
동의보감

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Outline

- ❖ Overview
- ❖ Unit Conversion
- ❖ Logic [Filter & Clustering]
- ❖ Visualizations - Shiny

Unit Conversion

Nutrient	Current DV Unit*	Current Conversion*	New DV Unit (required by 2019-2020)	New Conversion (required by 2019-2020)
Vitamin A	IU	1 IU = 0.3 mcg retinol 1 IU = 0.6 mcg beta-carotene	mcg RAE	1 mcg RAE = 1 mcg retinol 1 mcg RAE = 2 mcg supplemental beta-carotene 1 mcg RAE = 12 mcg beta-carotene 1 mcg RAE = 24 mcg alpha-carotene 1 mcg RAE = 24 mcg beta-cryptoxanthin
Vitamin E	IU	1 IU = 0.67 mg for <i>d</i> -alpha-tocopherol (natural) 1 IU = 0.9 mg for <i>dl</i> -alpha-tocopherol (synthetic)	mg alpha-tocopherol	1 mg vitamin E (as alpha-tocopherol) label claim = 1 mg of natural α -tocopherol 1 mg vitamin E (as alpha-tocopherol) label claim = 2 mg of synthetic α -tocopherol
Vitamin D	IU	1 IU = 0.025 mcg	mcg	1 IU = 0.025 mcg
Folate	mcg		mcg DFE	1 mcg DFE = 1 mcg folates 1 mcg DFE = 0.6 mcg folic acid
Niacin	mg		mg NE	1 mg NE = 1 mg niacinamide 1 mg NE = 1 mg inositol hexanicotinate 1 mg NE = 1 mg niacin 1 mg NE = 60 mg tryptophan

IU = International Unit

RAE = Retinol Activity Equivalents

DFE = Dietary Folate Equivalents

NE = Niacin Equivalents

Source: <https://dsid.od.nih.gov/Conversions.php>

Literature Review: United States

Dietary Reference Intakes (DRIs): Recommended Dietary Allowances and Adequate Intakes, Vitamins

Life Stage Group	Vitamin A (µg/d) ^a	Vitamin C (mg/d)	Vitamin D (µg/d) ^{b, c}	Vitamin E (mg/d) ^d	Vitamin K (µg/d)	Thiamin (mg/d)
Infants						
0–6 mo	400*	40*	10*	4*	2.0*	0.2*
6–12 mo	500*	50*	10*	5*	2.5*	0.3*
Children						
1–3 y	300	15	15	6	30*	0.5
4–8 y	400	25	15	7	55*	0.6
Males						
9–13 y	600	45	15	11	60*	0.9
14–18 y	900	75	15	15	75*	1.2
19–30 y	900	90	15	15	120*	1.2
31–50 y	900	90	15	15	120*	1.2
51–70 y	900	90	15	15	120*	1.2
> 70 y	900	90	20	15	120*	1.2

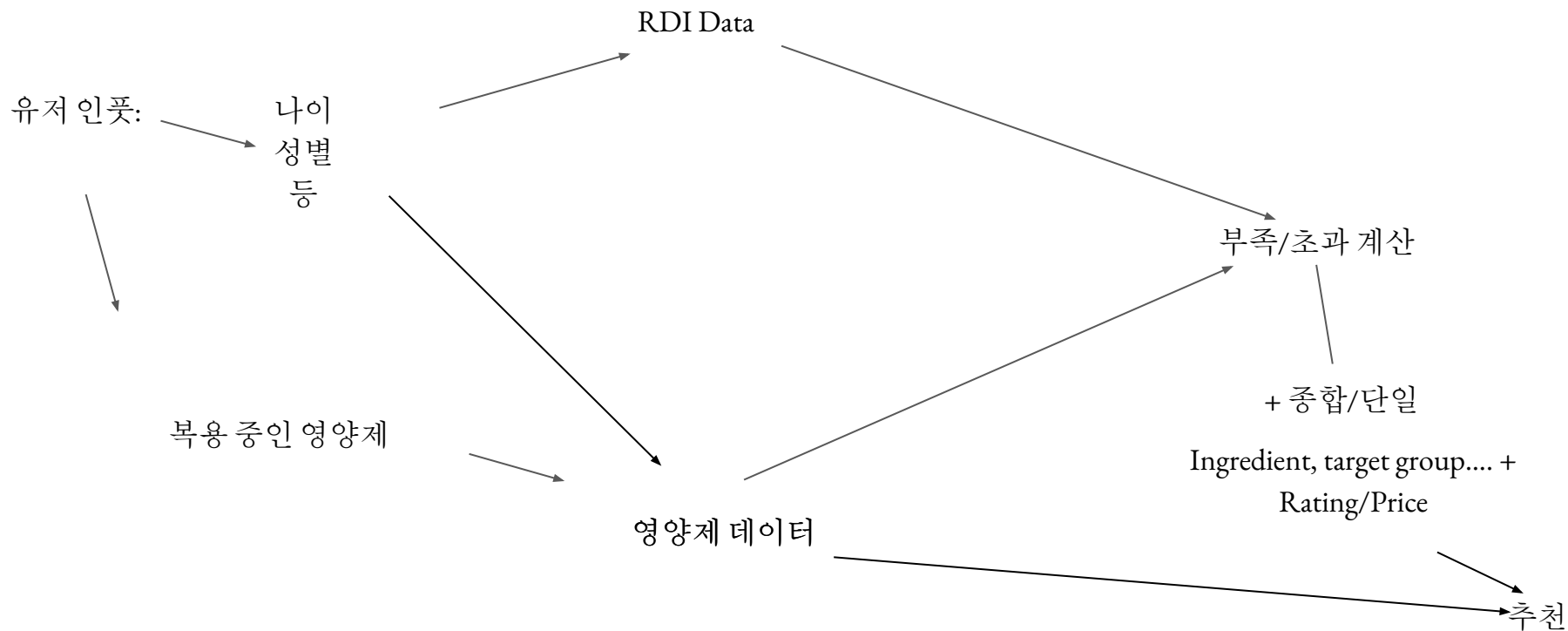
$$15/0.025=600 \text{ IU}$$

Dietary Reference Intakes (DRIs): Tolerable Upper Intake Levels, Vitamins

Life Stage Group	Vitamin A (µg/d) ^a	Vitamin C (mg/d)	Vitamin D (µg/d)	Vitamin E (mg/d) ^{b, c}	Vitamin K	Thiamin
Infants						
0–6 mo	600	ND^e	25	ND	ND	ND
6–12 mo	600	ND	38	ND	ND	ND
Children						
1–3 y	600	400	63	200	ND	ND
4–8 y	900	650	75	300	ND	ND
Males						
9–13 y	1,700	1,200	100	600	ND	ND
14–18 y	2,800	1,800	100	800	ND	ND
19–30 y	3,000	2,000	100	1,000	ND	ND
31–50 y	3,000	2,000	100	1,000	ND	ND
51–70 y	3,000	2,000	100	1,000	ND	ND
> 70 y	3,000	2,000	100	1,000	ND	ND

$$100/0.025 = 4000 \text{ IU}$$

Logic [Filter & Clustering]



Logic [Filter & Clustering]

RDI DF

	Vitamin A	Vitamin C	Vitamin D	Vitamin E	Vitamin K	Vitamin B6	Vitamin B12
1	900	90000	15	15000	120	1300	2.4

Showing 1 to 1 of 1 entries

Previous Next

유저 인풋:

User Input DF

	name	ingred	perone	unit	urintake
1	Windmill Quick Melt B-12 (Cyanocobalamin) 1000 mcg	Vitamin B12	1000	mg	4000
2	Windmill Quick Melt B-12 (Cyanocobalamin) 1000 mcg	Vitamin B12	1000	mcg	4000

부족/초과 계산

Your overdose 3997.6

Total Vitamin DF

Basic_overview.csv[name, net content, supplement form]

Dietary_supplement_facts.csv[daily value target group, ingredient, category]

Other_ingredients.csv[other ingredients]

추천

Logic [Filter & Clustering]

- Duplicate 제거, 중복 개수 파악 (종합/ 싱글 비타민)

```
## # A tibble: 10 x 6
## # Groups:   Name [9]
##   Name                'Serving Size' Target Categories Ingrednum multi
##   <chr>                <chr>         <chr> <chr>          <int> <chr>
## 1 Windmill Quick Melt B-12 (C- 1.0 Melt(s)   Adult- vitamin      2 Multi
## 2 Windmill B-1 (Thiamine Hydr- 1.0 Tablet(s)  Adult- vitamin      1 Sing-
## 3 Windmill B-12 (Cyanocobalam- 1.0 Tablet(s)  Adult- vitamin      2 Multi
## 4 Thorne Methylcobalamin       1.0 Capsule(s) Adult- vitamin      1 Sing-
## 5 Thorne Pyridoxal 5'- Phosph- 1.0 Capsule(s) Adult- vitamin      1 Sing-
## 6 Thorne Vitamin K2           15.0 Drop(s)   Adult- vitamin      1 Sing-
## 7 Allergy Research Group Pure- 2.0 Capsule(s) Adult- vitamin      4 Multi
## 8 The Vitamin Shoppe Dry A No- 1.0 Capsule(s) Adult- vitamin      2 Multi
## 9 The Vitamin Shoppe Vitamin - 1.0 Lozenge(s) Adult- vitamin      2 Multi
## 10 The Vitamin Shoppe Vitamin - 1.0 Lozenge(s) Adult- vitamin      2 Multi
```

Logic [Filter & Clustering]

```
## # A tibble: 10 x 6
## # Groups:   Name [9]
##   Name                'Serving Size' Target Categories Ingrednum multi
##   <chr>                <chr>         <chr> <chr>          <int> <chr>
## 1 Windmill Quick Melt B-12 (C- 1.0 Melt(s) Adult- vitamin      2 Multi
## 2 Windmill B-1 (Thiamine Hydr- 1.0 Tablet(s) Adult- vitamin      1 Sing-
## 3 Windmill B-12 (Cyanocobalam- 1.0 Tablet(s) Adult- vitamin      2 Multi
## 4 Thorne Methylcobalamin       1.0 Capsule(s) Adult- vitamin      1 Sing-
## 5 Thorne Pyridoxal 5'- Phosph- 1.0 Capsule(s) Adult- vitamin      1 Sing-
## 6 Thorne Vitamin K2            15.0 Drop(s) Adult- vitamin      1 Sing-
## 7 Allergy Research Group Pure- 2.0 Capsule(s) Adult- vitamin      4 Multi
## 8 The Vitamin Shoppe Dry A No- 1.0 Capsule(s) Adult- vitamin      2 Multi
## 9 The Vitamin Shoppe Vitamin - 1.0 Lozenge(s) Adult- vitamin      2 Multi
## 10 The Vitamin Shoppe Vitamin - 1.0 Lozenge(s) Adult- vitamin      2 Multi
```

Basic overview

name
Brand
Net contents
Supplement form

Dietary Supplement Facts (Clustering)

/ Daily value Target group
/ Ingredient
/ Category

크롤링

Rating, 가격, 리뷰개수 => 최종 추천

Python 클러스터링/크롤링?

Basic_overview.csv[net content, supplement form]

Dietary_supplement_facts.csv[daily value target group, ingredient, category]

Other_ingredients.csv[other ingredients]

```
Basic_Overview_1      20000 obs. of 11 variables
 $ URL                : chr [1:20000] "https://dsld.od.nih.gov/labe
 $ DSLD ID            : num [1:20000] 542 543 544 545 546 547 548 5
 $ Product Name       : chr [1:20000] "Vitamin World B-2 100 mg" "V
 $ Brand Name         : chr [1:20000] "Vitamin World" "Vitamin Worl
 $ Net Contents       : chr [1:20000] "100.0 Easy To Swallow Coated
 $ Serving Size       : chr [1:20000] "2.0 Tablet(s)" "1.0 Tablet(s)
 $ Product Type [LanguaL] : chr [1:20000] "DIETARY SUPPLEMENT, VITAMIN
 $ Supplement Form [LanguaL]: chr [1:20000] "TABLET [E0155]" "TABLET [E01
```

```
Other_Ingredients_1   20216 obs.
 $ URL                : chr [1:20216] Dicalcium Phosphate, Vegetable Cellulose, Croscarme...
 $ DSLD ID            : num [1:20216] Dicalcium Phosphate, Vegetable Cellulose, Croscarme...
 $ Product Name       : chr [1:20216] Ascorbic Acid, Vegetable Cellulose, Citrus Bioflavono...
 $ Other Ingredients: chr [1:20216] Dicalcium Phosphate, Vegetable Cellulose, Croscarme...
                                Vegetable Cellulose, Dicalcium Phosphate, Stearic Aci...
```

```
Dietary_Supplement_Fac... 193938 obs. of 10 variables
 $ URL                : chr [1:193938] "https://dsld.od.nih.gov/la
 $ DSLD ID            : num [1:193938] 542 543 544 544 544 545 546
 $ Product Name       : chr [1:193938] "Vitamin World B-2 100 mg"
 $ Serving Size       : chr [1:193938] "2.0 Tablet(s)" "1.0 Tablet
 $ Daily Value Target Group : chr [1:193938] "Adults and children 4 or m
 $ Ingredient         : chr [1:193938] "Riboflavin" "Vitamin B6" "
 $ DSLD Ingredient Categories: chr [1:193938] "vitamin" "vitamin" "vitami
```

Python 클러스터링/크롤링?

Basic_overview.csv[net content, supplement form]

Dietary_supplement_facts.csv[daily value target group, ingredient, category]

Other_ingredients.csv[other ingredients]



New Column (Variables)

- 'Form of Supplement' → Categorical Var (i.e. tablet → "1")
- 'Serving Size' → Categorical Var (i.e. 500 pills → "5", 100 pills → "1")
- 'Ingredients' → Logical Var (i.e. more than 5 → "1" == 종합)
- Possibly 'Other Ingredients'

Basic_Overview_1		20000 obs. of 11 variables									
\$ URL	:	chr	[1:20000]	"https://dsld.od.nih.gov/label/542-543-544-545-546-547-548-549-550-551-552-553-554-555-556-557-558-559-560-561-562-563-564-565-566-567-568-569-570-571-572-573-574-575-576-577-578-579-580-581-582-583-584-585-586-587-588-589-590-591-592-593-594-595-596-597-598-599-600-601-602-603-604-605-606-607-608-609-610-611-612-613-614-615-616-617-618-619-620-621-622-623-624-625-626-627-628-629-630-631-632-633-634-635-636-637-638-639-640-641-642-643-644-645-646-647-648-649-650-651-652-653-654-655-656-657-658-659-660-661-662-663-664-665-666-667-668-669-670-671-672-673-674-675-676-677-678-679-680-681-682-683-684-685-686-687-688-689-690-691-692-693-694-695-696-697-698-699-700-701-702-703-704-705-706-707-708-709-710-711-712-713-714-715-716-717-718-719-720-721-722-723-724-725-726-727-728-729-730-731-732-733-734-735-736-737-738-739-740-741-742-743-744-745-746-747-748-749-750-751-752-753-754-755-756-757-758-759-760-761-762-763-764-765-766-767-768-769-770-771-772-773-774-775-776-777-778-779-780-781-782-783-784-785-786-787-788-789-790-791-792-793-794-795-796-797-798-799-800-801-802-803-804-805-806-807-808-809-810-811-812-813-814-815-816-817-818-819-820-821-822-823-824-825-826-827-828-829-830-831-832-833-834-835-836-837-838-839-840-841-842-843-844-845-846-847-848-849-850-851-852-853-854-855-856-857-858-859-860-861-862-863-864-865-866-867-868-869-870-871-872-873-874-875-876-877-878-879-880-881-882-883-884-885-886-887-888-889-890-891-892-893-894-895-896-897-898-899-900-901-902-903-904-905-906-907-908-909-910-911-912-913-914-915-916-917-918-919-920-921-922-923-924-925-926-927-928-929-930-931-932-933-934-935-936-937-938-939-940-941-942-943-944-945-946-947-948-949-950-951-952-953-954-955-956-957-958-959-960-961-962-963-964-965-966-967-968-969-970-971-972-973-974-975-976-977-978-979-980-981-982-983-984-985-986-987-988-989-990-991-992-993-994-995-996-997-998-999-1000-1001-1002-1003-1004-1005-1006-1007-1008-1009-1010-1011-1012-1013-1014-1015-1016-1017-1018-1019-1020-1021-1022-1023-1024-1025-1026-1027-1028-1029-1030-1031-1032-1033-1034-1035-1036-1037-1038-1039-1040-1041-1042-1043-1044-1045-1046-1047-1048-1049-1050-1051-1052-1053-1054-1055-1056-1057-1058-1059-1060-1061-1062-1063-1064-1065-1066-1067-1068-1069-1070-1071-1072-1073-1074-1075-1076-1077-1078-1079-1080-1081-1082-1083-1084-1085-1086-1087-1088-1089-1090-1091-1092-1093-1094-1095-1096-1097-1098-1099-1100-1101-1102-1103-1104-1105-1106-1107-1108-1109-1110-1111-1112-1113-1114-1115-1116-1117-1118-1119-1120-1121-1122-1123-1124-1125-1126-1127-1128-1129-1130-1131-1132-1133-1134-1135-1136-1137-1138-1139-1140-1141-1142-1143-1144-1145-1146-1147-1148-1149-1150-1151-1152-1153-1154-1155-1156-1157-1158-1159-1160-1161-1162-1163-1164-1165-1166-1167-1168-1169-1170-1171-1172-1173-1174-1175-1176-1177-1178-1179-1180-1181-1182-1183-1184-1185-1186-1187-1188-1189-1190-1191-1192-1193-1194-1195-1196-1197-1198-1199-1200-1201-1202-1203-1204-1205-1206-1207-1208-1209-1210-1211-1212-1213-1214-1215-1216-1217-1218-1219-1220-1221-1222-1223-1224-1225-1226-1227-1228-1229-1230-1231-1232-1233-1234-1235-1236-1237-1238-1239-1240-1241-1242-1243-1244-1245-1246-1247-1248-1249-1250-1251-1252-1253-1254-1255-1256-1257-1258-1259-1260-1261-1262-1263-1264-1265-1266-1267-1268-1269-1270-1271-1272-1273-1274-1275-1276-1277-1278-1279-1280-1281-1282-1283-1284-1285-1286-1287-1288-1289-1290-1291-1292-1293-1294-1295-1296-1297-1298-1299-1300-1301-1302-1303-1304-1305-1306-1307-1308-1309-1310-1311-1312-1313-1314-1315-1316-1317-1318-1319-1320-1321-1322-1323-1324-1325-1326-1327-1328-1329-1330-1331-1332-1333-1334-1335-1336-1337-1338-1339-1340-1341-1342-1343-1344-1345-1346-1347-1348-1349-1350-1351-1352-1353-1354-1355-1356-1357-1358-1359-1360-1361-1362-1363-1364-1365-1366-1367-1368-1369-1370-1371-1372-1373-1374-1375-1376-1377-1378-1379-1380-1381-1382-1383-1384-1385-1386-1387-1388-1389-1390-1391-1392-1393-1394-1395-1396-1397-1398-1399-1400-1401-1402-1403-1404-1405-1406-1407-1408-1409-1410-1411-1412-1413-1414-1415-1416-1417-1418-1419-1420-1421-1422-1423-1424-1425-1426-1427-1428-1429-1430-1431-1432-1433-1434-1435-1436-1437-1438-1439-1440-1441-1442-1443-1444-1445-1446-1447-1448-1449-1450-1451-1452-1453-1454-1455-1456-1457-1458-1459-1460-1461-1462-1463-1464-1465-1466-1467-1468-1469-1470-1471-1472-1473-1474-1475-1476-1477-1478-1479-1480-1481-1482-1483-1484-1485-1486-1487-1488-1489-1490-1491-1492-1493-1494-1495-1496-1497-1498-1499-1500-1501-1502-1503-1504-1505-1506-1507-1508-1509-1510-1511-1512-1513-1514-1515-1516-1517-1518-1519-1520-1521-1522-1523-1524-1525-1526-1527-1528-1529-1530-1531-1532-1533-1534-1535-1536-1537-1538-1539-1540-1541-1542-1543-1544-1545-1546-1547-1548-1549-1550-1551-1552-1553-1554-1555-1556-1557-1558-1559-1560-1561-1562-1563-1564-1565-1566-1567-1568-1569-1570-1571-1572-1573-1574-1575-1576-1577-1578-1579-1580-1581-1582-1583-1584-1585-1586-1587-1588-1589-1590-1591-1592-1593-1594-1595-1596-1597-1598-1599-1600-1601-1602-1603-1604-1605-1606-1607-1608-1609-1610-1611-1612-1613-1614-1615-1616-1617-1618-1619-1620-1621-1622-16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\$ DSLD Ingredient Categories	: chr	[1:193938] "vitamin" "vitamin" "vitami

Visualizations - Shiny

Next Step

Unit / Data Scaling

Finalize dataframes and try clustering

Web Scraping if possible

Shiny (Stack input & output as dataframe)

Thank you