PRODUCT- LED GROWTH FUNNEL ANALYSIS

MYSQL QUERIES & RESULTS DOCUMENT

PLG Analytics Database - Complete Query Walkthrough

**Database: plg_analytics

**Analysis Type: Comprehensive funnel, A/B test and cohort analysis

-- QUERY 1: PLG FUNNEL CONVERSION RATES --

```sql
SELECT
    'Signup' as funnel_stage,
    COUNT(DISTINCT user_id) as users_count,
    ROUND(100.0 * COUNT(DISTINCT user_id) / (SELECT COUNT(*) FROM dim_users), 2) as conversion_rate
FROM fact_user_events
WHERE event_type = 'signup'

UNION ALL

SELECT
    'Activation',
    COUNT(DISTINCT user_id),
    ROUND(100.0 * COUNT(DISTINCT user_id) / (SELECT COUNT(*) FROM dim_users), 2)
FROM fact_user_events
WHERE event_type = 'activation'

UNION ALL

SELECT
    'Feature Adoption',
    COUNT(DISTINCT user_id),
    ROUND(100.0 * COUNT(DISTINCT user_id) / (SELECT COUNT(*) FROM dim_users), 2)
FROM fact_user_events
WHERE event_type = 'feature_use'

UNION ALL

SELECT
    'PQL Qualified',
    COUNT(DISTINCT user_id),
    ROUND(100.0 * COUNT(DISTINCT user_id) / (SELECT COUNT(*) FROM dim_users), 2)
FROM fact_user_events
WHERE event_type = 'pql_qualified'

UNION ALL

SELECT
    'Paid Conversion',
    COUNT(DISTINCT user_id),
    ROUND(100.0 * COUNT(DISTINCT user_id) / (SELECT COUNT(*) FROM dim_users), 2)
FROM fact_user_events
WHERE event_type = 'payment_complete'
ORDER BY conversion_rate DESC;
```

funnel_stage	users_count	conversion_rate
Signup	10000	100
Activation	7027	70.27
Feature Adoption	3496	34.96
PQL Qualified	1434	14.34
Paid Conversion	378	3.78

-- QUERY 2: FUNNEL BY USER SEGMENT --

```sql
SELECT
    u.user_segment,
    COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END) as signups,
    COUNT(DISTINCT CASE WHEN e.event_type = 'activation' THEN u.user_id END) as activated,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN e.event_type = 'activation' THEN u.user_id END) /
        COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END), 2) as activation_rate,
    COUNT(DISTINCT CASE WHEN e.event_type = 'payment_complete' THEN u.user_id END) as customers,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN e.event_type = 'payment_complete' THEN u.user_id END) /
        COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END), 2) as conversion_rate
FROM dim_users u
LEFT JOIN fact_user_events e ON u.user_id = e.user_id
GROUP BY u.user_segment
ORDER BY conversion_rate DESC;
```

user_segment	signups	activated	activation_rate	customers	conversion_rate
Direct	2568	1787	69.59	111	4.32
Referral	2492	1726	69.26	93	3.73
Organic	2484	1801	72.5	90	3.62
Paid	2456	1713	69.75	84	3.42

-- QUERY 3: FUNNEL BY DEVICE TYPE --

```sql
SELECT
    u.device_type,
    COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END) as signups,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN e.event_type = 'activation' THEN u.user_id END) /
        COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END), 2) as activation_rate,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN e.event_type = 'feature_use' THEN u.user_id END) /
        COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END), 2) as engagement_rate,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN e.event_type = 'payment_complete' THEN u.user_id END) /
        COUNT(DISTINCT CASE WHEN e.event_type = 'signup' THEN u.user_id END), 2) as conversion_rate
FROM dim_users u
LEFT JOIN fact_user_events e ON u.user_id = e.user_id
GROUP BY u.device_type
ORDER BY conversion_rate DESC;
```

device_type	signups	activation_rate	engagement_rate	conversion_rate
Mobile	3283	70.36	35.91	4.14
Tablet	3332	70.59	34.33	3.93
Desktop	3385	69.87	34.65	3.28

-- QUERY 4: TIME TO VALUE (TTV) ANALYSIS --

```sql
SELECT
    'Signup to Activation' as journey_stage,
    ROUND(AVG(c.days_to_activation), 1) as avg_days,
    ROUND(AVG(c.days_to_activation), 1) as median_days,
    MIN(c.days_to_activation) as min_days,
    MAX(c.days_to_activation) as max_days,
    COUNT(DISTINCT c.user_id) as users_completed
FROM fact_cohort_data c
WHERE c.activation_date IS NOT NULL

UNION ALL

SELECT
    'Activation to PQL',
    ROUND(AVG(DATEDIFF(c.pql_date, c.activation_date)), 1),
    ROUND(AVG(DATEDIFF(c.pql_date, c.activation_date)), 1),
    MIN(DATEDIFF(c.pql_date, c.activation_date)),
    MAX(DATEDIFF(c.pql_date, c.activation_date)),
    COUNT(DISTINCT c.user_id)
FROM fact_cohort_data c
WHERE c.pql_date IS NOT NULL AND c.activation_date IS NOT NULL

UNION ALL

SELECT
    'PQL to Paid',
    ROUND(AVG(DATEDIFF(c.payment_date, c.pql_date)), 1),
    ROUND(AVG(DATEDIFF(c.payment_date, c.pql_date)), 1),
    MIN(DATEDIFF(c.payment_date, c.pql_date)),
    MAX(DATEDIFF(c.payment_date, c.pql_date)),
    COUNT(DISTINCT c.user_id)
FROM fact_cohort_data c
WHERE c.payment_date IS NOT NULL AND c.pql_date IS NOT NULL;
```

journey_stage	avg_days	median_days	min_days	max_days	users_completed
Signup to Activation	1.1	1.1	0	3	7027
Activation to PQL	11	11	1	21	1434
PQL to Paid	15.1	15.1	1	30	378

-- QUERY 5: COHORT RETENTION ANALYSIS (WEEKLY) --

```sql
SELECT
    c.cohort_date as cohort_week,
    COUNT(DISTINCT c.user_id) as cohort_size,
    COUNT(DISTINCT CASE WHEN c.activation_date IS NOT NULL THEN c.user_id END) as week1_active,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN c.activation_date IS NOT NULL THEN c.user_id END) /
        COUNT(DISTINCT c.user_id), 2) as week1_retention_rate,
    COUNT(DISTINCT CASE WHEN c.feature_adoption_date IS NOT NULL THEN c.user_id END) as week2_engaged,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN c.feature_adoption_date IS NOT NULL THEN c.user_id END) /
        COUNT(DISTINCT c.user_id), 2) as week2_engagement_rate,
    COUNT(DISTINCT CASE WHEN c.payment_date IS NOT NULL THEN c.user_id END) as paid_customers,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN c.payment_date IS NOT NULL THEN c.user_id END) /
        COUNT(DISTINCT c.user_id), 2) as paid_conversion_rate
FROM fact_cohort_data c
GROUP BY c.cohort_date
ORDER BY c.cohort_date DESC;
```

cohort_week	cohort_size	week1_active	week1_retention_rate	week2_engaged	week2_engagement_rate	paid_customers	paid_conversion_rate
25-11-2024	49	38	77.55	21	42.86	5	10.2
18-11-2024	203	146	71.92	76	37.44	5	2.46
11-11-2024	188	131	69.68	60	31.91	4	2.13
04-11-2024	202	145	71.78	73	36.14	3	1.49
28-10-2024	219	147	67.12	78	35.62	8	3.65
21-10-2024	218	152	69.72	82	37.61	7	3.21
14-10-2024	209	159	76.08	79	37.8	11	5.26
07-10-2024	230	164	71.3	80	34.78	6	2.61
30-09-2024	213	146	68.54	81	38.03	10	4.69
23-09-2024	201	142	70.65	64	31.84	8	3.98
16-09-2024	199	134	67.34	68	34.17	11	5.53
09-09-2024	214	149	69.63	71	33.18	10	4.67
02-09-2024	234	168	71.79	95	40.6	14	5.98
26-08-2024	201	130	64.68	63	31.34	7	3.48
19-08-2024	223	158	70.85	77	34.53	10	4.48
12-08-2024	247	169	68.42	77	31.17	8	3.24
05-08-2024	221	161	72.85	84	38.01	8	3.62

-- QUERY 6: A/B TEST ANALYSIS - OVERALL RESULTS --

```sql
SELECT
    test_name,
    variant,
    COUNT(DISTINCT user_id) as users_assigned,
    SUM(CASE WHEN converted = 1 THEN 1 ELSE 0 END) as conversions,
    ROUND(100.0 * SUM(CASE WHEN converted = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT user_id), 2) as conversion_rate
FROM fact_ab_tests
GROUP BY test_name, variant
ORDER BY test_name, conversion_rate DESC;
```

test_name	variant	users_assigned	conversions	conversion_rate
feature_adoption	treatment_tooltip_guide	3968	2794	70.41
feature_adoption	control	4032	610	15.13
onboarding_flow	treatment_quick_start	4042	3260	80.65
onboarding_flow	control	3958	611	15.44
pricing_strategy	treatment_freemium	3981	2587	64.98
pricing_strategy	control_7day_trial	4019	614	15.28

-- QUERY 7: A/B TEST - STATISTICAL SIGNIFICANCE --

```sql
WITH test_stats AS (
    SELECT
        test_name,
        variant,
        COUNT(DISTINCT user_id) as sample_size,
        SUM(CASE WHEN converted = 1 THEN 1 ELSE 0 END) as successes,
        ROUND(100.0 * SUM(CASE WHEN converted = 1 THEN 1 ELSE 0 END) / COUNT(DISTINCT user_id), 2) as success_rate
    FROM fact_ab_tests
    GROUP BY test_name, variant
)
SELECT
    test_name,
    MAX(CASE WHEN variant LIKE 'control%' THEN success_rate END) as control_rate,
    MAX(CASE WHEN variant NOT LIKE 'control%' THEN success_rate END) as treatment_rate,
    ROUND(MAX(CASE WHEN variant NOT LIKE 'control%' THEN success_rate END) -
        MAX(CASE WHEN variant LIKE 'control%' THEN success_rate END), 2) as lift_percentage,
    CASE
        WHEN ABS(MAX(CASE WHEN variant NOT LIKE 'control%' THEN success_rate END) -
            MAX(CASE WHEN variant LIKE 'control%' THEN success_rate END)) > 5 THEN '✅ Significant'
        ELSE '⚠️ Inconclusive'
    END as significance
FROM test_stats
GROUP BY test_name;
```

test_name	control_rate	treatment_rate	lift_percentage	significance
feature_adoption	15.13	70.41	55.28	Significant
onboarding_flow	15.44	80.65	65.21	Significant
pricing_strategy	15.28	64.98	49.7	Significant

-- QUERY 8: PQL IDENTIFICATION - CHARACTERISTICS --

```sql
SELECT
    u.user_segment,
    u.device_type,
    u.platform,
    COUNT(DISTINCT u.user_id) as total_users,
    COUNT(DISTINCT CASE WHEN c.pql_date IS NOT NULL THEN u.user_id END) as pql_count,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN c.pql_date IS NOT NULL THEN u.user_id END) /
        COUNT(DISTINCT u.user_id), 2) as pql_rate,
    ROUND(AVG(c.days_to_pql), 1) as avg_days_to_pql
FROM dim_users u
LEFT JOIN fact_cohort_data c ON u.user_id = c.user_id
GROUP BY u.user_segment, u.device_type, u.platform
HAVING COUNT(DISTINCT u.user_id) > 20
ORDER BY pql_rate DESC;
```

user_segment	device_type	platform	total_users	pql_count	pql_rate	avg_days_to_pql
Direct	Mobile	Web	268	50	18.66	12.9
Paid	Tablet	Android	289	52	17.99	11.1
Direct	Mobile	iOS	290	52	17.93	11.7
Referral	Mobile	iOS	284	50	17.61	13.1
Direct	Tablet	iOS	303	50	16.5	11.3
Direct	Desktop	Web	298	48	16.11	13.1
Referral	Tablet	Web	274	44	16.06	12.2
Organic	Mobile	Web	291	46	15.81	11.2
Organic	Mobile	Android	268	42	15.67	11.3
Organic	Desktop	iOS	263	41	15.59	12.5
Paid	Tablet	Web	245	38	15.51	11.8
Organic	Tablet	Android	281	43	15.3	11.8
Paid	Tablet	iOS	276	42	15.22	11.8
Referral	Tablet	iOS	265	40	15.09	12
Direct	Mobile	Android	291	43	14.78	11.2
Organic	Tablet	iOS	264	39	14.77	12.4
Paid	Mobile	Android	276	40	14.49	12.4
Referral	Desktop	iOS	272	39	14.34	12.4

-- QUERY 9: CHURN ANALYSIS - AT-RISK SEGMENTS --

```sql
SELECT
    u.user_segment,
    COUNT(DISTINCT u.user_id) as total_users,
    COUNT(DISTINCT CASE WHEN e.event_type = 'activation' THEN u.user_id END) as activated,
    COUNT(DISTINCT CASE WHEN c.feature_adoption_date IS NULL AND
                DATEDIFF(CURDATE(), u.signup_date) > 14 THEN u.user_id END) as inactive_14days,
    ROUND(100.0 * COUNT(DISTINCT CASE WHEN c.feature_adoption_date IS NULL AND
                DATEDIFF(CURDATE(), u.signup_date) > 14 THEN u.user_id END) /
        COUNT(DISTINCT u.user_id), 2) as churn_risk_rate
FROM dim_users u
LEFT JOIN fact_user_events e ON u.user_id = e.user_id
LEFT JOIN fact_cohort_data c ON u.user_id = c.user_id
GROUP BY u.user_segment
ORDER BY churn_risk_rate DESC;
```

user_segment	total_users	activated	inactive_14days	churn_risk_rate
Paid	2456	1713	1636	66.61
Organic	2484	1801	1614	64.98
Direct	2568	1787	1662	64.72
Referral	2492	1726	1592	63.88

-- QUERY 10: REVENUE ANALYSIS - LTV BY COHORT --

```sql
SELECT
    c.cohort_date,
    COUNT(DISTINCT c.user_id) as cohort_size,
    ROUND(SUM(CASE WHEN e.event_type = 'payment_complete' THEN e.event_value ELSE 0 END), 2) as total_revenue,
    COUNT(DISTINCT CASE WHEN e.event_type = 'payment_complete' THEN c.user_id END) as paying_customers,
    ROUND(SUM(CASE WHEN e.event_type = 'payment_complete' THEN e.event_value ELSE 0 END) /
        COUNT(DISTINCT c.user_id), 2) as revenue_per_user,
    ROUND(SUM(CASE WHEN e.event_type = 'payment_complete' THEN e.event_value ELSE 0 END) /
        NULLIF(COUNT(DISTINCT CASE WHEN e.event_type = 'payment_complete' THEN c.user_id END), 0), 2) as arpu
FROM fact_cohort_data c
LEFT JOIN fact_user_events e ON c.user_id = e.user_id
GROUP BY c.cohort_date
ORDER BY c.cohort_date DESC;
```

cohort_date	cohort_size	total_revenue	paying_customers	revenue_per_user	arpu
25-11-2024	49	1021.2	5	20.84	204.24
18-11-2024	203	973.66	5	4.8	194.73
11-11-2024	188	613.92	4	3.27	153.48
04-11-2024	202	148.74	3	0.74	49.58
28-10-2024	219	1462.28	8	6.68	182.79
21-10-2024	218	1513.75	7	6.94	216.25
14-10-2024	209	1750.66	11	8.38	159.15
07-10-2024	230	1076.41	6	4.68	179.4
30-09-2024	213	1735.56	10	8.15	173.56
23-09-2024	201	825.58	8	4.11	103.2
16-09-2024	199	1796.98	11	9.03	163.36
09-09-2024	214	1409.13	10	6.58	140.91
02-09-2024	234	2177.27	14	9.3	155.52
26-08-2024	201	813.32	7	4.05	116.19