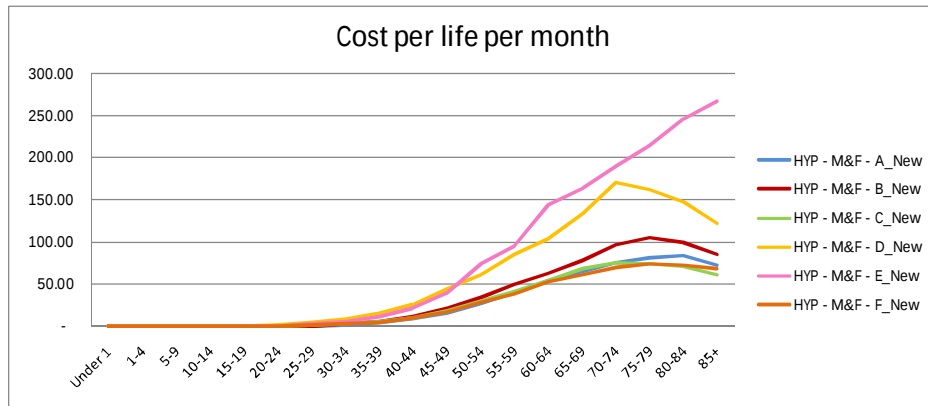
12 months of prevalence data

Prevalence: Hyperlipidaemia



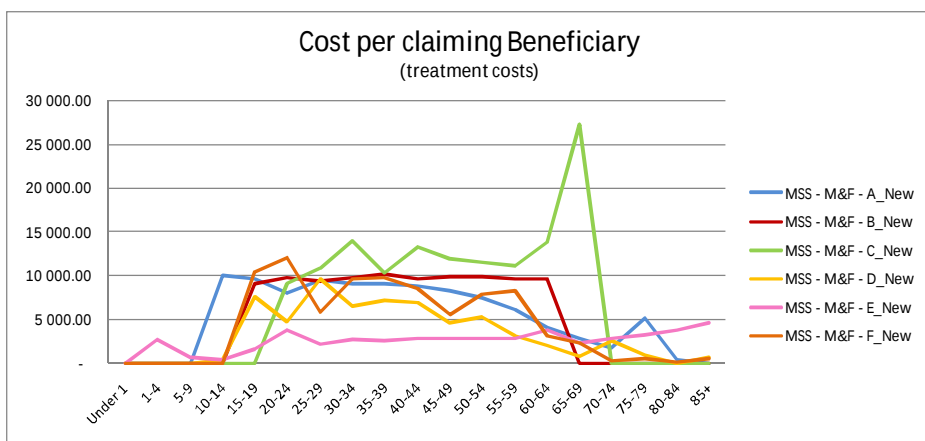
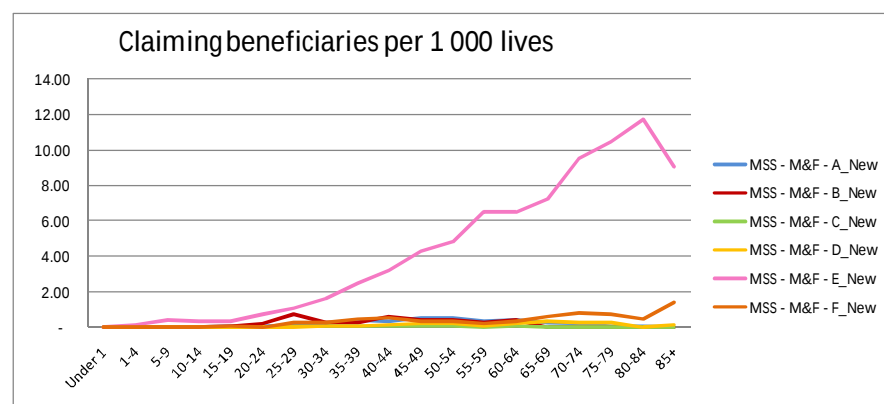
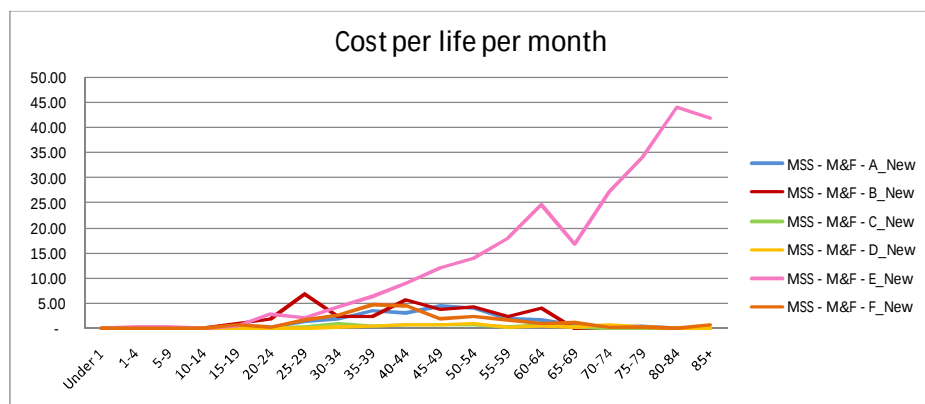
12 months of prevalence data

Prevalence: Hypertension



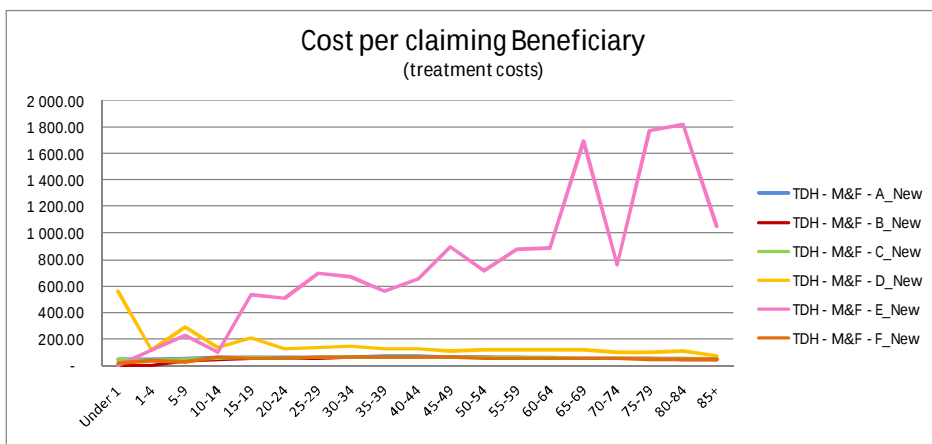
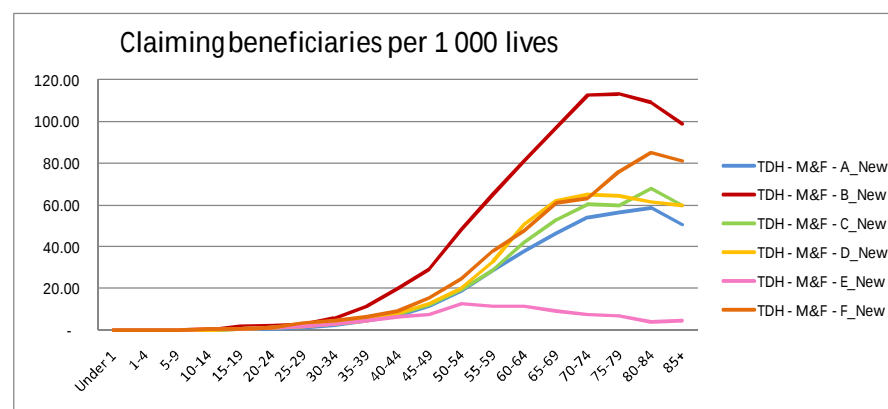
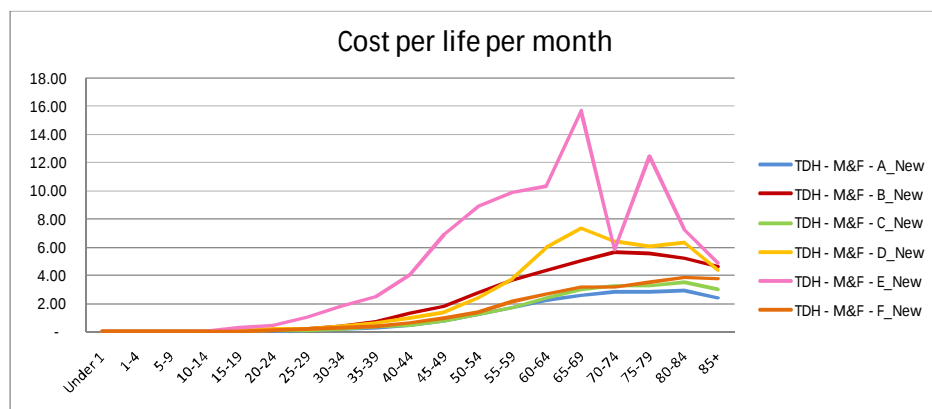
12 months of prevalence data

Prevalence: Multiple Sclerosis



12 months of prevalence data

Prevalence: Hypothyroidism



12 months of prevalence data

Note: Similar trend for Administrator B in REF submissions

Decision based on prevalence trends

- Exclude the data from Administrator E

Regression results

All the CDL's were significant in the combined regression model based on the aggregated data

R-squared: 44% for final model; statistically not a very good model, but the purpose is not to make estimates at individual beneficiary or scheme level. Confidence intervals of individual estimates could be influenced by the performance of the model.

Impact of aggregation:

Remove variation in the data  improve the R-squared value

Sample required for multiple regression

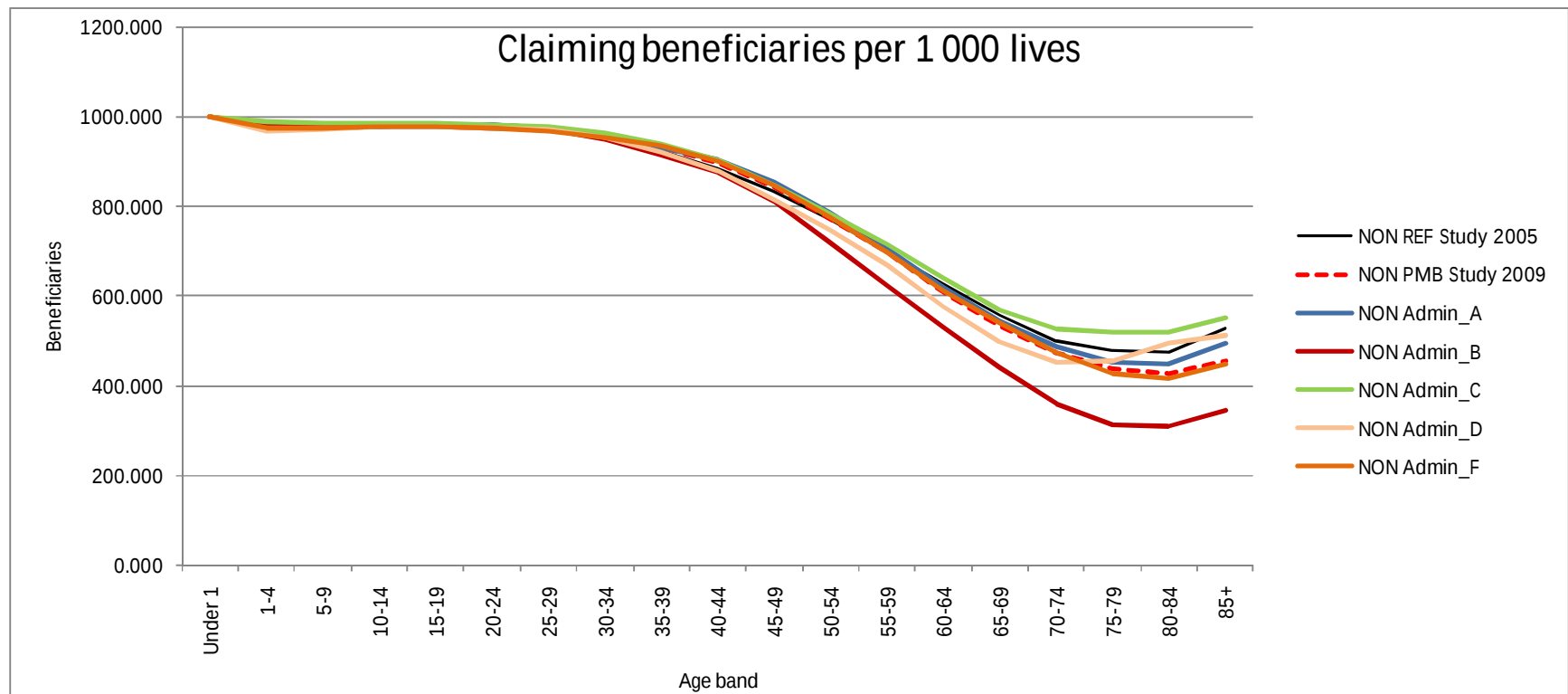
Significance level $\alpha = 0.05$				
	Number of dependent variables			
Sample size	2	5	10	20
50	19	23	29	42
100	10	12	15	21
250	4	5	6	8
500	3	4	5	9
1000	1	1	2	2

With two variables and 50 observations one will be able to detect a R-squared of 19% and above to be significant. With 1000 observations one will be able to detect a R-squared of only 1% to be significant. The larger the sample size, the greater is your likelihood of obtaining a significant relationship between the dependent variable and the set of independent variables.

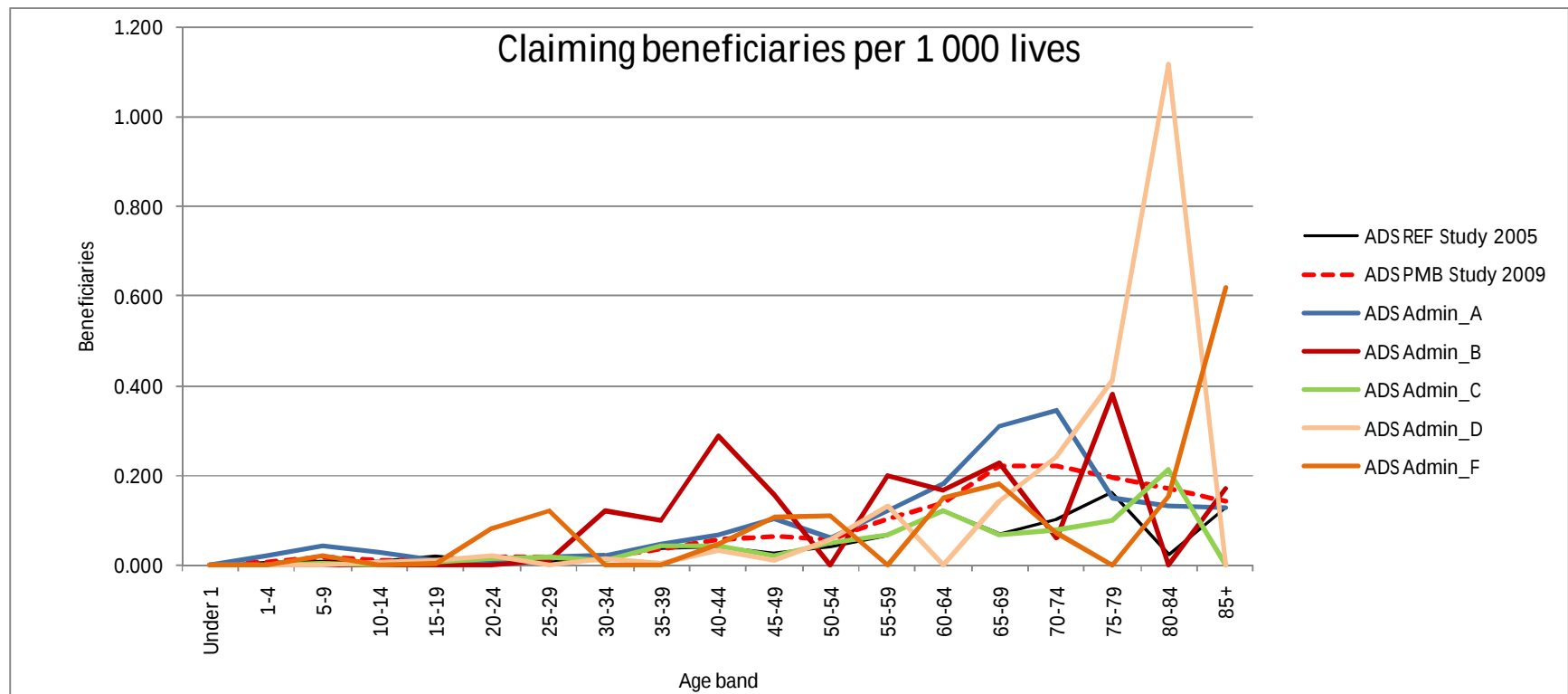
Ranks of diseases

New ranks (2009 data, used 2012)			Old ranks (2005 data, used 2009)		
CDL	Amount	Rank	CDL	Amount	Rank
HAE	20105.00	1	HAE	12042.01	2
CRF	14887.00	2	CRF	18711.38	1
MSS	7918.55	3	MSS	10029.32	3
COP	2423.12	4	BCE	532.64	17
CMY	2038.58	5	COP	1590.81	5
CSD	1941.50	6	CMY	1382.70	8
DBI	1774.40	7	CSD	1402.02	7
DM1	1746.34	8	DBI	921.90	13
BCE	1693.91	9	DM1	1633.35	4
PAR	1680.59	10	PAR	1002.74	11
BMD	1611.73	11	BMD	1357.88	9
SCZ	1502.32	12	SCZ	717.79	15
DYS	1339.27	13	DYS	689.99	16
SLE	1241.21	14	SLE	1490.22	6
IBD	1111.18	15	IHD	977.83	12
EPL	1072.97	16	IBD	478.75	19
HIV	995.48	17	EPL	815.31	14
IHD	969.78	18	HIV	1144.73	10
ADS	836.69	19	ADS	165.40	25
RHA	730.44	20	RHA	434.01	20
AST	442.51	21	AST	350.57	21
DM2	425.79	22	DM2	505.16	18
HYP	260.38	23	HYL	254.45	22
HYL	249.38	24	HYP	193.34	24
GLC	240.90	25	GLC	254.16	23
TDH	113.79	26	TDH	96.58	26
-	-	-	CHF	-	-
MULTIPLES AND MATERNITY					
CC2	297.41	-	CC2	226.38	-
CC3	643.47	-	CC3	619.52	-
CC4	1258.23	-	CC4	1260.01	-
MAT	19006.12	-	MAT	20995.70	-
PMB cost pbpm			307.65		

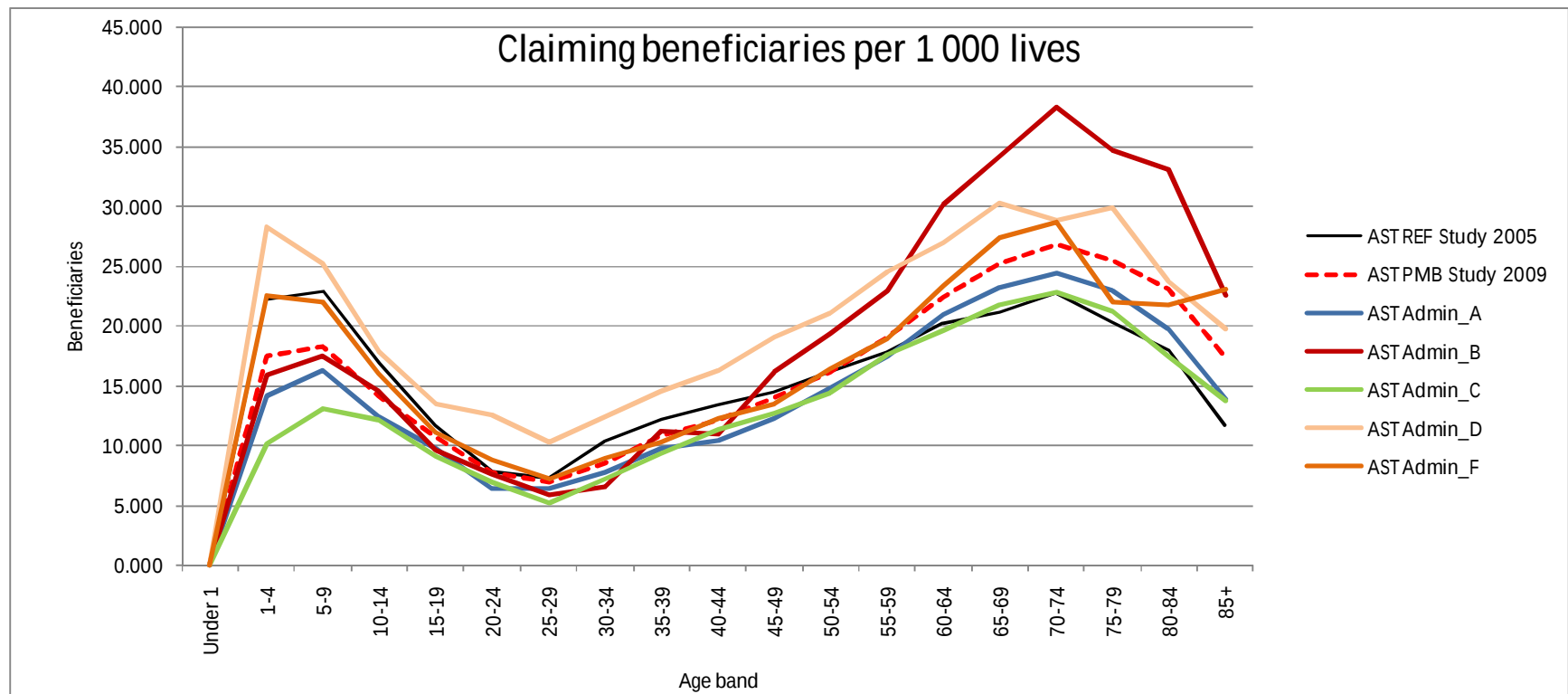
NON (DTP's)



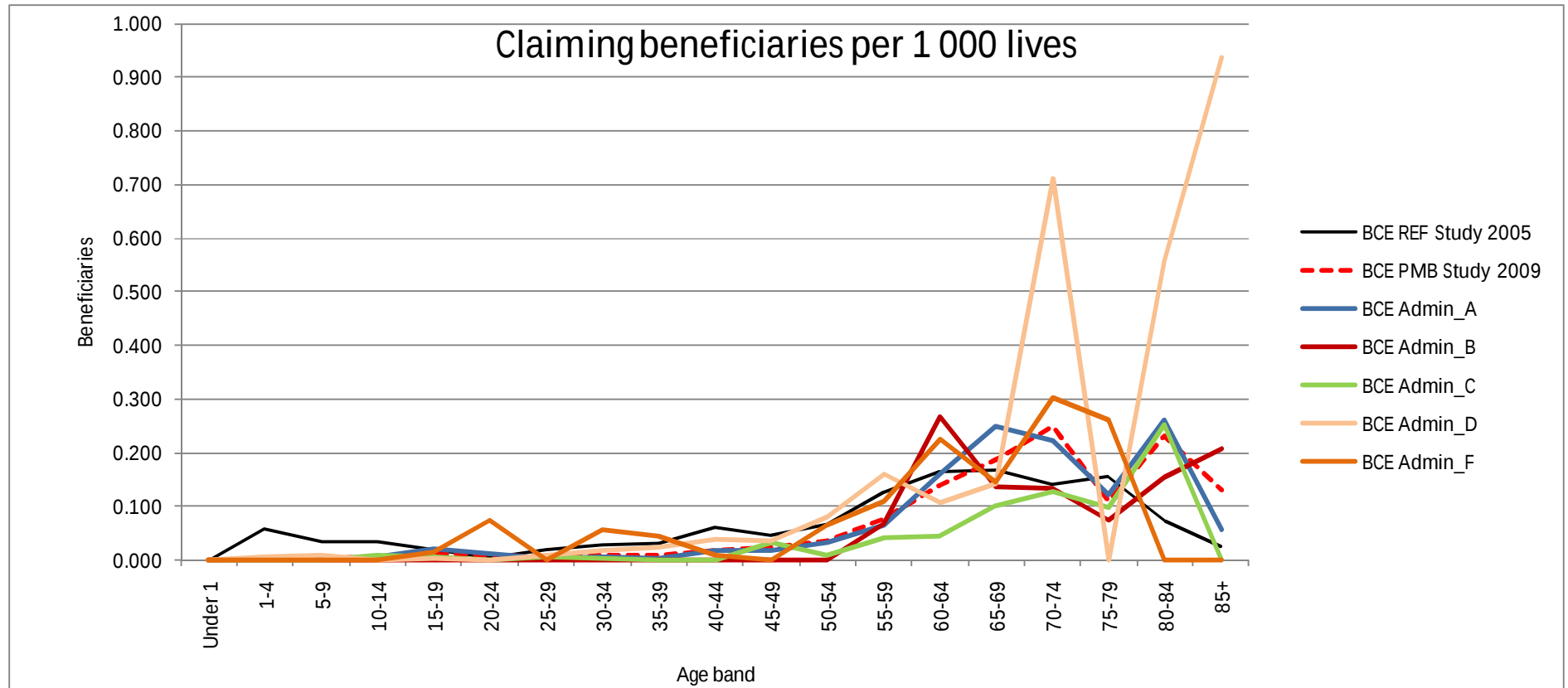
Addison's (ADS)



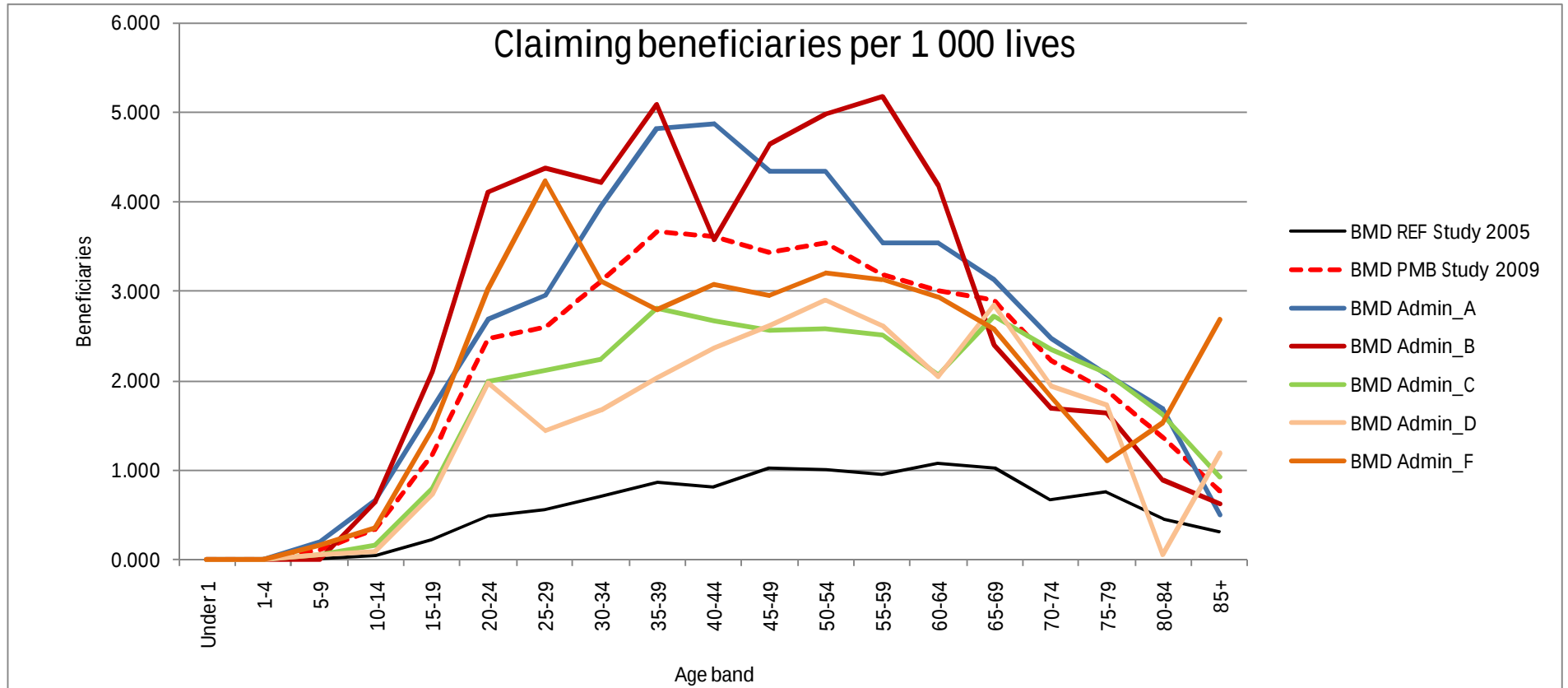
Asthma (AST)



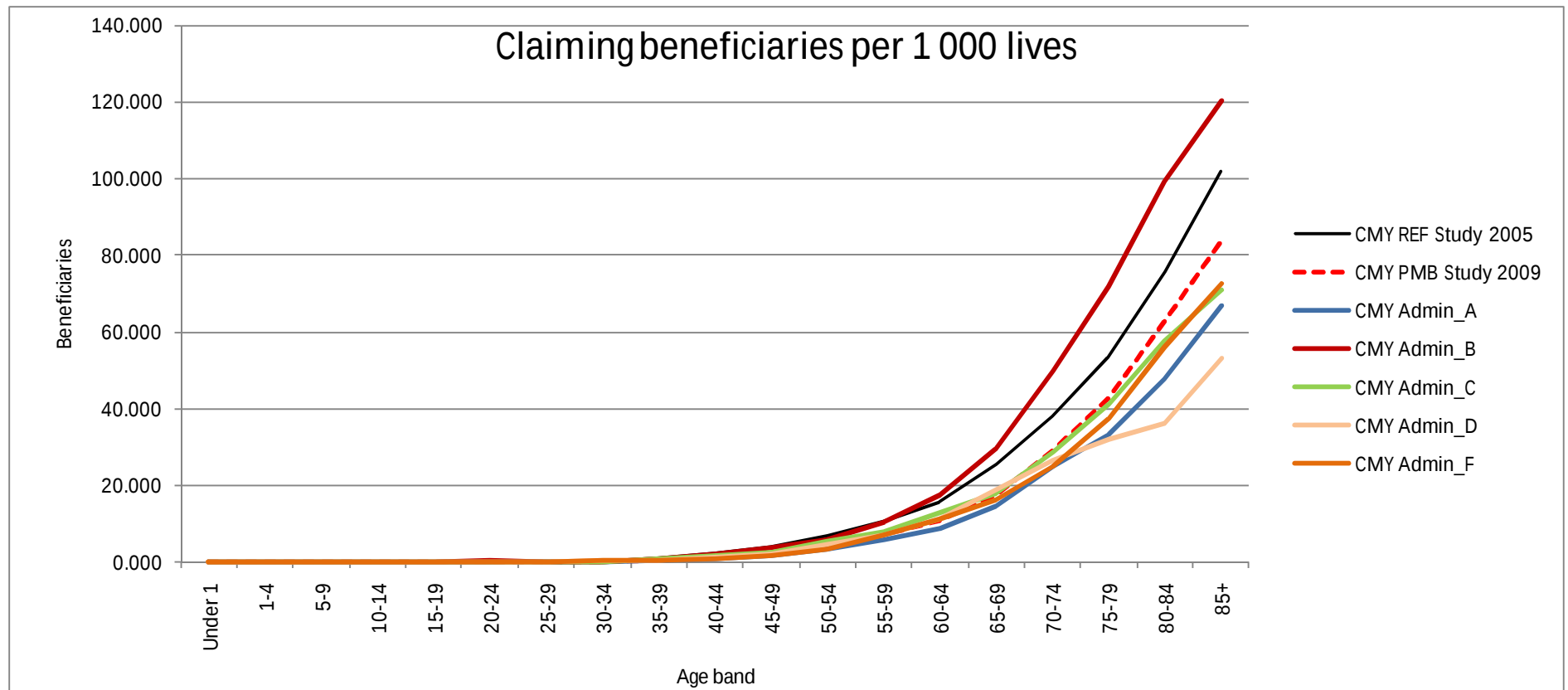
Bronchiectasis (BCE)



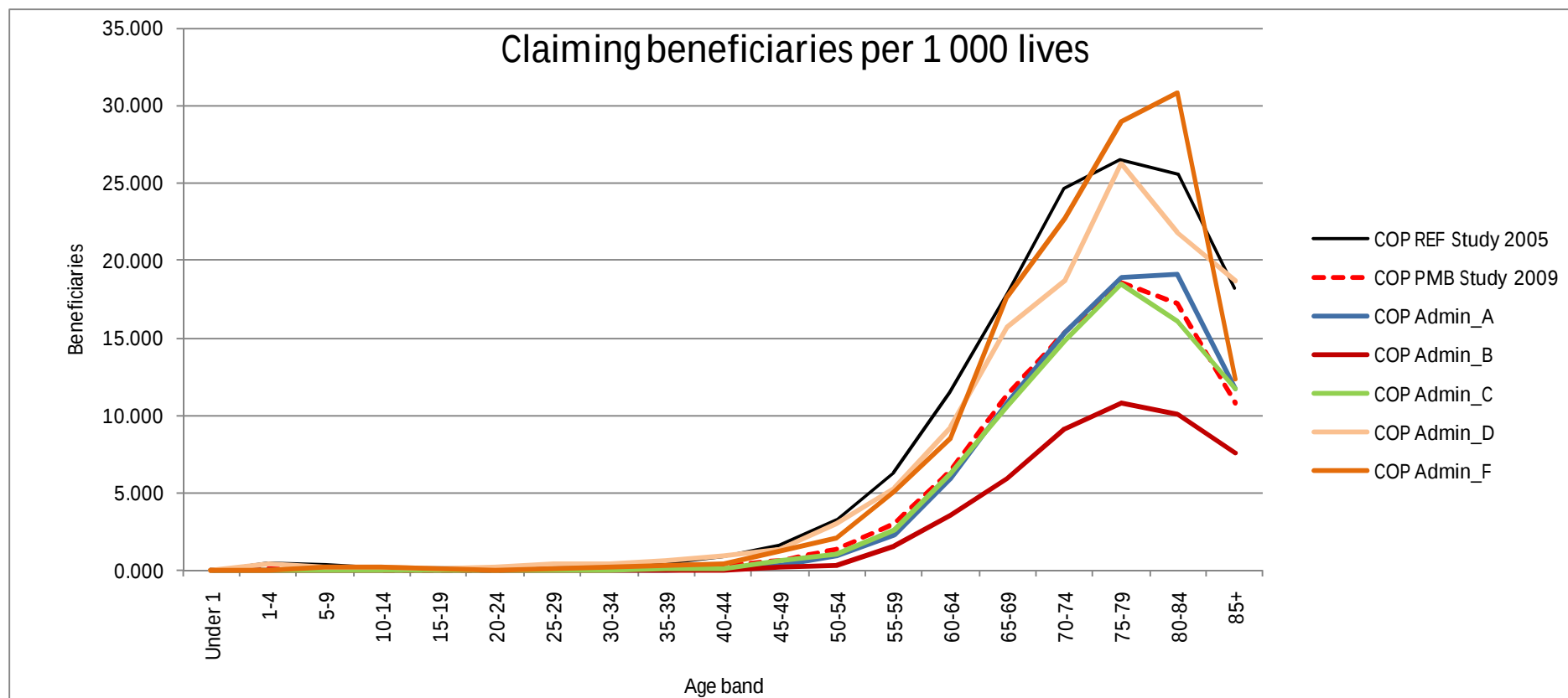
Bipolar Mood Disorder (BMD)



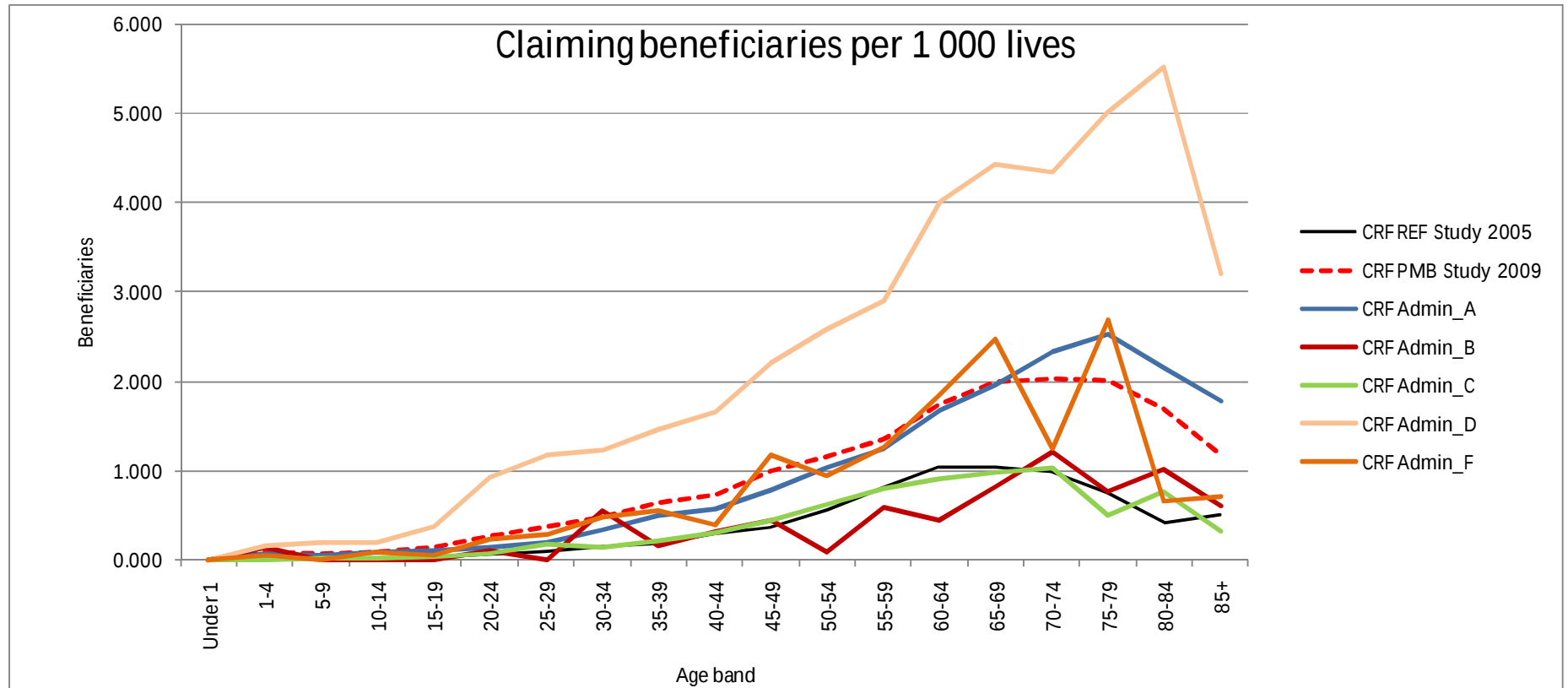
Cardiac Failure and Cardiomyopathy (CMY)



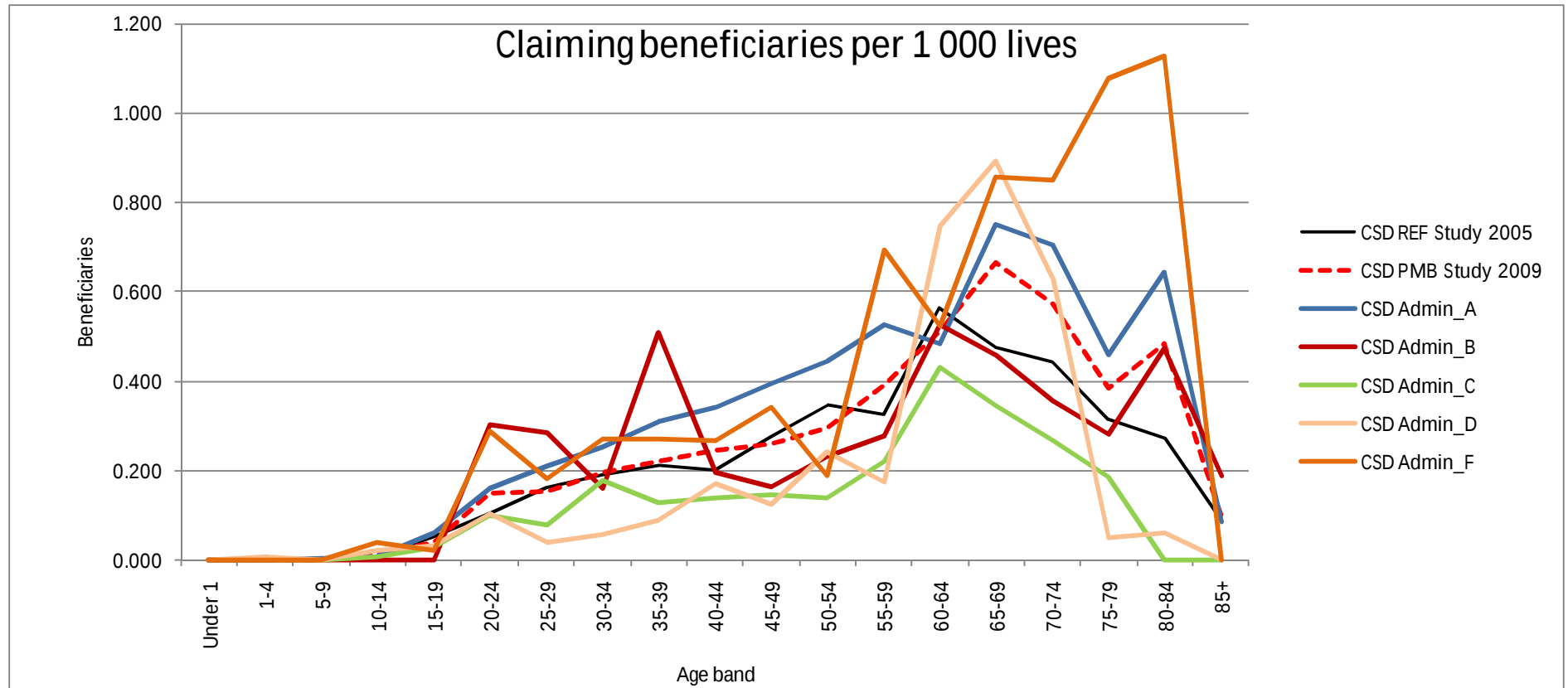
Chronic Obstructive Pulmonary Disease (COP)



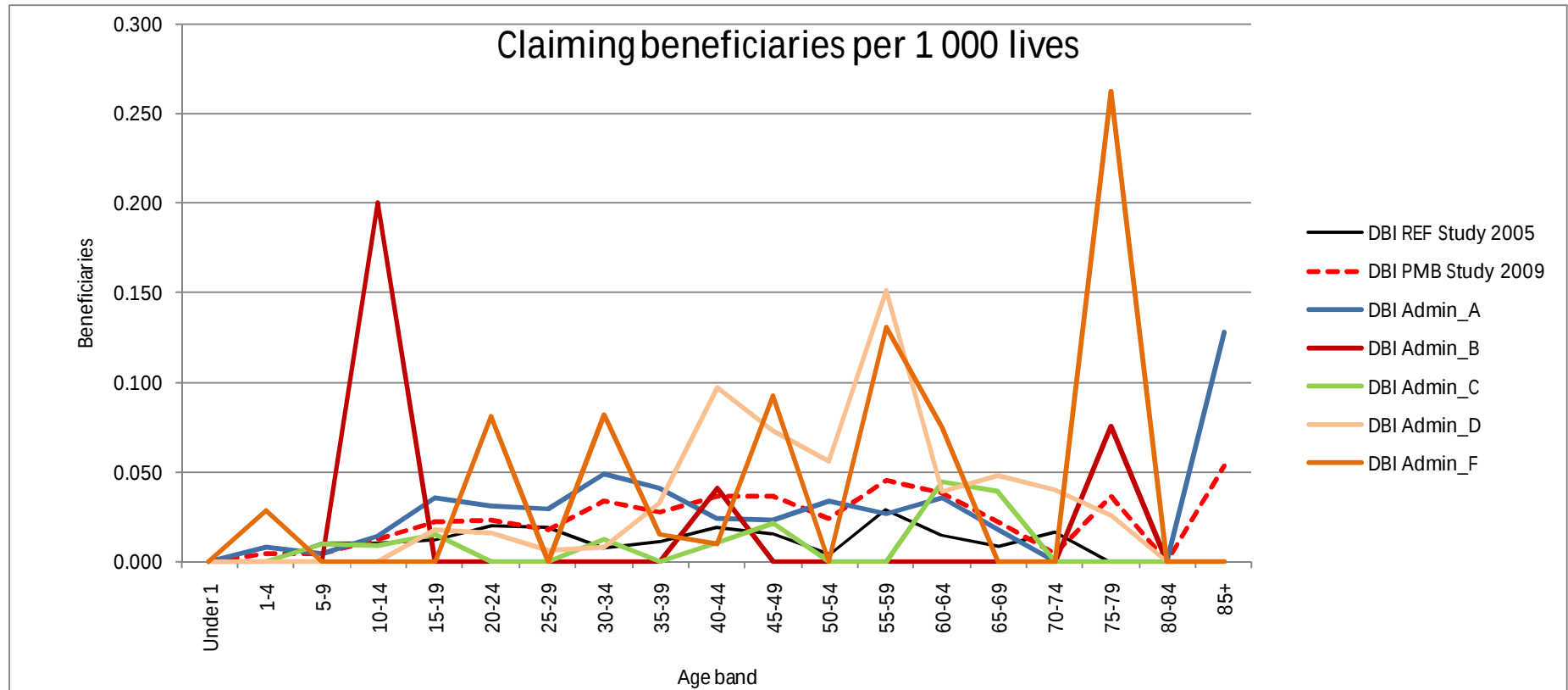
Chronic Renal Disease (CRF)



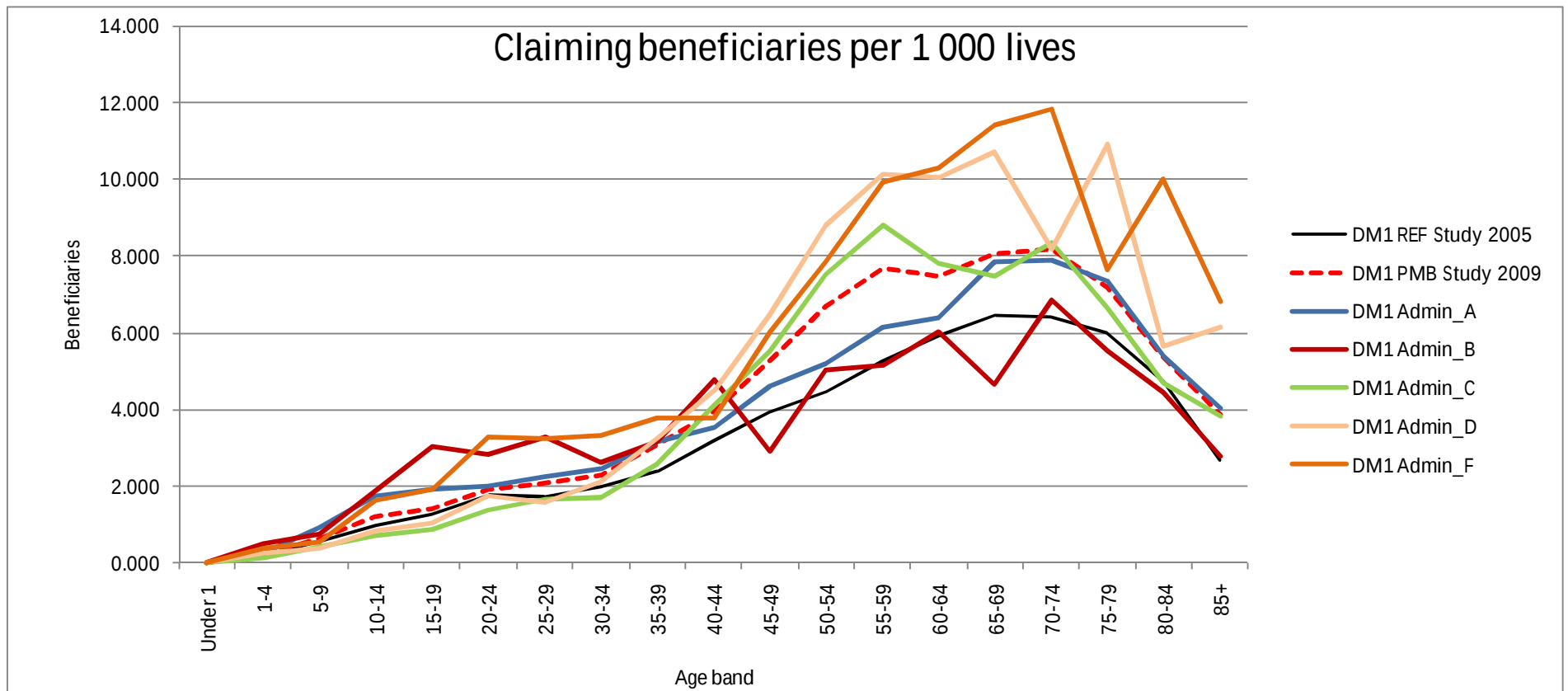
Crohn's Disease (CSD)



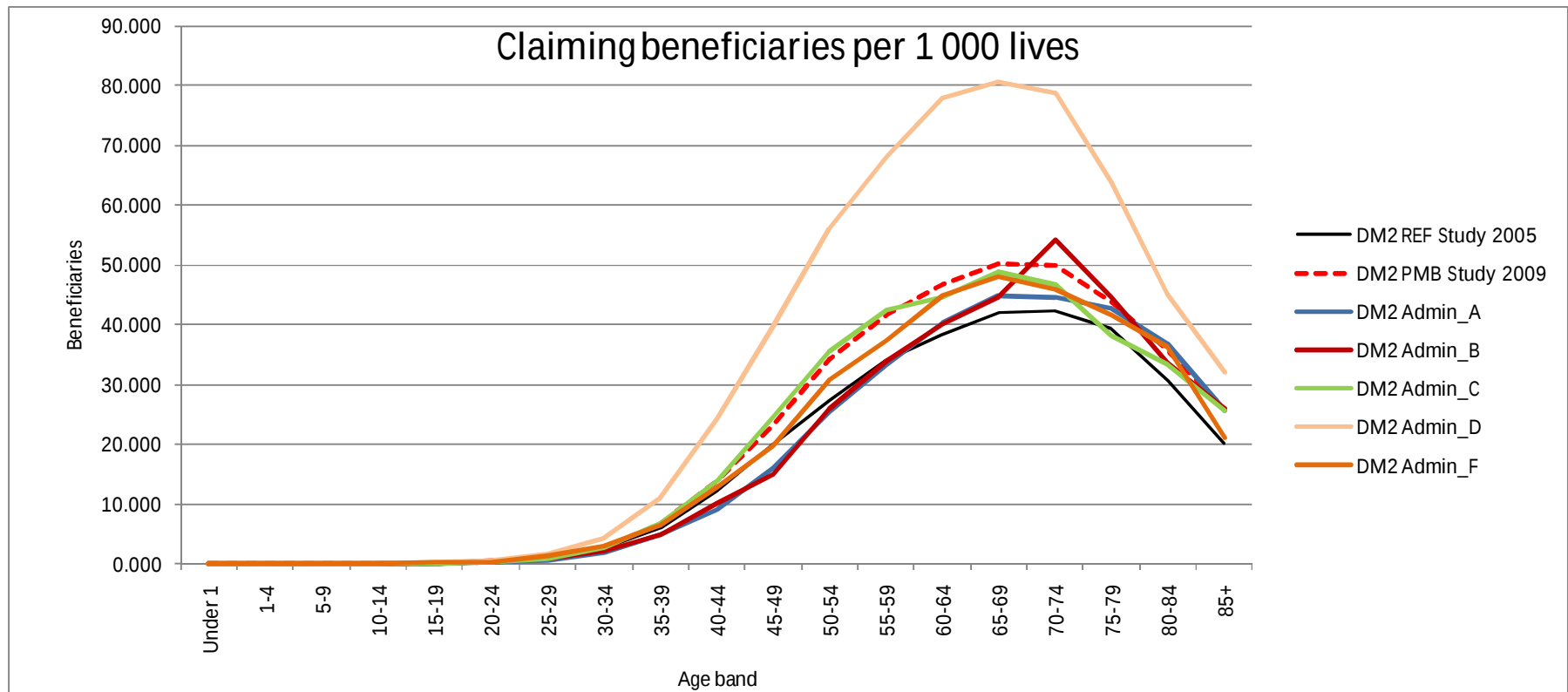
Diabetes Insipidus (DBI)



Diabetes Type I (DM1)

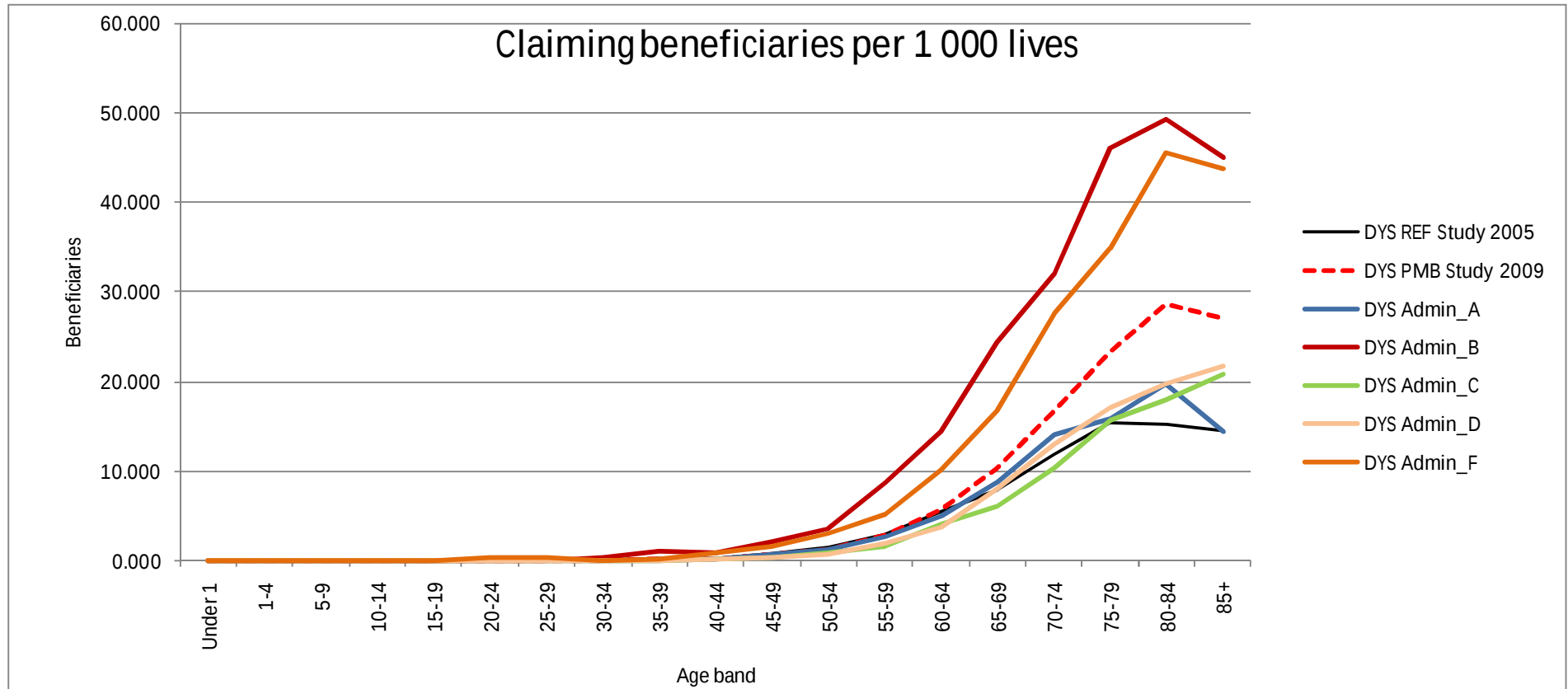


Diabetes Type II (DM2)

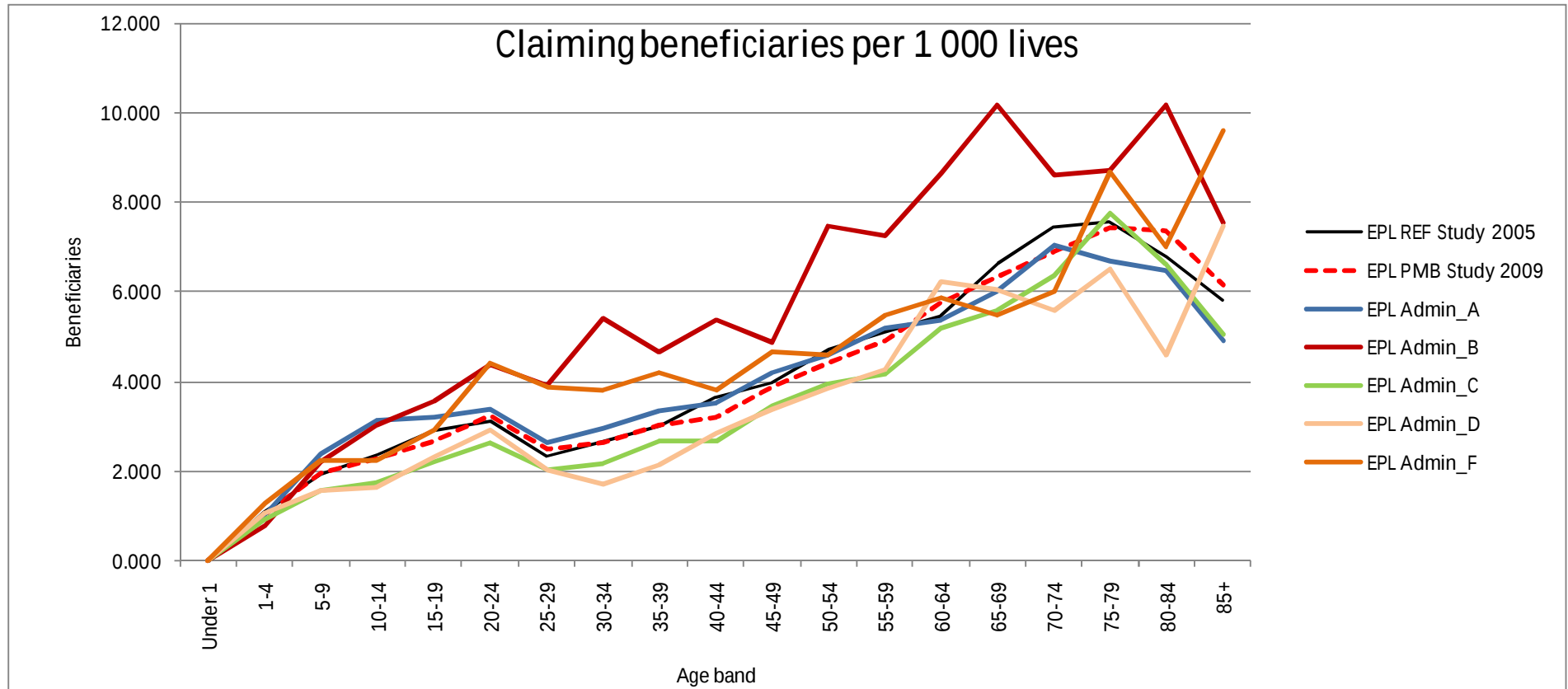


Note: Similar trend for Administrator D in REF submissions

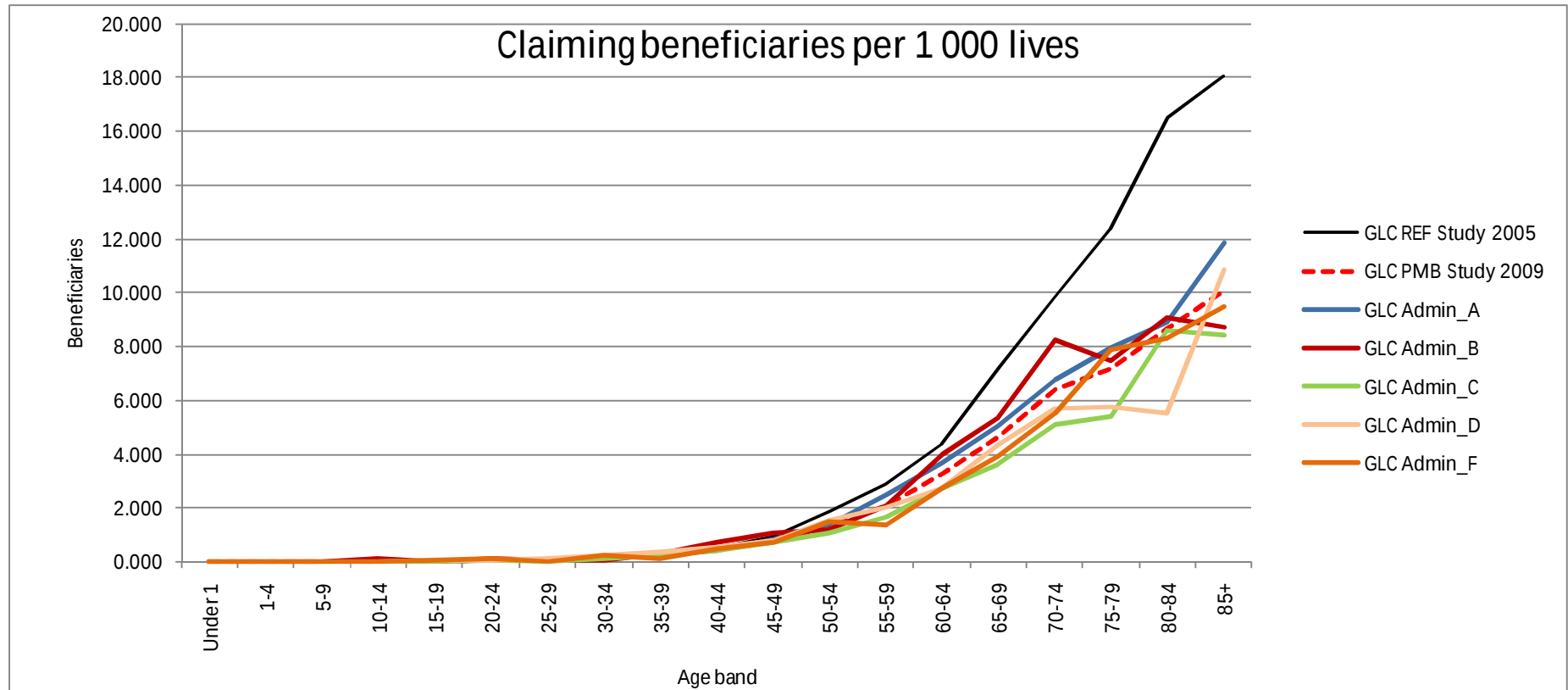
Dysrhythmias (DYS)



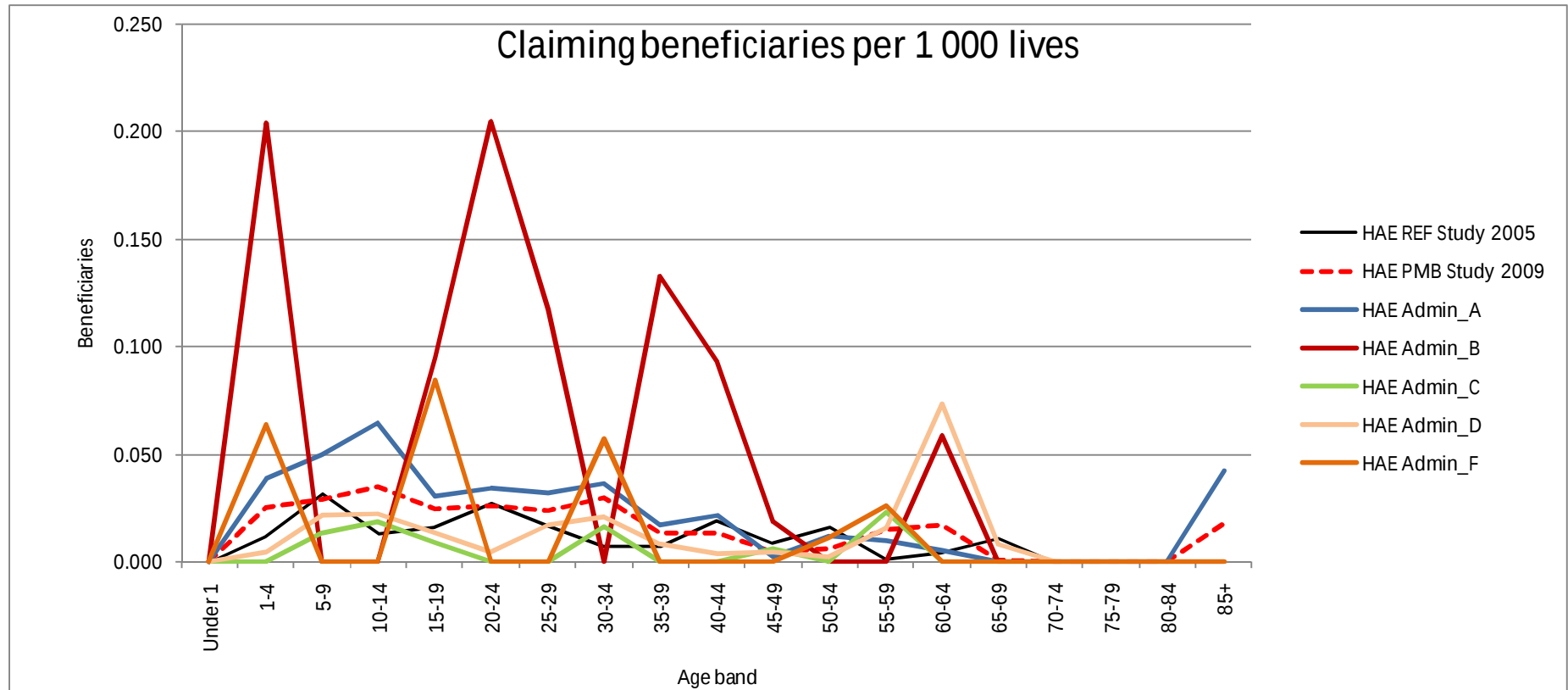
Epilepsy (EPL)



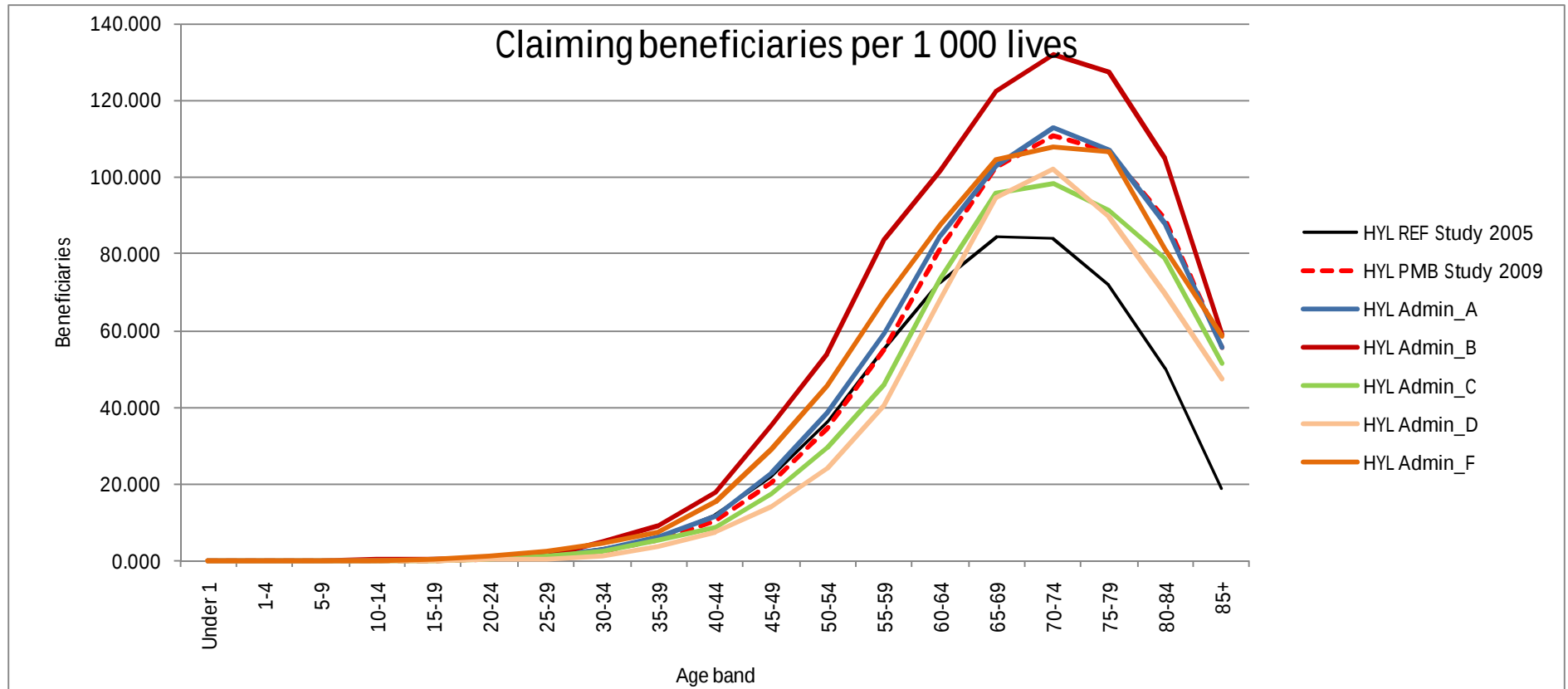
Glaucoma (GLC)



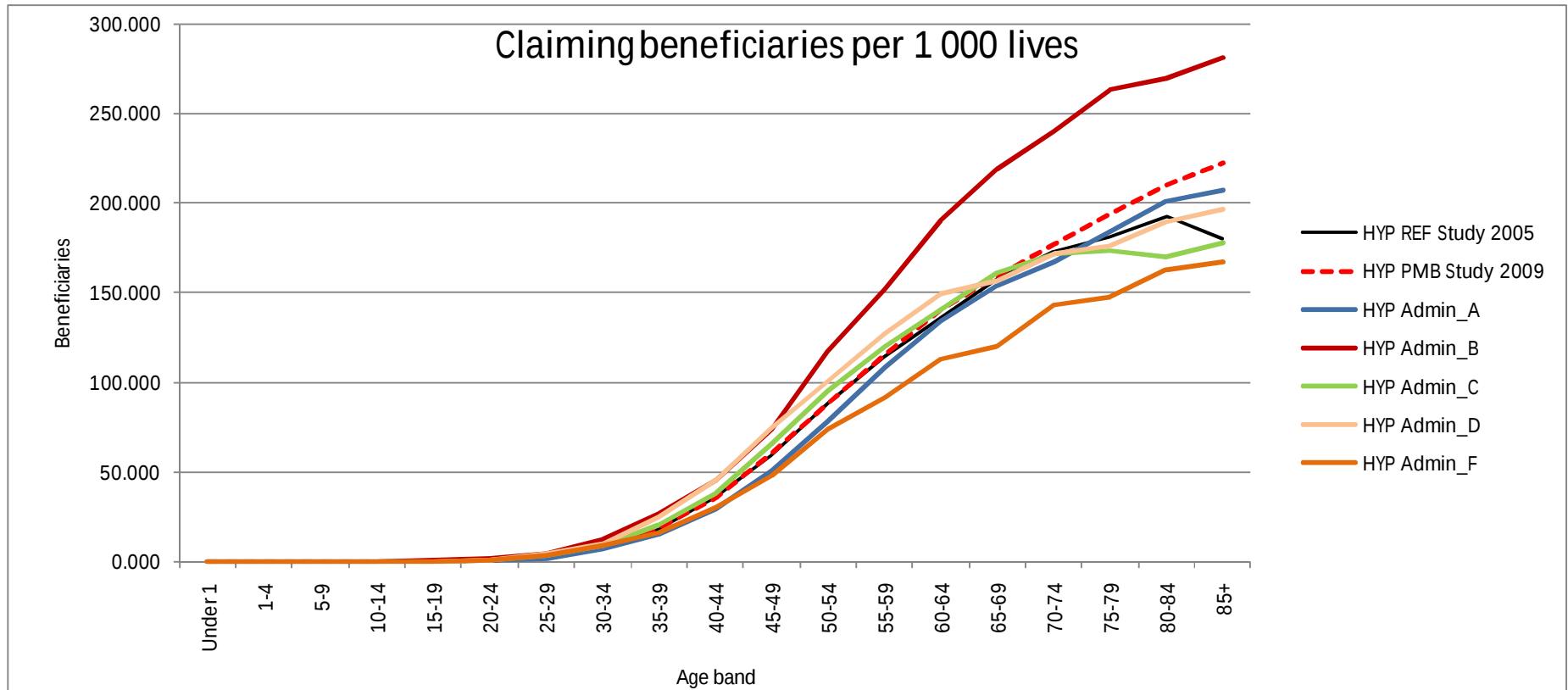
Haemophilia (HAE)



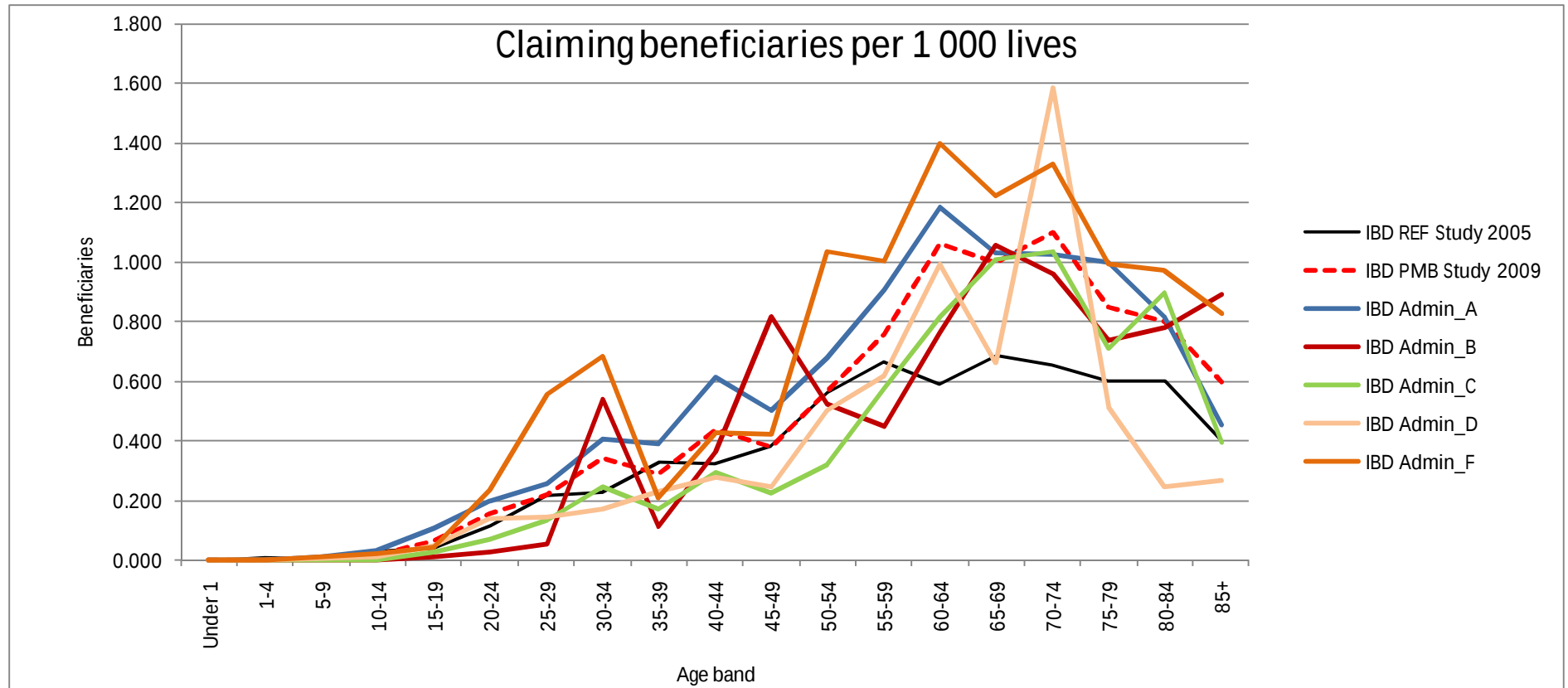
Hyperlipidaemia (HYL)



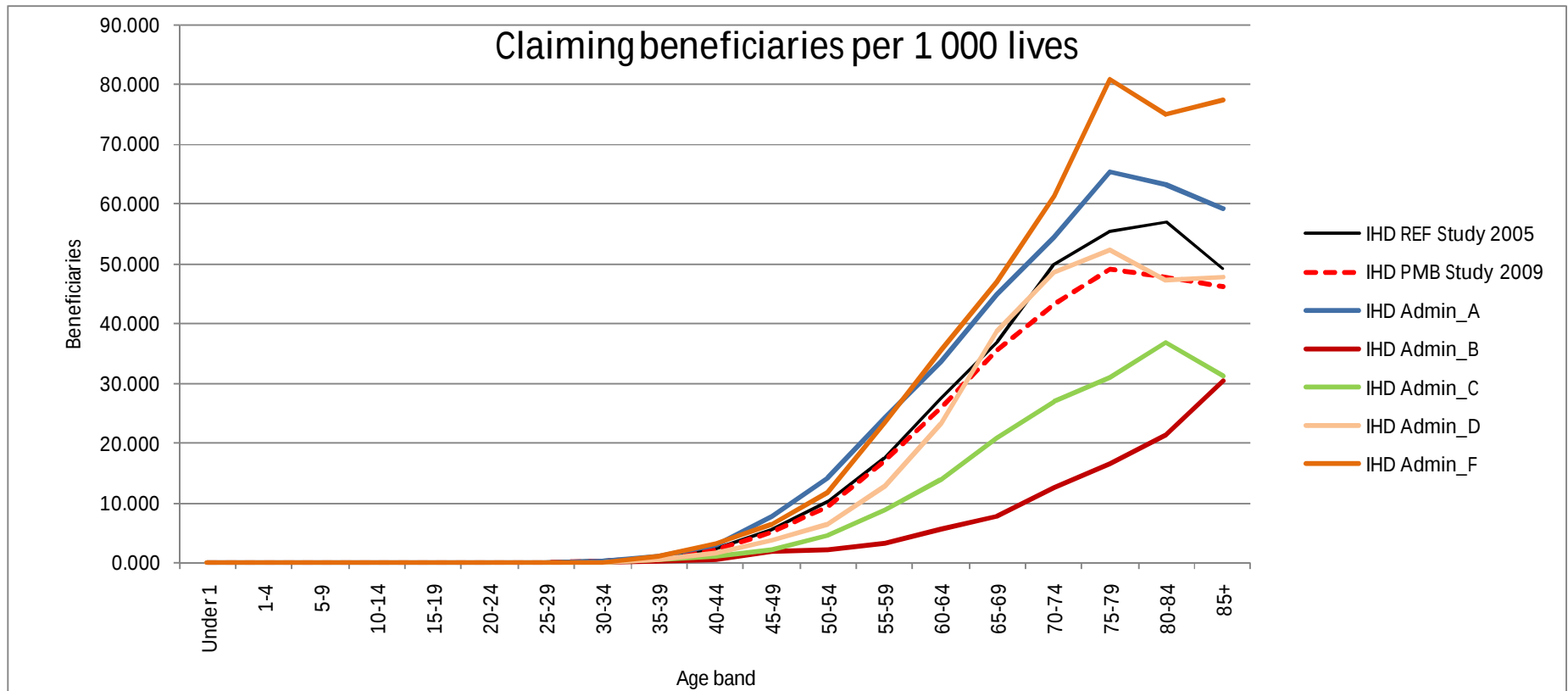
Hypertension (HYP)



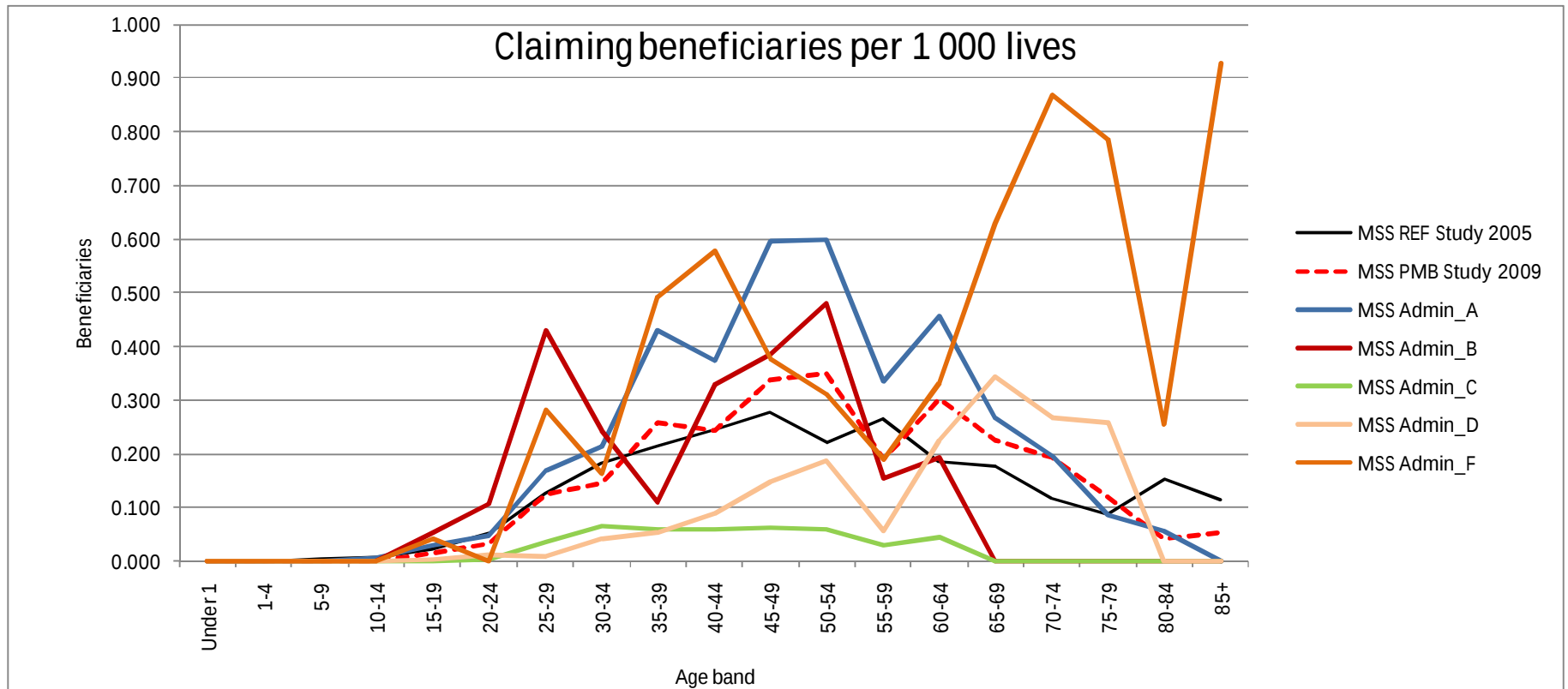
Ulcerative Colitis (IBD)



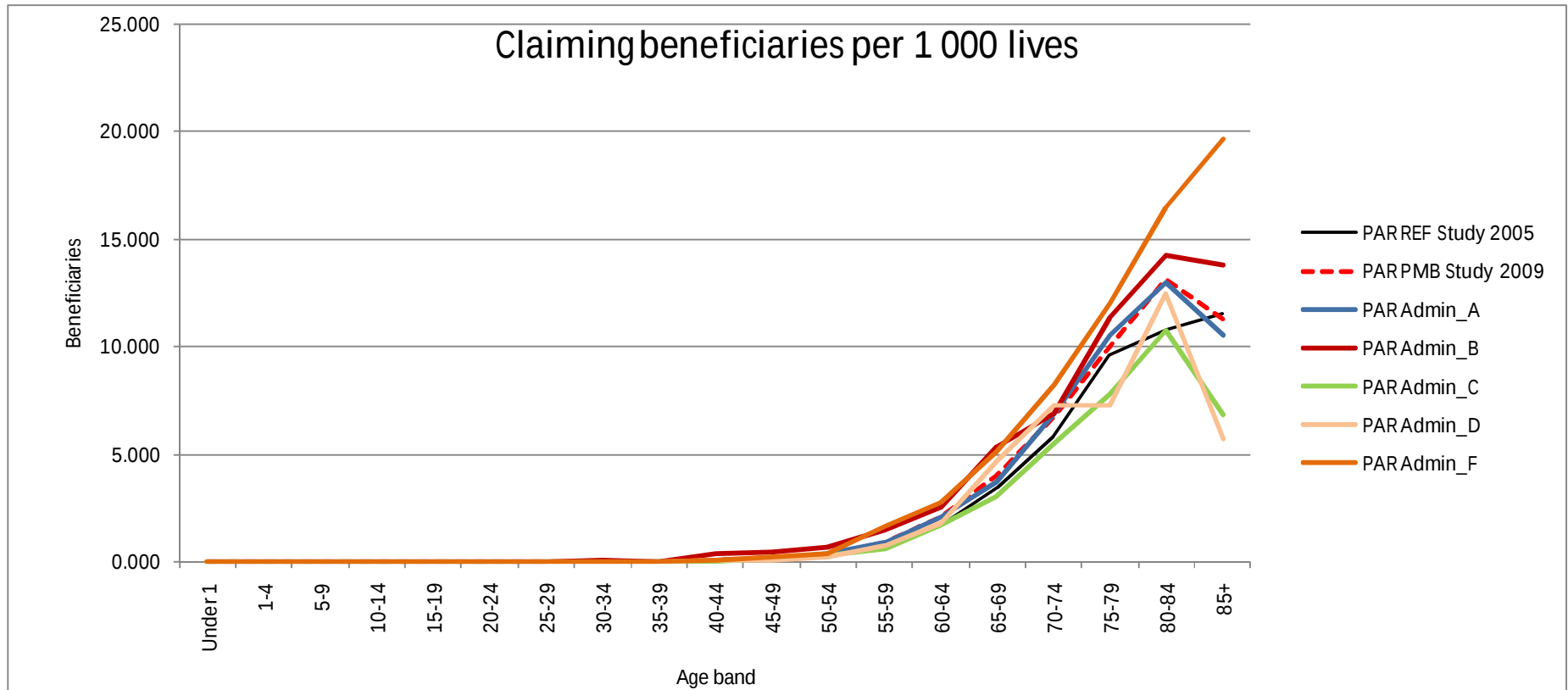
Coronary Artery Disease (IHD)



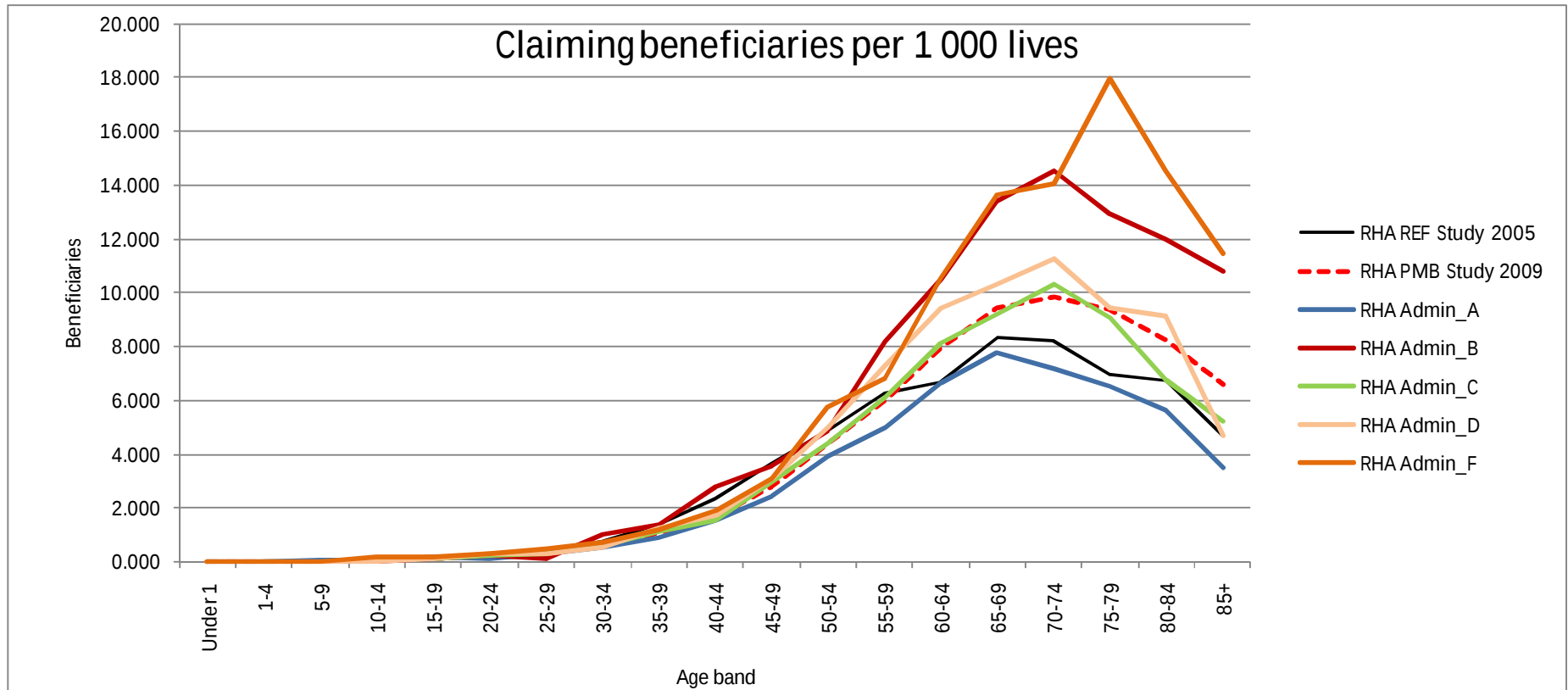
Multiple Sclerosis (MSS)



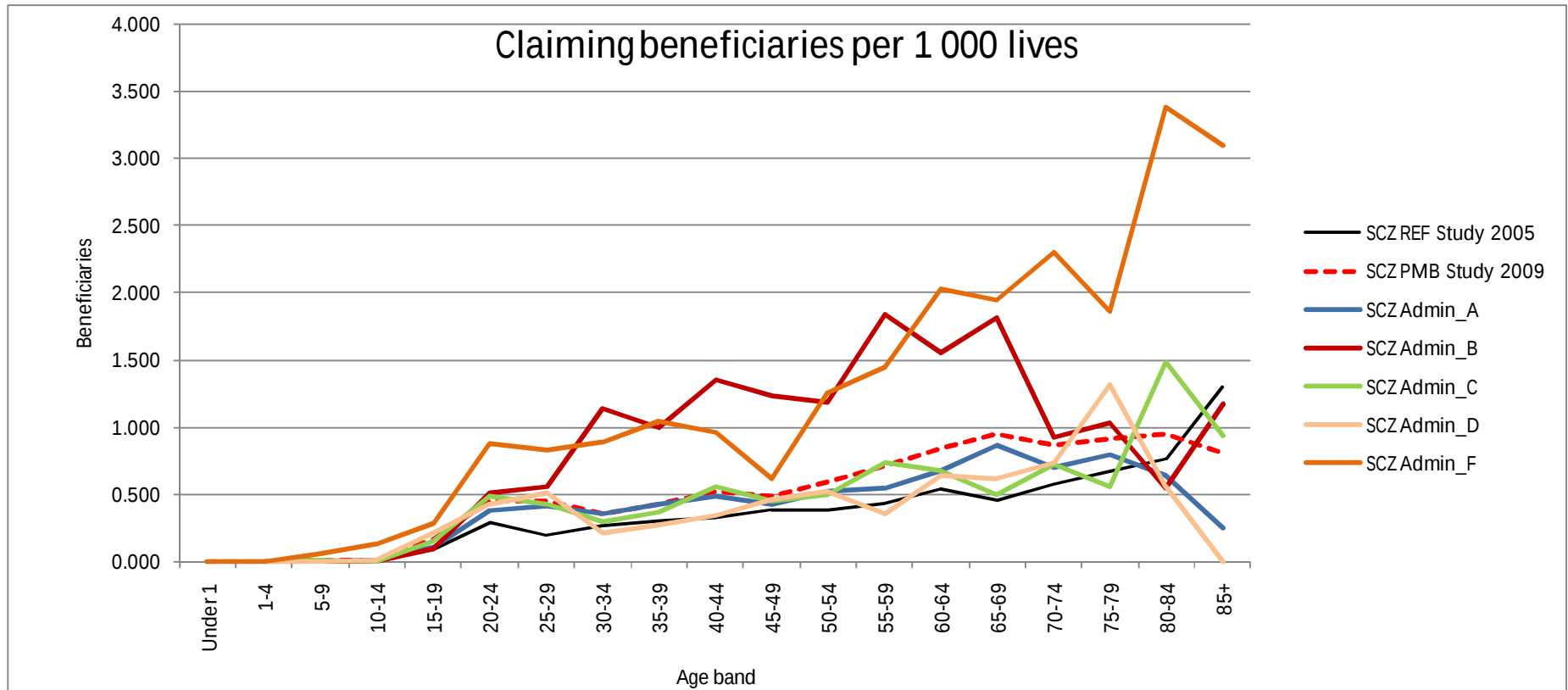
Parkinson's disease (PAR)



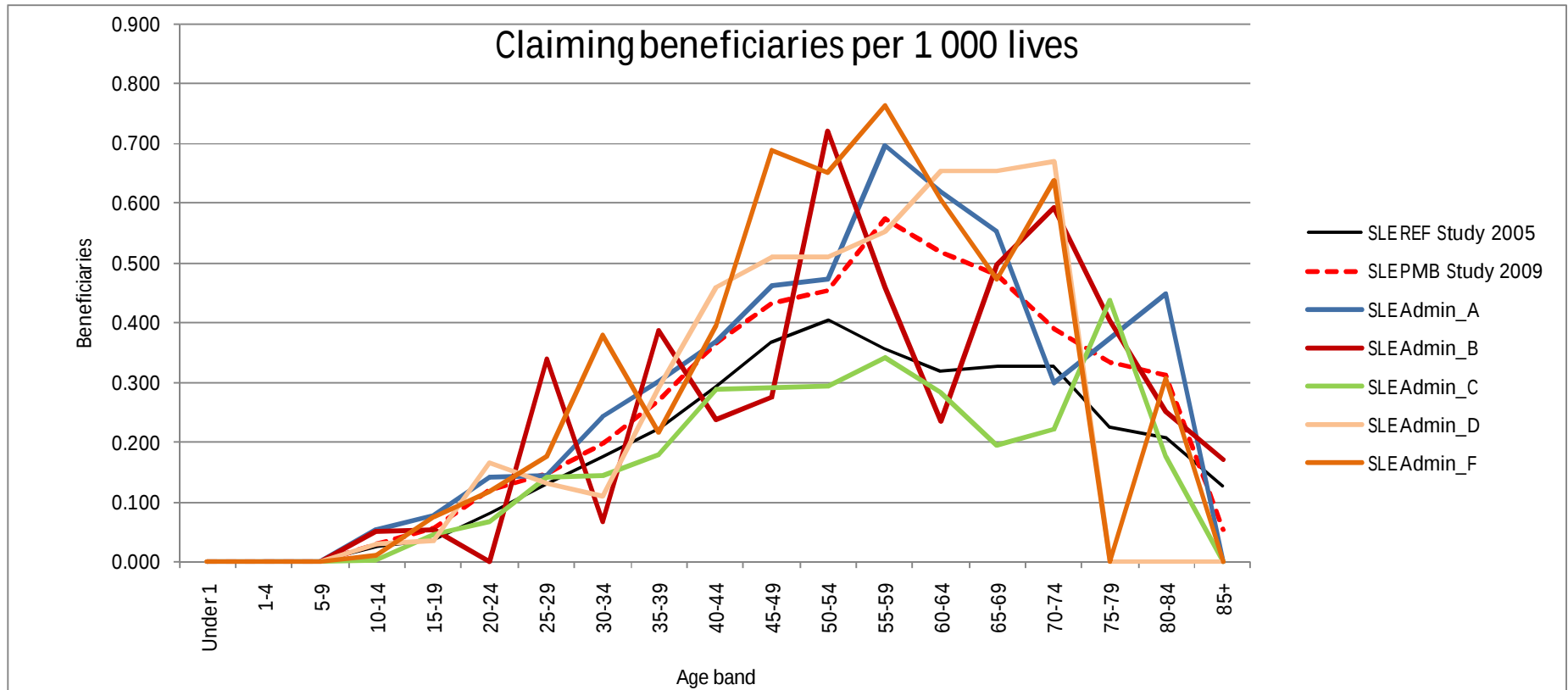
Rheumatoid Arthritis (RHA)



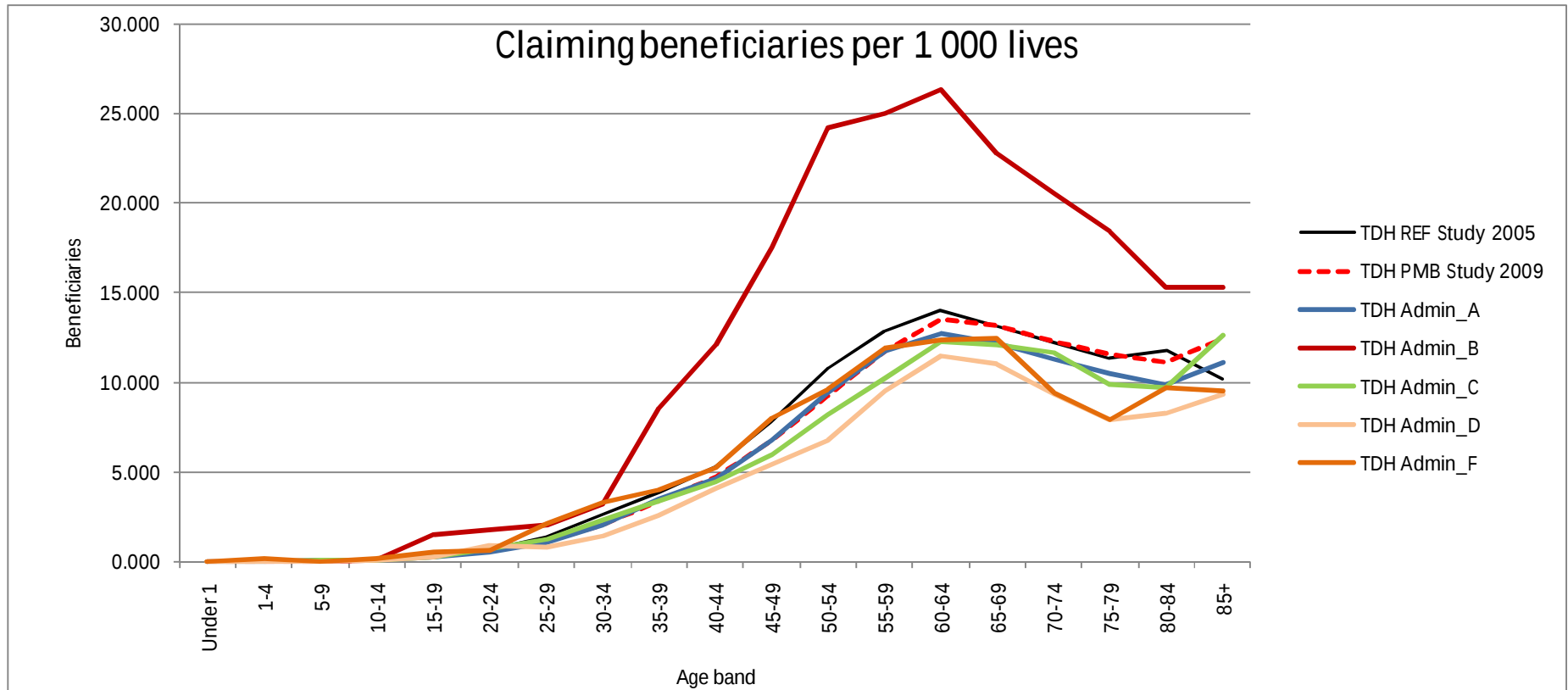
Schizophrenia (SCZ)



Systemic Lupus Erythematosus (SLE)

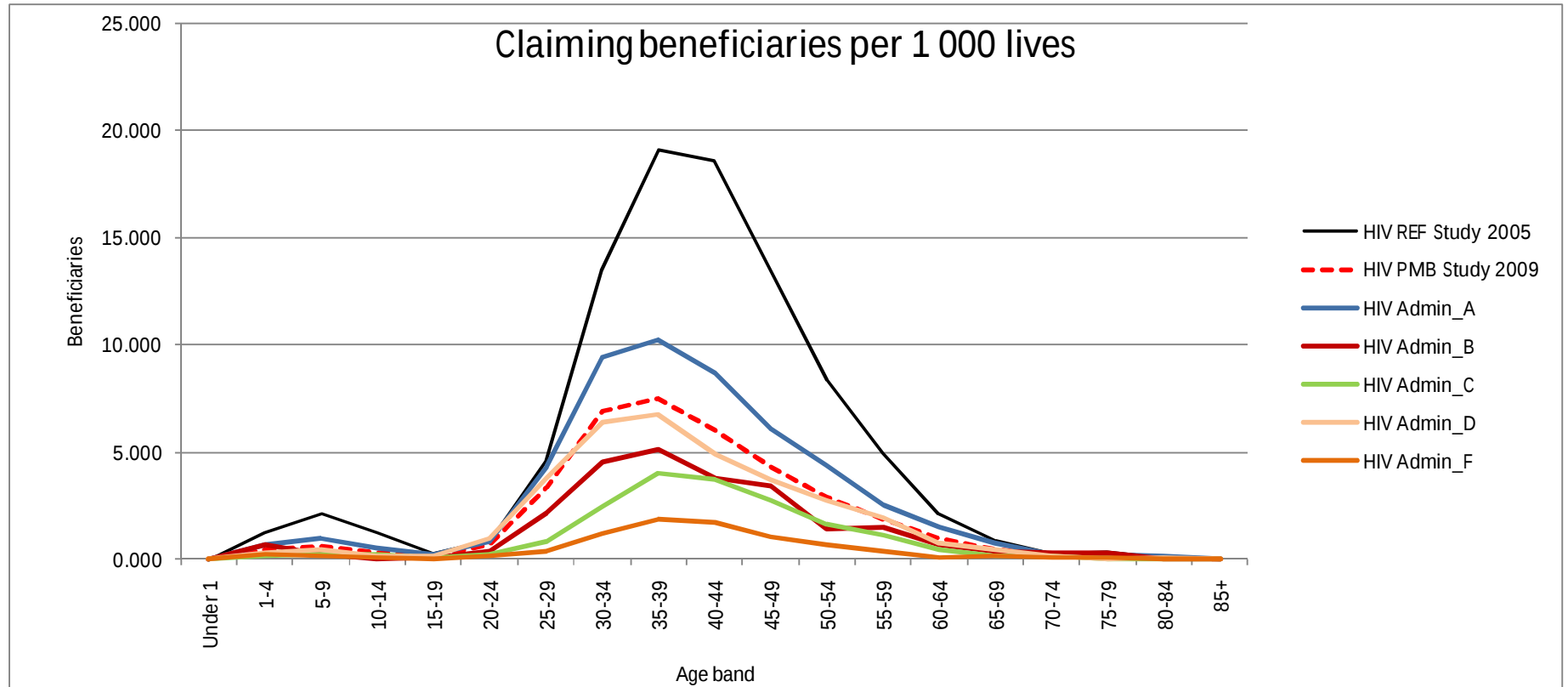


Hypothyroidism (TDH)



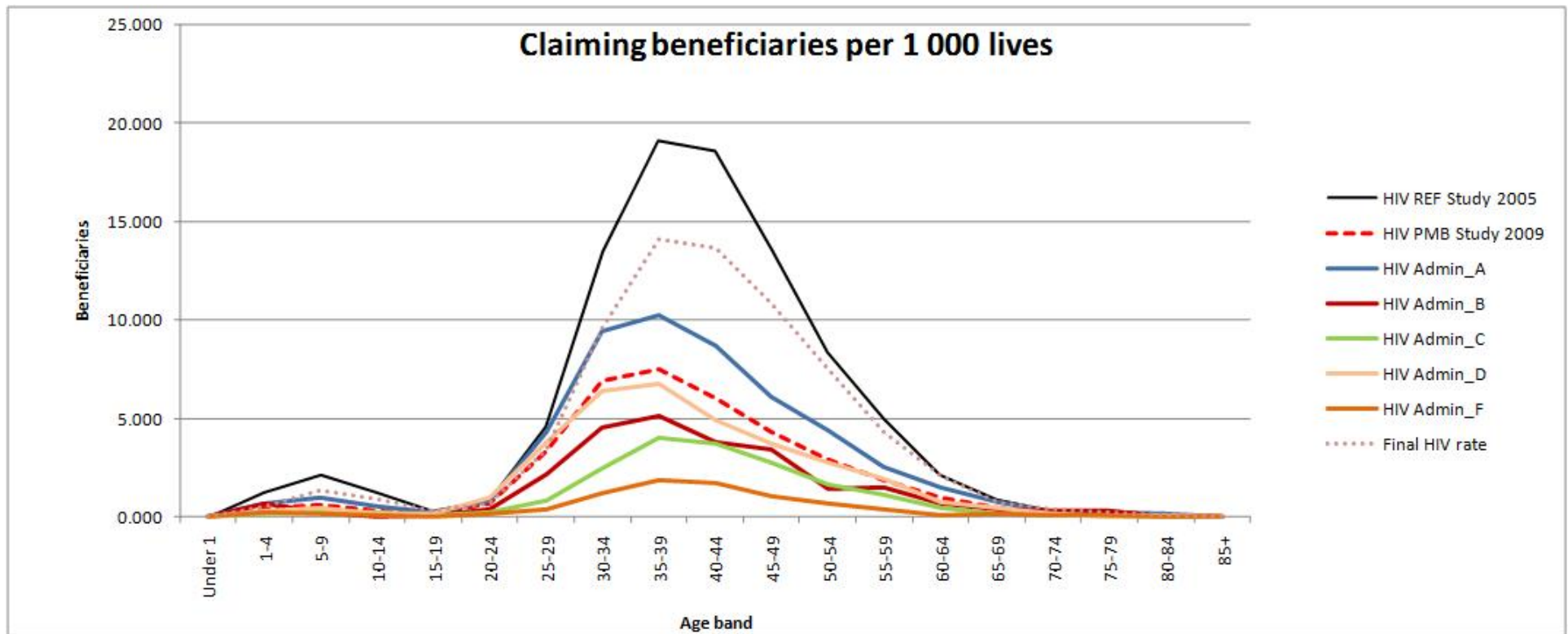
Note: Similar trend for Administrator B in REF submissions

HIV/Aids

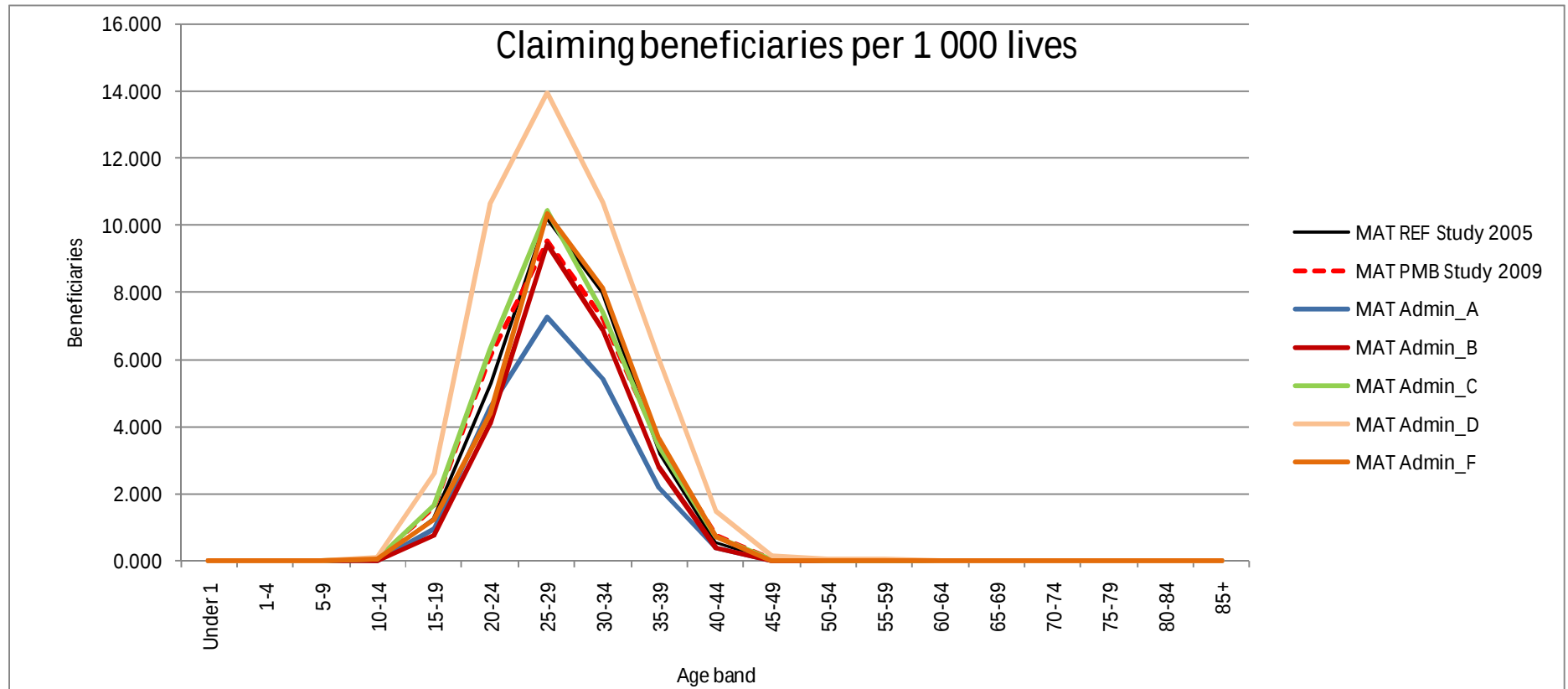


Questionable data for a number of administrators/schemes. Previous estimates were not from the Study 2005 data.

HIV/Aids (Adjusted)

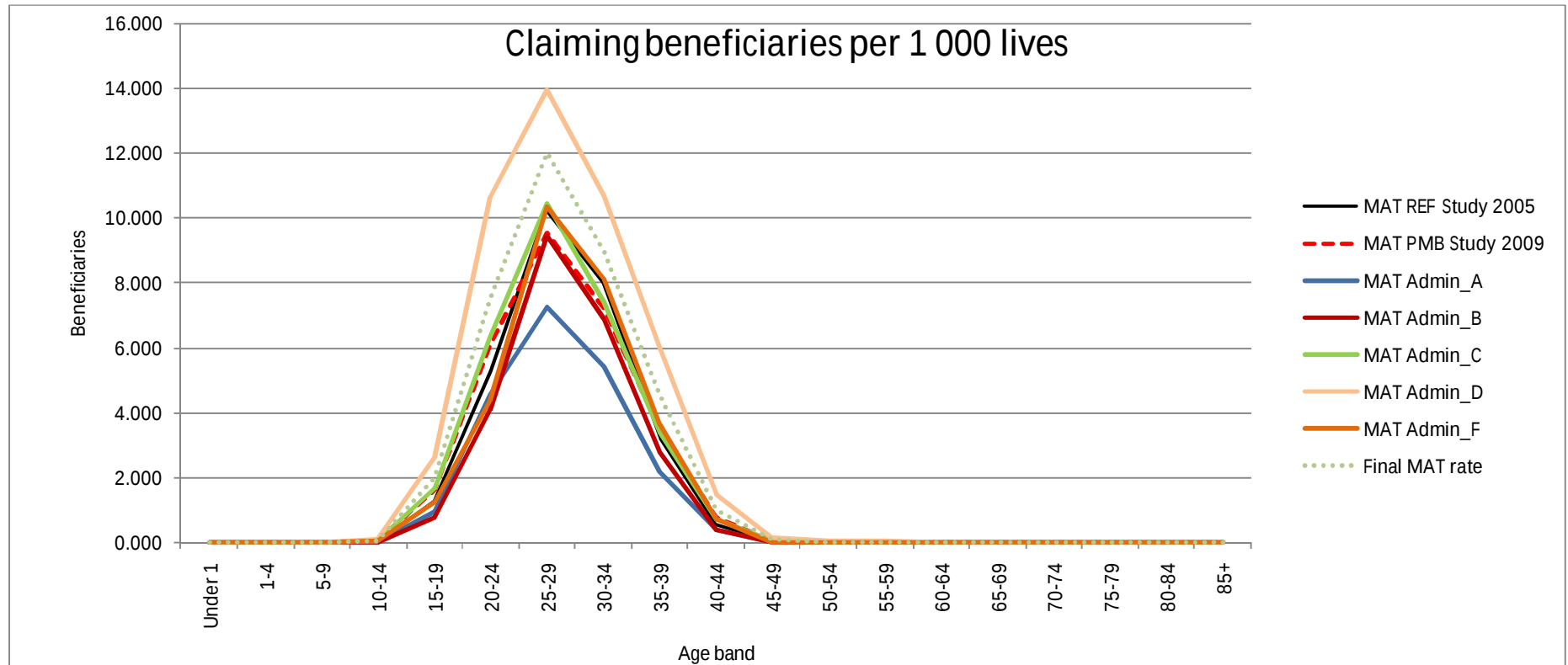


Maternity (MAT)

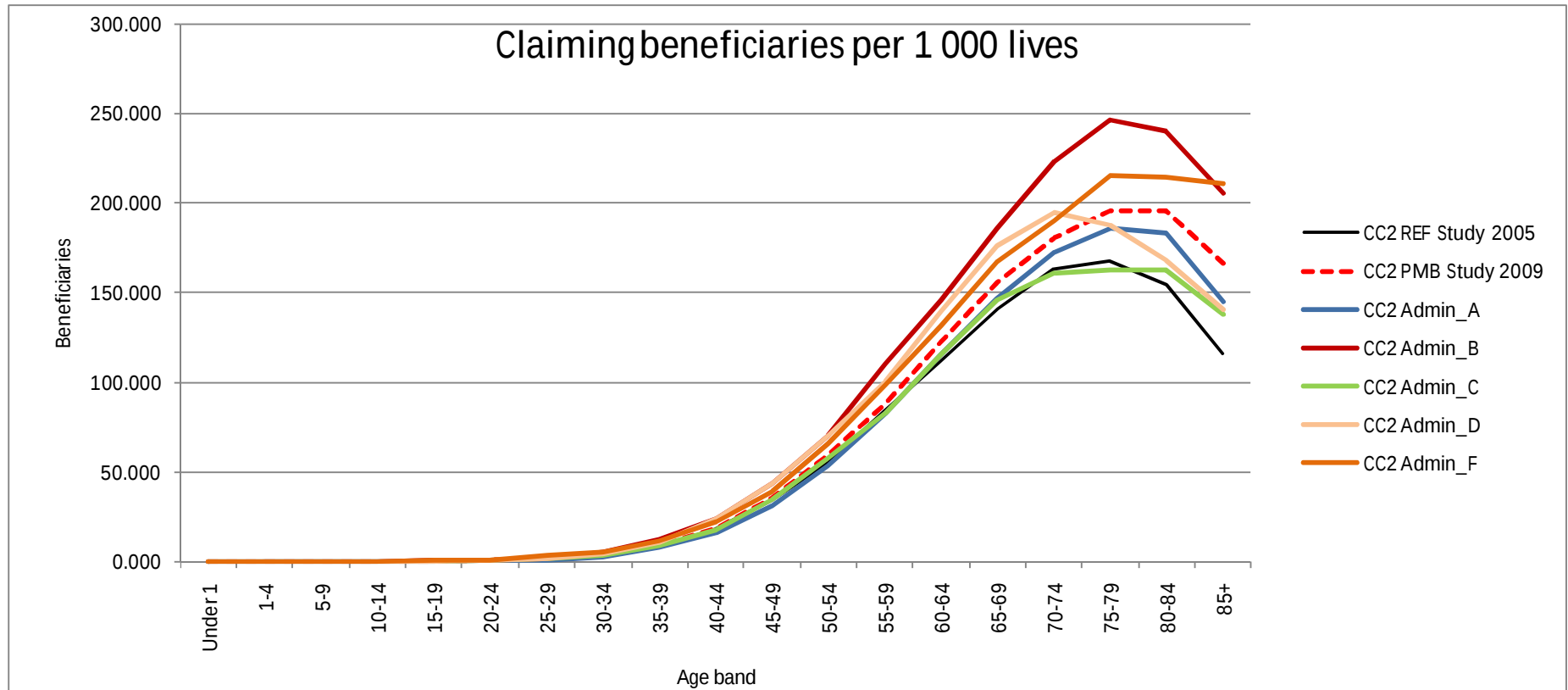


Rates too low for Administrator A

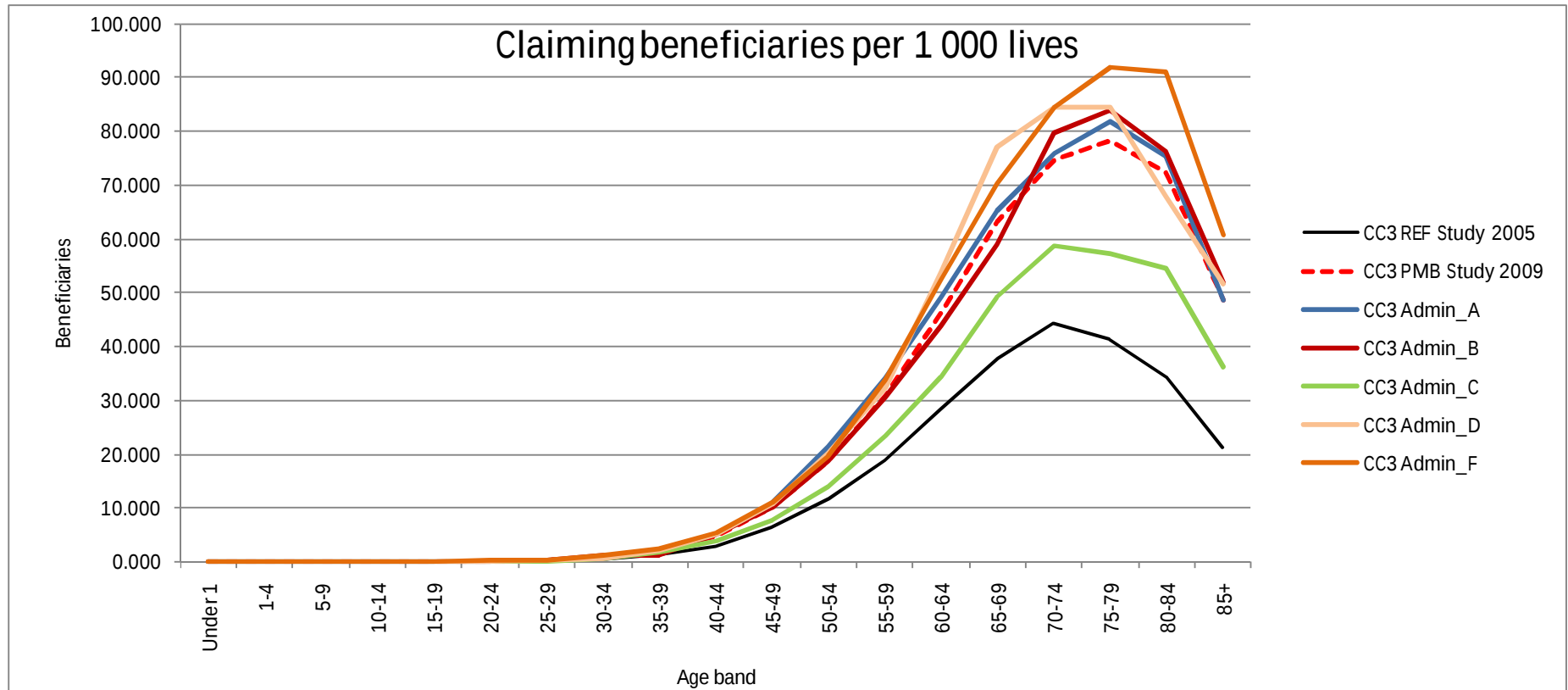
Maternity (Adjusted)



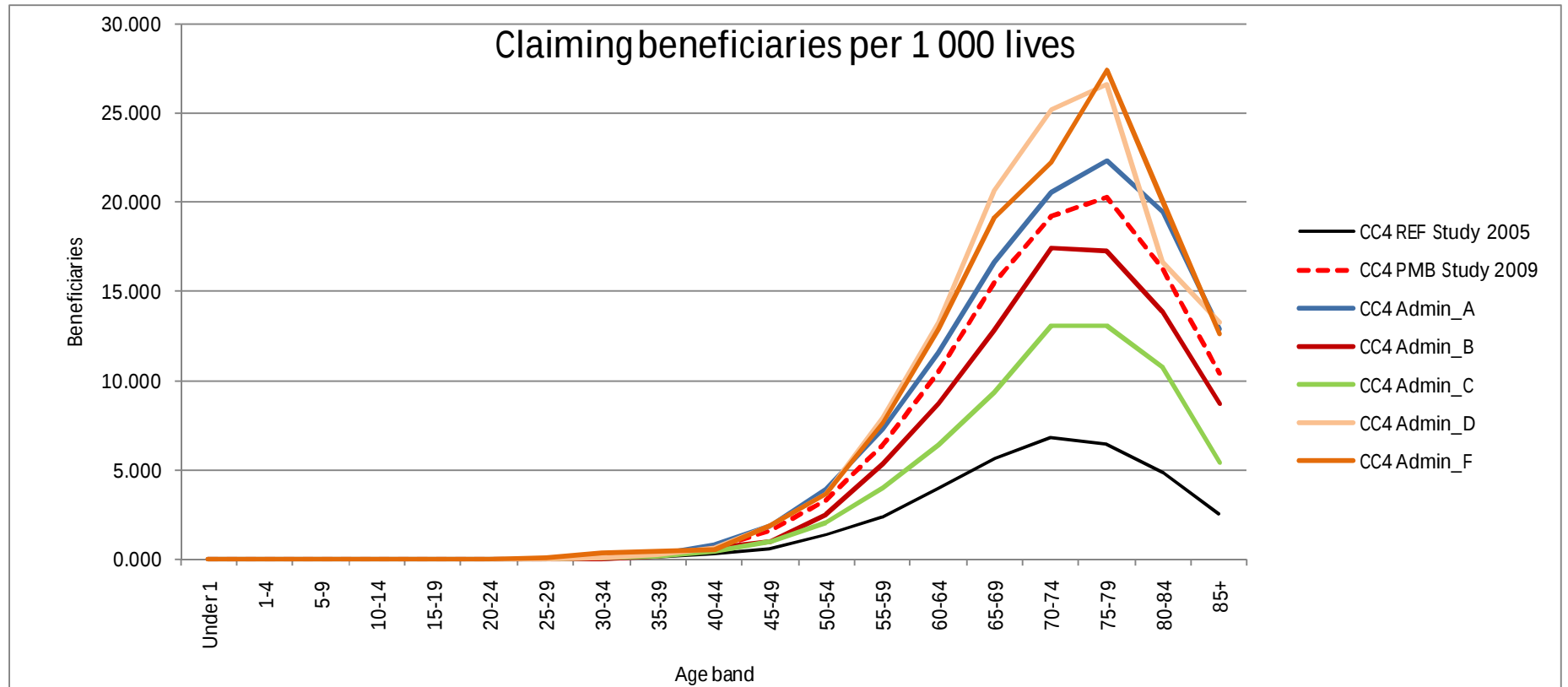
CC2



CC3



CC4



Expected count rates 2012

Based on PMB Study 2009, with adjustments to NON weights, accommodating changes to NON, HIV & MAT expected count rates

Scheme Risk Measurement Expected Count Rates																																			
SRM expected count rates 2012 (Estimated Industry community rate: R 357.81pbpm)										Based on PMB Study 2009, with adjustments HIV & MAT expected count rates																									
Age specific rate per 1,000 Beneficiaries in each Age Band																																			
Age Bands	No CDL Diseases										Chronic Disease List (CDL) Conditions														HIV/AIDS					Total	Multiple CDL Conditions				Maternity Monthly per 1,000 female
	NON	ADS	AST	BCE	BMD	CHF	CMV	COP	CRF	CSD	DBI	DM1	DM2	DYS	SPL	GLC	HAE	HVL	HYP	IBD	IMD	MSS	PAR	RVA	SCZ	SLE	TDH	HIV	CC2		CC3	CC4			
Column	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34		
Under 1	1 000.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
1-4	980.28	0.01	17.49	0.00	0.00	-	0.05	0.12	0.08	0.00	0.00	0.24	0.01	0.01	1.03	0.01	0.03	0.01	0.02	-	0.00	-	-	0.01	-	-	0.05	0.54	0.11	0.00	0.00	-	-		
5-9	977.17	0.02	18.31	0.00	0.12	-	0.05	0.09	0.08	0.00	0.00	0.62	0.01	0.02	1.95	0.01	0.03	0.02	0.04	0.01	0.00	-	0.00	0.03	0.01	-	0.06	1.34	0.21	0.00	-	-	-		
10-14	980.33	0.01	14.13	0.01	0.35	-	0.04	0.07	0.09	0.01	0.01	1.21	0.06	0.01	2.29	0.02	0.03	0.10	0.08	0.02	0.00	0.00	-	0.07	0.02	0.03	0.11	0.90	0.27	0.00	0.00	0.07	-		
15-19	981.96	0.01	10.66	0.01	1.18	-	0.04	0.05	0.15	0.04	0.02	1.41	0.13	0.02	2.68	0.03	0.02	0.22	0.22	0.06	0.01	0.02	-	0.17	0.16	0.06	0.36	0.31	0.42	0.02	0.00	1.98	-		
20-24	979.54	0.02	7.77	0.01	2.48	-	0.10	0.04	0.26	0.15	0.02	1.93	0.33	0.04	3.23	0.08	0.03	0.62	0.93	0.15	0.03	0.03	0.01	0.21	0.45	0.12	0.71	0.68	0.86	0.10	0.01	7.50	-		
25-29	974.09	0.02	6.94	0.01	2.60	-	0.12	0.08	0.37	0.16	0.02	2.08	0.84	0.07	2.50	0.09	0.02	1.16	2.92	0.22	0.07	0.13	-	0.32	0.46	0.15	1.15	3.44	1.62	0.23	0.03	11.99	-		
30-34	954.81	0.02	8.58	0.01	3.11	-	0.26	0.11	0.49	0.20	0.03	2.28	2.66	0.07	2.64	0.18	0.03	2.64	8.39	0.34	0.20	0.15	0.02	0.58	0.36	0.20	2.08	9.56	3.81	0.76	0.08	8.97	-		
35-39	925.54	0.04	10.80	0.01	3.66	-	0.60	0.18	0.64	0.22	0.03	3.08	6.65	0.15	3.01	0.26	0.01	5.68	18.85	0.29	0.78	0.26	0.01	1.07	0.42	0.27	3.43	14.08	9.14	2.11	0.27	4.57	-		
40-44	889.49	0.06	12.12	0.02	3.61	-	1.15	0.30	0.73	0.24	0.04	3.95	13.99	0.26	3.22	0.47	0.01	10.45	36.03	0.44	2.18	0.24	0.07	1.65	0.52	0.37	4.73	13.65	18.88	4.74	0.67	1.01	-		
45-49	836.26	0.07	13.96	0.02	3.43	-	2.19	0.68	0.99	0.26	0.04	5.27	23.33	0.72	3.89	0.80	0.00	20.45	60.34	0.38	5.14	0.34	0.17	2.81	0.49	0.43	6.73	10.83	35.95	10.01	1.64	0.08	-		
50-54	769.16	0.06	16.15	0.04	3.54	-	4.20	1.41	1.16	0.30	0.02	6.67	34.19	1.32	4.41	1.33	0.01	34.66	88.49	0.56	9.40	0.35	0.34	4.42	0.60	0.45	9.31	7.46	59.57	18.85	3.29	0.03	-		
55-59	693.40	0.10	19.10	0.08	3.19	-	7.02	3.03	1.36	0.39	0.05	7.70	41.57	2.80	4.92	2.10	0.01	55.10	115.67	0.76	17.22	0.19	0.88	5.97	0.71	0.57	11.76	4.34	88.46	30.79	6.46	0.02	-		
60-64	609.22	0.14	22.39	0.14	3.01	-	11.04	6.50	1.74	0.51	0.04	7.49	46.71	5.81	5.76	3.28	0.02	81.56	140.47	1.06	25.81	0.30	2.05	7.98	0.85	0.52	13.52	2.08	122.89	46.42	10.53	-	-		
65-69	532.23	0.22	25.26	0.19	2.89	-	17.45	11.38	1.99	0.67	0.02	8.07	50.30	10.41	6.33	4.61	0.00	102.72	159.65	1.00	35.58	0.22	4.00	9.43	0.95	0.48	13.19	0.77	155.80	63.29	15.47	-	-		
70-74	472.25	0.22	26.83	0.25	2.23	-	29.24	15.33	2.04	0.57	0.00	8.19	50.04	16.80	6.90	6.43	-	111.04	176.62	1.10	43.13	0.19	6.78	9.82	0.87	0.39	12.31	0.42	180.95	74.68	19.24	-	-		
75-79	436.72	0.20	25.45	0.11	1.89	-	42.65	18.56	2.01	0.38	0.04	7.18	43.92	23.26	7.43	7.18	-	106.57	193.97	0.85	49.09	0.12	10.01	9.37	0.92	0.33	11.55	0.23	195.73	78.37	20.25	-	-		
80-84	426.05	0.17	23.11	0.23	1.37	-	62.55	17.21	1.70	0.48	-	5.36	35.83	28.69	7.38	8.66	-	89.26	209.57	0.80	47.65	0.04	13.13	8.27	0.95	0.31	11.13	0.07	195.57	72.42	16.33	-	-		
85+	453.86	0.14	17.41	0.13	0.77	-	84.06	10.81	1.17	0.10	0.05	3.86	25.82	27.10	6.14	10.11	0.02	55.77	222.69	0.60	46.13	0.05	11.24	6.59	0.81	0.06	12.50	-	166.68	48.51	10.38	-	-		
Overall rate	888.71	0.05	13.40	0.03	2.17	-	3.29	1.41	0.60	0.18	0.02	3.13	11.86	1.53	3.11	0.81	0.02	16.43	35.56	0.31	5.31	0.14	0.58	1.88	0.37	0.22	3.77	5.13	27.39	9.52	2.06	2.89	-		

Show in Excel

Scheme Risk Measurement Weighting Table for 2012

Scheme Risk Measurement Weighting Table																																												
SRM weights 2012										Inflation: 2009 to 2010			10.80%		Inflation: 2011 to 2012		9.00%		Based on PMB Study 2009, with adjustments to NON weights, accommodating changes to NON, HIV & MAT expected count rates																									
Rand per beneficiary										Inflation: 2010 to 2011			9.00%																											Multiple CDL Conditions				Maternity (Monthly per 1,000 Female MAT)
Age Bands		No CDL Diseases		Chronic Disease List (CDL) Conditions																													HIV / AIDS		Blank		2.00		3.00		4 or more		MAT	
NON		ADS	AST	BCE	BMD	CHF	CMY	COP	CRF	CSD	DBI	DM1L	DM2	DVS	EPL	GLC	HAE	HL	HYL	HYP	IBD	IID	ISS	MS	PAR	RHA	SCZ	SE	SL	TCH	HIV	CC2	CC3	CC4	CC4	MAT								
Column	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40					
Under 1	787.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-					
1-4	108.12	1 214.51	695.60	2 342.97	2 234.78	-	2 796.69	3 302.90	19 710.54	2 668.89	2 448.92	2 411.98	673.59	1 876.11	1 525.54	430.20	26 579.59	441.36	455.84	1 575.84	1 389.70	10 537.16	2 325.43	1 074.64	2 090.75	1 747.03	262.87	1 423.54	-	-	-	-	-	-	-	-	-	-						
5-9	56.58	1 160.61	641.70	2 289.07	2 180.88	-	2 742.79	3 249.00	19 656.64	2 614.99	2 395.02	2 358.08	619.69	1 822.21	1 471.64	376.30	26 525.69	387.46	401.95	1 521.94	1 335.80	10 483.26	2 271.53	1 020.74	2 036.85	1 693.13	208.97	1 369.64	-	-	-	-	-	-	-	-	-	-						
10-14	62.14	1 166.42	647.52	2 294.88	2 186.69	-	2 748.61	3 254.82	19 662.45	2 620.80	2 400.84	2 363.89	625.50	1 828.03	1 477.46	382.11	26 531.51	393.27	407.76	1 527.76	1 341.62	10 489.08	2 277.34	1 026.55	2 042.67	1 698.94	214.79	1 375.45	-	-	-	-	-	-	-	-	-	-						
15-19	94.96	1 200.74	681.84	2 329.20	2 221.02	-	2 782.93	3 289.14	19 696.78	2 655.12	2 435.16	2 398.21	659.82	1 862.35	1 511.78	416.44	26 565.83	427.59	442.08	1 562.08	1 375.94	10 523.40	2 311.67	1 060.88	2 076.99	1 733.26	249.11	1 409.78	-	-	-	-	-	-	-	-	-	-						
20-24	141.14	1 249.04	730.14	2 377.50	2 269.32	-	2 831.23	3 337.44	19 745.08	2 703.42	2 483.46	2 446.52	708.12	1 910.65	1 560.08	464.74	26 614.13	475.89	490.38	1 610.38	1 424.24	10 571.70	2 359.97	1 109.18	2 125.29	1 781.56	297.41	1 458.08	-	-	-	-	-	-	-	-	-	-						
25-29	190.54	1 300.71	781.80	2 429.17	2 320.98	-	2 882.89	3 389.10	19 796.74	2 755.09	2 535.12	2 498.18	759.79	1 962.31	1 611.74	516.40	26 665.79	527.56	542.05	1 662.04	1 475.90	10 623.36	2 411.63	1 160.84	2 176.95	1 833.23	349.07	1 509.74	-	-	-	-	-	-	-	-	-	-						
30-34	227.43	1 339.28	820.38	2 467.74	2 359.56	-	2 921.47	3 427.68	19 835.32	2 793.66	2 573.70	2 536.76	798.36	2 000.89	1 650.32	554.98	26 704.37	566.13	580.62	1 700.62	1 514.48	10 661.94	2 450.21	1 199.42	2 215.53	1 871.80	387.65	1 548.32	-	-	-	-	-	-	-	-	-	-						
35-39	270.80	1 384.65	865.74	2 513.11	2 404.92	-	2 966.83	3 473.04	19 880.68	2 839.03	2 619.06	2 582.12	843.73	2 046.25	1 695.68	600.34	26 749.73	611.50	625.99	1 745.98	1 559.84	10 707.30	2 495.57	1 244.78	2 260.89	1 917.17	433.01	1 593.68	-	-	-	-	-	-	-	-	-	-						
40-44	301.02	1 416.25	897.34	2 544.71	2 436.52	-	2 998.44	3 504.65	19 912.28	2 870.63	2 650.67	2 613.72	875.33	2 077.85	1 727.29	631.94	26 781.33	643.10	657.59	1 777.59	1 591.45	10 738.90	2 527.17	1 276.38	2 292.49	1 948.77	464.62	1 625.28	-	-	-	-	-	-	-	-	-	-						
45-49	352.24	1 469.82	950.91	2 598.28	2 490.09	-	3 052.01	3 558.22	19 965.85	2 924.20	2 704.24	2 667.29	928.90	2 131.43	1 780.86	685.51	26 834.91	696.67	711.16	1 831.16	1 645.02	10 792.48	2 580.74	1 329.95	2 346.07	2 002.34	518.19	1 678.85	-	-	-	-	-	-	-	-	-	-						
50-54	428.46	1 549.53	1 030.63	2 677.99	2 569.80	-	3 131.72	3 637.93	20 045.57	3 003.91	2 783.95	2 747.00	1 008.61	2 211.14	1 860.57	765.22	26 914.62	776.38	790.87	1 910.87	1 724.73	10 872.19	2 660.45	1 409.66	2 425.78	2 082.05	597.90	1 758.57	-	-	-	-	-	-	-	-	-	-						
55-59	565.40	1 692.75	1 173.84	2 821.21	2 713.02	-	3 274.93	3 781.14	20 188.78	3 147.13	2 927.16	2 890.22	1 151.83	2 354.35	2 003.78	908.44	27 057.83	919.60	934.08	2 054.08	1 867.94	11 015.40	2 803.67	1 552.88	2 568.99	2 225.27	741.11	1 901.78	-	-	-	-	-	-	-	-	-	-						
60-64	735.53	1 870.68	1 351.77	2 999.14	2 890.95	-	3 452.86	3 958.07	20 366.71	3 325.06	3 105.09	3 068.15	1 329.76	2 532.28	2 181.71	1 086.37	27 235.76	1 097.53	1 112.01	2 232.01	2 045.87	11 193.33	2 981.60	1 730.81	2 746.92	2 403.20	919.04	2 079.71	-	-	-	-	-	-	-	-	-	-						
65-69	1 011.25	2 159.03	1 640.12	3 287.49	3 179.30	-	3 741.21	4 247.42	20 655.06	3 613.41	3 393.44	3 356.50	1 618.11	2 820.63	2 470.06	1 374.72	27 524.11	1 395.88	1 400.37	2 520.36	2 334.22	11 481.68	3 269.95	2 019.16	3 035.27	2 691.55	1 207.39	2 368.06	-	-	-	-	-	-	-	-	-	-						
70-74	1 209.82	2 366.70	1 847.79	3 495.16	3 386.97	-	3 948.88	4 456.09	20 862.73	3 821.08	3 601.11	3 564.17	1 825.78	3 028.30	2 677.73	1 582.39	27 731.78	1 593.55	1 608.04	2 728.03	2 541.89	11 689.35	3 477.62	2 226.83	3 242.94	2 899.22	1 415.06	2 575.73	-	-	-	-	-	-	-	-	-	-						
75-79	1 313.56	2 475.20	1 956.29	3 603.66	3 495.47	-	4 057.39	4 563.60	20 971.23	3 929.58	3 709.62	3 672.67	1 934.28	3 136.80	2 786.24	1 690.89	27 840.28	1 702.05	1 716.54	2 836.54	2 650.40	11 797.85	3 586.12	2 335.33	3 351.44	3 007.72	1 523.57	2 684.23	-	-	-	-	-	-	-	-	-	-						
80-84	1 435.58	2 602.81	2 063.91	3 731.27	3 623.08	-	4 185.00	4 691.21	21 098.84	4 057.19	3 837.23	3 800.28	2 061.89	3 264.42	2 913.85	1 818.50	27 967.90	1 829.66	1 844.15	2 964.15	2 778.01	11 925.47	3 713.73	2 462.94	3 479.06	3 135.33	1 651.18	2 811.84	-	-	-	-	-	-	-	-	-	-						
85+	1 388.83	2 553.92	2 035.01	3 682.38	3 574.19	-	4 136.10	4 642.31	21 049.95	4 008.30	3 788.33	3 751.39	2 013.00	3 215.52	2 864.95	1 769.61	27 919.00	1 780.77	1 795.26	2 915.25	2 729.11	11 876.57	3 664.84	2 414.05	3 430.16	3 086.44	1 602.28	2 762.95	-	-	-	-	-	-	-	-	-	-						

(Show in Excel)

Adjust for population age profile: R357,81 versus R361 from Study 2009 data

Inflation adjustment

2009 - 2010: 10.8% PMB Cost pbpm: R396,45

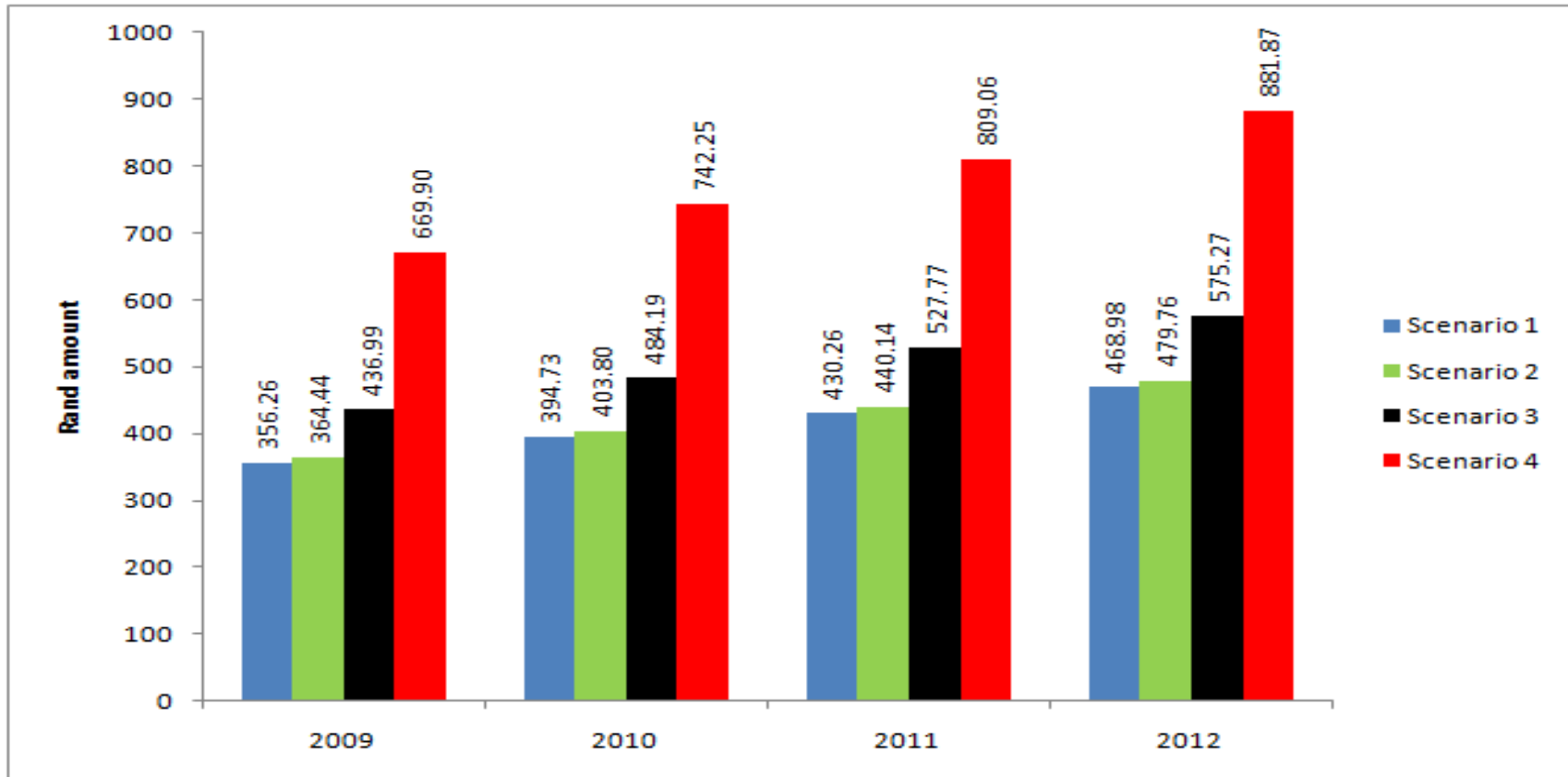
2010 - 2011: 9% PMB Cost pbpm: R432,13

2011 - 2012: 9% PMB Cost pbpm: R471,02

Comments

- ✓ A range of cost estimates for the PMB package was calculated.
- ✓ The implementation of the *PMB Code of Conduct Guideline* can have an influence on the PMB cost estimates based on the data for 2009. CMS need to re-cost the package once there is evidence that the industry have adopted the *Code of Conduct Guideline*.
- ✓ The PMB cost estimate based on the REF formula (R361,00 for 2009) is an estimate closer to the lower limit of the range of estimates for the PMB package.
- ✓ The Discovery Episode grouper's classification is a more holistic approach to identify and treat PMB's, but it is also possible to overestimate the PMB package if one would use the Episode grouper. Not all the claims within a DEG are always PMB's.
- ✓ Affordability needs to be taken in consideration in any attempt of re-defining the PMB package including the benefit definition project.
- ✓ CMS must develop a mechanism to measure the trend of PMB claims over time.

Comments on the PMB Cost Estimates

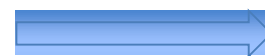


Estimates based on data for 12 months without the data for Administrators E and F

Inflation adjustments: 2009 – 2010: 10,8%

2010 – 2011: 9%?

2011 – 2012: 9%?



Input from RETAP

Underestimate of 18,5% for 2009 (REF weighting table 2009 versus Study data 2005)

Thank you

- ✓ Participating schemes and administrators
- ✓ Shoden Data Systems
- ✓ Pieter Grobler

The way forward